BUNDLED WIND POWER PROJECT IN GUJARAT AND TAMIL NADU

Project title	Bundled Wind Power Project in Gujarat and Tamil Nadu
Project ID	1862[1]
Monitoring period	01-August-2021 to 31-october-2022 (inclusive of both dates)
Original date of issue	02- February - 2024
Most recent date of issue	29-February-2024
Version	03
VCS Standard Version	4.0
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[1] https://registry.verra.org/app/projectDetail/VCS/1862

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of this bundled project activity is to generate clean form of electricity through renewable wind energy sources. The project activity involves installation of combined capacity of 12.8 MW wind power projects in the states of Gujarat and Tamil Nadu India.

Over the first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 29,987 tCO_2e per year, thereon displacing 32,012 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The electricity generated from the project activity would be supplied to the national grid of India Though all the WTGs are connected to the grid, usage is for sale to grid (State Utility), third party sale & captive use. Thus for third party sale and captive use tri-party wheeling agreements are executed between PP and State Utility.

The total GHG emission reduction in this monitoring period 01-August-2021 to 31-October-2022 (inclusive of both days), the project is replacing anthropogenic emissions of greenhouse gases (GHG's) of 39,951 tCO_2e. thereon displacing 42,652 MWh amount of electricity generation in current monitoring period.

No major breakdowns occurred during the current monitoring period apart from the scheduled maintenance shutdowns.

The details of the project, their investors and their location of installation are mentioned in the table below: -

Name of Investor	Capacity in MW	Commissioning date	District	Connection with Grid	State	Usage
M/s Venus Textile Service	1.50 MW	30-March-2017	Theni	Indian Grid	Tamil Nadu	Sale to State Discom
	1.50 MW	30-March-2017				
	1.50 MW	31-March-2017	Dindigul			
	2.0 MW		Karur			Sale to Third Party[2]
M/s JB Ecotex LLP	2.10 MW	17-October-2017	Jamnagar			

[2] WTG is connected to the state grid and wheeling agreement is signed between PP & State Utility.

M/s J. Korin Spinning Private Limited	2.10 MW	02-August-2017	Kutch	Indian Grid	Gujarat	Captive[3]
M/s Oriilion India Private Limited	2.10 MW	31-March-2018	Jamnagar			

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/ verification	30-March-2017 to 28-Febuary-2019	VCS	Applus certification	1 year 11 months
Verification	01-March-2019 To 31-July-2021	VCS	TUV SUD SOUTH ASIA PVT LTD	2 Year 4 Months
Verification	01-August-2021 to 31-October-2022	VCS	TUV SUD SOUTH ASIA PVT LTD	1 Year 2 months
Total				5 Year 5 Months

1.3 Sectoral Scope and Project Type

Sectoral scope[4]	01 - Energy industries (renewable / non-renewable sources)
Project activity type	I - Renewable Energy Projects

[3] All WTG are connected to the state grid and wheeling agreement is signed between PP & State Utility

[4] *Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes*

1.4 Project Proponent

Organization name	M/s Venus Textile Service
Contact person	Mr. Mathew Jose
Title	Proprietor
Address	48/B4, Maniam Kaliappan Street, K. K. Pudur, Coimbatore – 641038, Tamil Nadu, India
Telephone	+91-9873654312
Email	mjvts@gmail.com

Organization name	M/s JB Ecotex LLP
Contact person	Mr. Vishal Kejriwal
Title	Authorized Signatory
Address	Block No. 195, National Highway-8, Near Rose Garden Hotel, Dhamdod, Taluka: Mangrol, District Surat – 394125, Gujarat, India.
Telephone	+91-987365322
Email	Jbdp1@msn.com

Organization name	M/s J. Korin Spinning Private Limited
Contact person	Mr. Vishal Kejriwal
Title	Authorized Signatory
Address	502, 5th Floor, Union Trade Center, Udhana Dawaraja, Ring Road, Surat – 395002, Gujarat, India
Telephone	+91-987365322
Email	Jbdp1@msn.com

Organization name	M/s Oriilion India Private Limited
Contact person	Mr. Vishal Kejriwal

Title	Authorized Signatory
Address	33/1, N.S. Road, Marshal House, 4th Floor, R. N. 444, Kolkata: - 700001, West Bengal.
Telephone	+91-987365322
Email	Jbdp1@msn.com

1.5 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Manish Dabkara
Title	CEO & MD
Address	Office no. 201, Plot 48, Scheme 78 Part 2 Vijay Nagar, Near Brilliant Convention Centre Indore - 452010 (M.P, India) Website www.enkingint.org
Telephone	+91-9907534900
Email	manish@enkingint.org

1.6 Project Start Date

Project start date	30-March-2017
Justification	This is the date of commissioning of two WTGs of 1.50 MW each by M/s Venus Textile Service in Tamil Nadu.

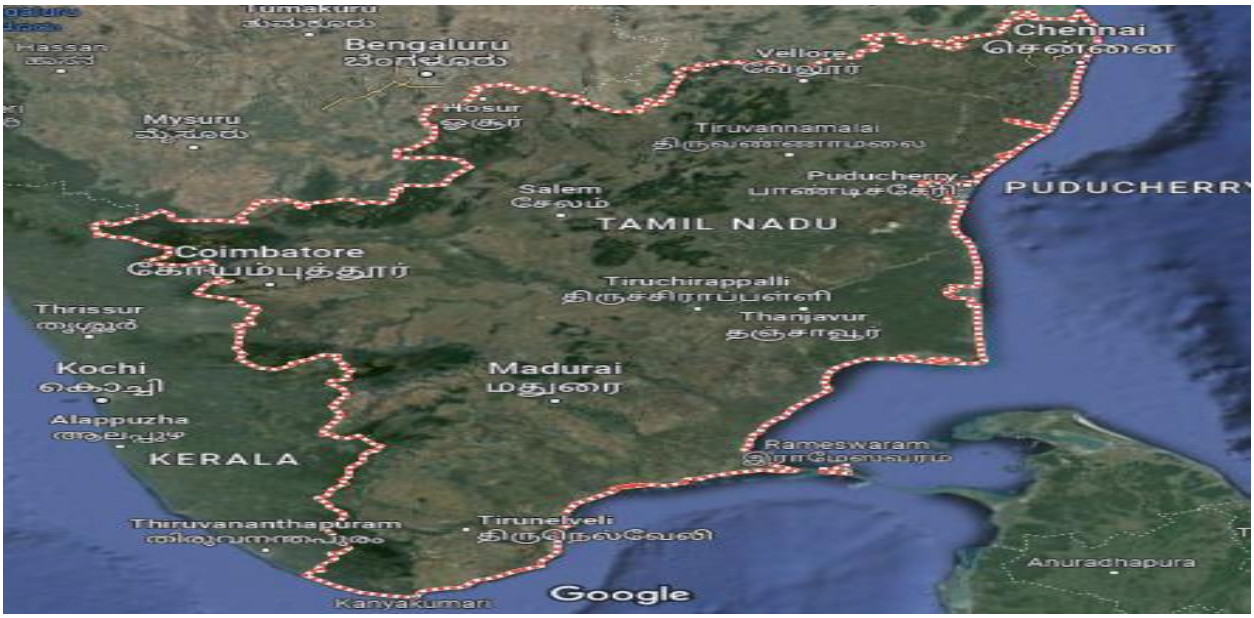
1.7 Project Crediting Period

Crediting period	☒ *Seven years, twice renewable*
Start and end date of first or fixed crediting period	30-March-2017 *to* 29-March-2024

1.8 Project Location

Name of Investor	Capacity (MW)	Village(s)	Tehsil / Mandal	District	State	Latitude (N)	Longitude (E)
M/s Venus Textile Service	1 X1.5 MW	Seepala--kottai;	Uthama--palayam	Theni	Tamil Nadu	9°50'43.8"N	77°27'03.8"E
	1 X1.5 MW					9°50'28.0"N	77°27'03.2"E
	1 X1.5 MW	Odaipatti	Oddan--chatram	Dindigul		9°49'20.2"N	77°26'35.0"E
	1 X 2.0 MW	Venjamangudalur		Karur		10°44'07.4"N	77°26'01.9"E
M/s JB Ecotex LLP	1 X 2.10 MW	Hadiyana	Jodiya	Jamnagar	Gujarat	22°34'12.3"N	70°14'06.6"E
M/s J. Korin Spinning Private Limited	1 X 2.10 MW	Karmata	Abaza	Kutch		23°23'48.0"N	68°37'44.6"E
M/s Oriilion India Private Limited	1 X 2.10 MW	Baradi	Jodiya	Jamnagar		22°33'38.9"N	70°15'08.9"E

Tamil Nadu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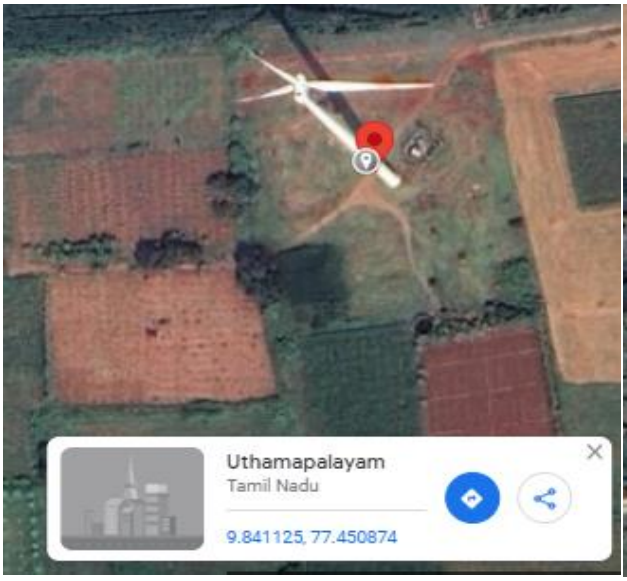
Vellore
Hosur
Mysuru
Tiruvannamalai
Puducherry
PUDUCHERRY
Salem
TAMIL NADU
Coimbatore
Tiruchirappalli
Thrissur
Thanjavur
Kochi
Madurai
Alappuzha
KERALA
Rameswaram
Thiruvananthapuram
Tirunelveli
Anuradhapura
Kanyakumari
Google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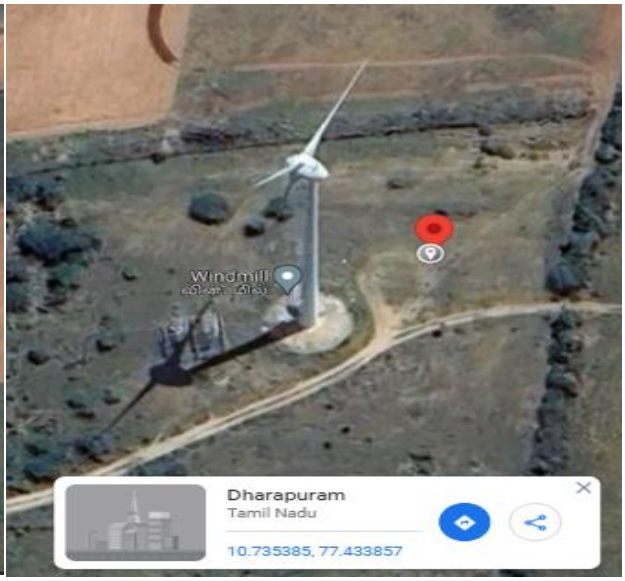
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Tamil Nadu
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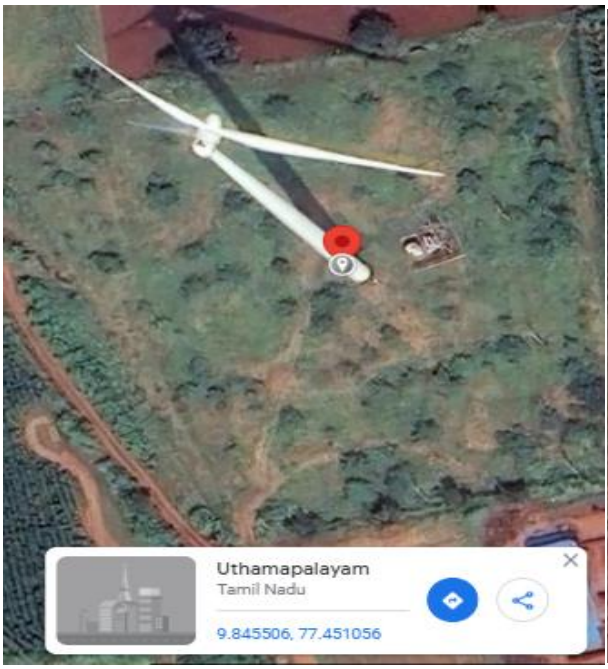
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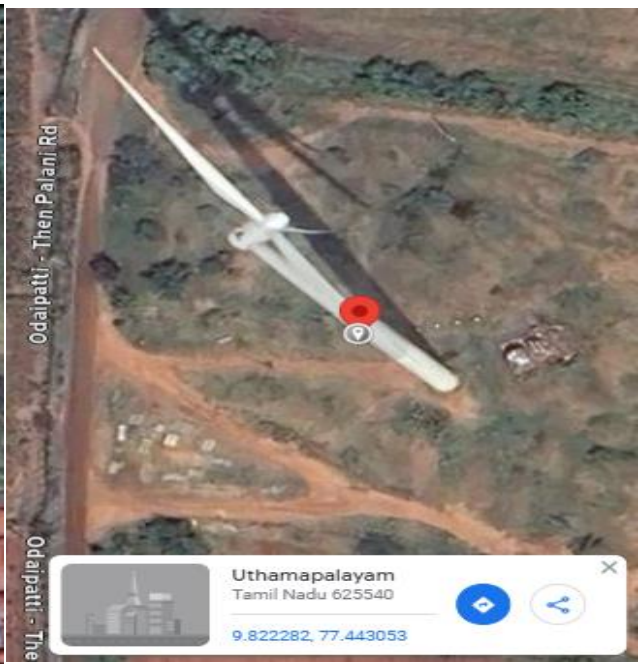
Odaipatti - Then Palani Rd
Uthamapalayam
Tamil Nadu 625540
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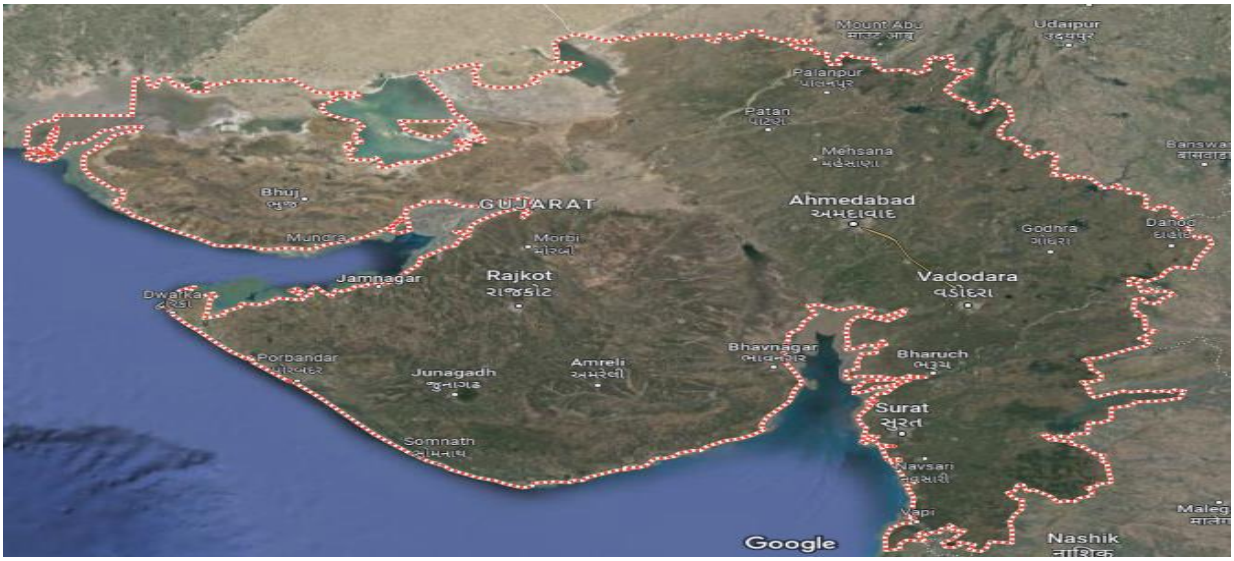
Gujarat


Mount Abu
Udaipur
Palanpur
Patan
Mehsana
Bhuj
GUJARAT
Ahmedabad
Godhra
Morbi
Jamnagar
Rajkot
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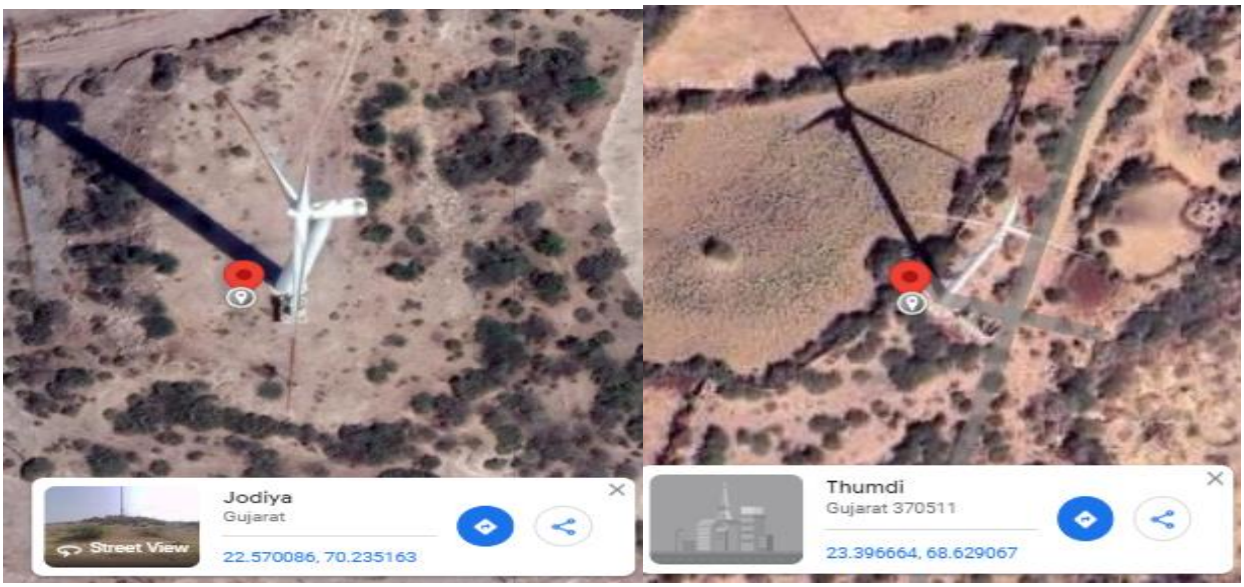

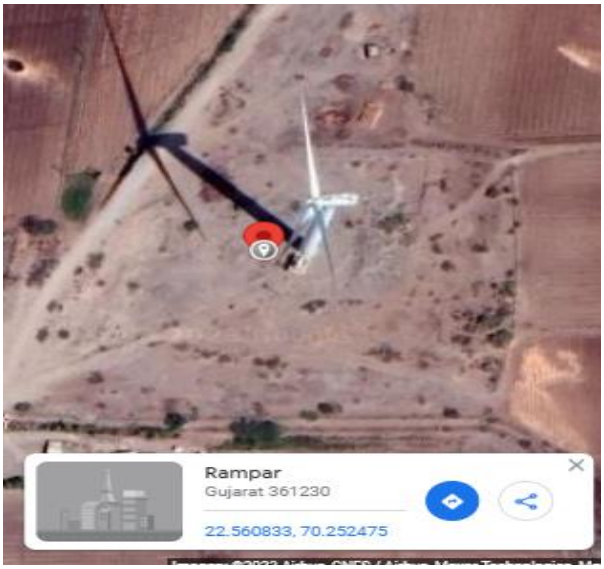

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1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	AMS-I.D.	AMS-I. D - Grid-connected electricity generation from renewable[5]	18.0

[5] https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

Tool	Tool 7	Tool to calculate the emission factor for an electricity system[6]	07.0

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

[6] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

1.12 Sustainable Development Contributions

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

Social well-being: The project has helped in generating employment opportunities during the construction and operation phases. The project activity has lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity has also helped to reduce the demand supply gap in the state.

Technological well-being:

Increased interest in Wind energy projects has further push innovations efforts by technology providers to develop more efficient and better machinery in future.

The technology is well proven and safe. Power generation through wind technology is environmentally safe and sound technology. Also, there are no harmful emissions while operation of the plant. Hence this technology is amongst the cleanest sources of power generation among the other power generation technologies available in the country. In this scenario, the share of power generation through wind is very small in India. Thus, project activity would help in diffusion of the cleaner technology in the country for power generation. This will lead to technological well-being in power generation sector in India.

The project activity has beneficial effect on the local environment and employment in the nearby region. Electricity generation through wind power technology 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. It also contributes in the social development through employments generation i.e., SDG 8. Detailed indicators are mentioned in below table. There is no compliance for monitoring and reporting the emission reduction and SDG contribution from the project activity.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	7	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 42,652.339 MWh renewable electricity was supplied to the Indian grid during the current monitoring period that helps to increase the renewable energy share in the energy mix	Overall 168,972.2 MWh (44,891.06+81,428.84+42,652.339) renewable electricity has been supplied to the Indian grid through put the project lifetime that help to increase the renewable energy share in the energy mix.
2)	8	8.5.1 Employment of local men and women	Implemented activities to increase	The project proponent has targeted to employ 15 persons by the year 2025 and minimum 1 person per annum after 2025	It is estimated to employ at least 10 persons over the entire crediting period and It is achieved employment for 5 people in this current monitoring period.

3)	13.0	13.1.1 Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to decrease	By supplying 42,652.339 MWh clean electricity to Indian grid, the project avoided release of 39,951 tCO_2 in to the atmosphere during the reporting period.	Overall Prevented the release of 158,251.5 tCO_2 (42,054.54+76,282.53+39,951.00) tCO_2 into the atmosphere since project commissioning Electricity generation from clean energy (wind energy) resources leads to low greenhouse gases emission along with supplying affordable, clean electricity.

1.13 Commercially Sensitive Information

Not applicable

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	NA
Legal or customary tenure/access rights	NA
Stakeholder diversity and changes over time	NA
Expected changes in well-being	NA
Location of stakeholders	NA
Location of resources	NA

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	As a part of on-going communication with local stakeholders, end users were informed about grievance register. Thus, ongoing communication of stakeholders was followed through grievance mechanism. If any concerns received during operation of project activity, same were to be addressed if relevant to project activity.
Date(s) of stakeholder consultation	

Location	State	Date
2 x1.5 MW WTGs of M/s Venus Textile Service		12/07/2016

	Seepalakottai, Theni	Tamil Nadu	
	1 x1.5 MW WTGs of M/s Venus Textile Service in village Odaipatti, Dindigul		14/07/2016
	1x2.0 MW WTG of M/s Venus Textile Service Playam,		20/12/2018
	1x2.1 MW WTG of M/s JB Ecotex LLP in Village Hadiyana	Gujarat	23/08/2016
	1x2.1 MW WTG of M/s Oriilion India Private Limited, Baradi		23/03/2017
	1x2.1 MW WTG of M/s J Korin Spinning Mills Private Limited, Karmata		12/08/2016
Communication of monitored results	Not applicable		
Consultation records	The grievance register is maintained by the project participant		
Stakeholder input	There has been no grievance received for the current monitoring period.		

2.1.3 Free, Prior, and Informed Consent

Consent	Not applicable
Outcome of FPIC	Not applicable

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
NA	There have been no grievances recorded for the current monitoring period

2.1.5 Public Comments

There is no public comments received during the stakeholders' consultation, and no comments have been received outside the public comment period:

Summary of comments received	Actions taken
NA	NA

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure taken
Risks to stakeholder participation	Not Applicable	There are no exclusions, lack of communication or barriers in the project activity, that might prevent stakeholders from engaging or participating.
Working conditions	Not Applicable	This project activity is a wind project activity which is 15-20 KM away from the residence of the stockholder. Still, from time to time stakeholders are advised to stay away from electrical components.

Safety of women and girls	Not Applicable	Meetings are held with stakeholders on women's safety and stakeholders are made aware of women's safety. And meeting held with women's stakeholders For mitigating their vulnerability to potential incidents.
Safety of minority and marginalized groups, including children	Not Applicable	Ensuring by the project participant the safety of minority and marginalized groups, including children, is paramount in wind project. And for this, meetings are held with the stakeholders from time to time.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	Not Applicable	This project activity is a wind project activity, hence there is no any discharge of water and no any pollutants of air and noise due to project activity. And Whatever waste generated from the project activity is collected and disposed by the operation and maintenance party.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	The PP strictly follows the national laws prohibiting discrimination and sexual harassment. There has been no reports of discrimination and sexual harassment for this monitoring period.
Management experience	No new entity has been involved in project design or implementation, hence not applicable.
Gender equity in labor and work	The PP strictly follows the national laws promoting the gender equality in labor and work. There has been no reports of discrimination and sexual harassment for this monitoring period.

Human trafficking, forced labor, and child labor	The PP strictly follows the national laws prohibiting human trafficking, forced labor and child labor. There have been no reports of human trafficking, forced labor and child labor for this monitoring period.

2.3.2 Human Rights

The following demonstrations show how the project is committed to safeguard the rights of IPs, LCs, and customary right holders, while following the international human rights law[7], the UNDRIP[8] and ILO Convention 169-

Free, Prior, and Informed Consent (FPIC): The project activity has obtained the FPIC from the local stakeholders including the IPs, LCs and customary right holders, ensuring their unforced consent before the project operation, respecting their right to make decisions.

Non-discriminatory Participation in the Project Activity: The project is a wind project activity which is implemented without cultural or social biases, safeguarding the rights of IPs, LCs, and customary rights holders to be free from discrimination.

2.3.3 Indigenous Peoples and Cultural Heritage

Since, the project activity is implemented, entirely manufactured outside the beneficiary's land, hence, no tangible cultural heritage has been hampered for the project activity.

2.3.4 Property Rights

Disputes over rights to territories and resources	NA
Respect for property rights	This project activity is a wind project activity, which has entirely been manufactured outside the beneficiary's land. Hence, no land/property of the stakeholders, IPs, LCs, and customary rights holders has been incorporated.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	Since the above section 2.3.4 is not applicable, hence this section is also not applicable.

[7] https://www.ohchr.org/sites/default/files/Documents/Publications/fs9Rev.2.pdf

[8] https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

Benefit sharing during the monitoring period	NA

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	The project activity is a wind energy project activity which is positive impact on biodiversity and ecosystems by, which is mainly dominated by thermal/fossil fuel-based power plant.
Soil degradation and soil erosion	No risk identified	This is a wind project activity whose implementation is not causing any kind of soil degradation and soil erosion.
Water consumption and stress	No risk identified	This is a wind project activity that does not cause any water consumption and stress.
Usage of fertilizers	No risk identified	This is wind project activity and there is no any usage of fertilizers during the implementation and also in operational period.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	Not applicable

2.4.2 Introduction of species

This project activity is a wind project activity. Hence, there is no planting or species introduction, hence this information is not applicable.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
NA	NA	NA	NA

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species
NA	NA

2.4.3 Ecosystem conversion

Not Applicable

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The bundled project activity involves the installation of Wind project. The total installed capacity of the project is 12.80 MW Wind project located in the states Gujarat and Tamil Nadu in India. The details of the investors are mentioned in Section 1.1.

The Project activity is a new facility (Greenfield) and the electricity generated by the project has been exported to the Indian electricity grid. The project is therefore displacing an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

In the Pre- project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

Over the 7 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 29,987 tCO2e per year, thereon displacing 32,012 MWh/year amount of electricity.

The basic technical details of the WTGs are as follows: -

Name of Investor	**Capacity in MW**	**Details**
M/s Venus Textile Service	3 X1.50 MW	WEC type Vensys make V87-1500 KW
	1 X 2.0 MW	G-114/T106 2.00 MW Siemens Gamesa make
M/s JB Ecotex LLP	1 X2.10 MW	Suzlon make, 2100 kW
M/s J. Korin Spinning Private Limited	1 X2.10 MW	Suzlon make, 2100 kW

M/s Oriilion India Private Limited	1X2.1 MW	Suzlon make, 2100 kW
Name of Investor	Capacity in MW	COD
M/s Venus Textile Service	1.50 MW	30-March-2017
	1.50 MW	30-March-2017
	1.50 MW	31-March-2017
	2.0 MW	31-March-2019
M/s JB Ecotex LLP	2.10 MW	17-October-2017

The detailed technical specifications for the respective WTGs are as follows: - M/s Venus Textile Service: 3 X1.50 MW, WEC type Vensys make V87-1500 KW

Wind Energy Convertor with 1500 kW rating, Upwind, Horizontal Axis with active yawing, three bladed Direct Drive permanent Magnet excited, grid connected.

Main Characteristics:

Model	**Repgen make Vensys 87**
Hub Height	85 m
GL Wind Turbine Class	IIIB
Type	Direct drive horizontal axis wind turbine with variable rotor speed
Survival wind speed	52.5 m/s
Power Regulation	Independent Electromechanical pitch system for each blade
Rated Power	1500 kW
Rated Speed	9 to 17.3 rpm

Design Lifetime	20 years
Output Voltage of WEC	620 V, 50 Hz
Output Voltageof Power Transformer	33 kV, 50 Hz

M/s Venus Textile Service: 1 X 2.0 MW G-114/T106 2.00 MW Siemens Gamesa make Wind Turbine Generator[9]

Power: -

Rated Power:	2,000.0 kW
Cut-In Wind Speed:	2.5 m/s
Rated Wind Speed:	10.0 m/s
Cut-Out Wind Speed:	25.0 m/s
Survival Wind Speed:	60.0 m/s

Rotor: -

Diameter:	114.0 m
Swept area:	10,207.0 m²
Number of blades:	3
Rotor speed, max:	16.0 U/min
Tip speed:	96 m/s
Type:	55.5
Material:	GFK
Manufacturer:	Gamesa
Power density 1:	195.9 W/m²
Power density 2:	5.1 m²/kW

[9] https://en.wind-turbine-models.com/turbines/428-gamesa-g114-2.0mw

Type:	spur/planetary
Stages:	3.0
Ratio:	1:80
Manufacturer:	Echesa(Gamesa Group)/Hansen/Bosch Rexroth/Winergy

Generator:

Type:	Double Fed Asyn
Number:	1
Speed, max:	1,280.0 U/min
Voltage:	690.0 V
Grid connection:	IGBT
Grid frequency:	50/60 Hz
Hersteller:	Cantarey (Gamesa Group)/ABB/Indar

Tower:

Hub height:	93/120/140 m
Type:	Steel tube/ concrete
Shape:	Conical
Corrosion protection:	Painted
Manufacturer:	Gamesa

The technical specifications of Suzlon make S111-90m WTG installed by M/s JB Ecotex LLP, M/s J Korin and M/s Oriilion India are as follows:[10]

[10] https://www.suzlon.com/in-en/energy-solutions/s111-wind-turbine-generator

OPERATING DATA

Wind class - IEC IIIA / IEC S

Rated power - 2.1 MW

Cut-in wind speed - 3.0 m/s

Rated wind speed - 12.5m/s

Cut-out wind speed - 30.0m/s (3-second average); 21.0m/s (10-minute average)

ROTOR

Rotor diameter - 111.8m

Swept area - 9,852m^2

GENERATOR

Frequency - 50Hz/60Hz

Type Asynchronous - 3 phase induction generator with slip rings operated with rotor circuit inverter system (DFIG)

TOWER

Hub heights - 90m

Type - Steel Tubular BLADE

Make - Suzlon SB54

No any events have occurred during the current monitoring period that may impact the GHG emission reductions or removals and monitoring.

3.2 Deviations

3.2.1 Methodology Deviations

The project activity has been implemented as described in the VCS-PD and there was no methodological deviation applied during the monitoring period.

3.2.2 Project Description Deviations

There is no any deviation in the current monitoring period.

3.3 Grouped Projects

Not applicable as the project is non-grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid, OM,y}$
Data unit	tCO_2/MWh
Description	Operating Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.9610
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as 3-year generation weighted average using data for the years 2015-16, 2016-17 & 2017-18. The data are obtained from "CO_2 Baseline Database for Indian Power Sector" version 14, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.8644
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2017-18. The data is obtained from "CO_2 Baseline Database for Indian Power Sector" version 14, published by the Central Electricity Authority, Ministry of Power, Government of India.

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

Data / Parameter	$EF_{grid, CM, y}$
Data unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.9368
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y*} W_{OM} + EF_{grid, BM,y}* W_{BM}$ Where: $EF_{grid, BM, y}$= Build margin CO_2 emission factor in year y (tCO_2/MWh) $EF_{grid, OM, y}$= Operating margin CO_2 emission factor in year y (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
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

For Gujarat Site

Data / Parameter	$EG_{PJ, Gujarat}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly Share Certificate issued by GETCO
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value is being considered for ER calculations.

Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	21,297.988
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.
QA/QC procedures to be applied	The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years. The monthly electricity supplied/exported by the project activity in the Share Certificate is cross checked with the monthly electricity bills being a captive project. In the absence or delay in the meter calibration appropriate Guidelines are being applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters. Please refer appendix 1 for Meter details
Purpose of the data	Calculation of baseline emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh
Comments	Data would be archived during the whole crediting period + 2 years

For Tamil nandu

Data / Parameter	$EG_{PJ,\ y\ Tamil\ Nadu}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly joint meter reading reports
Description of measurement methods	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project

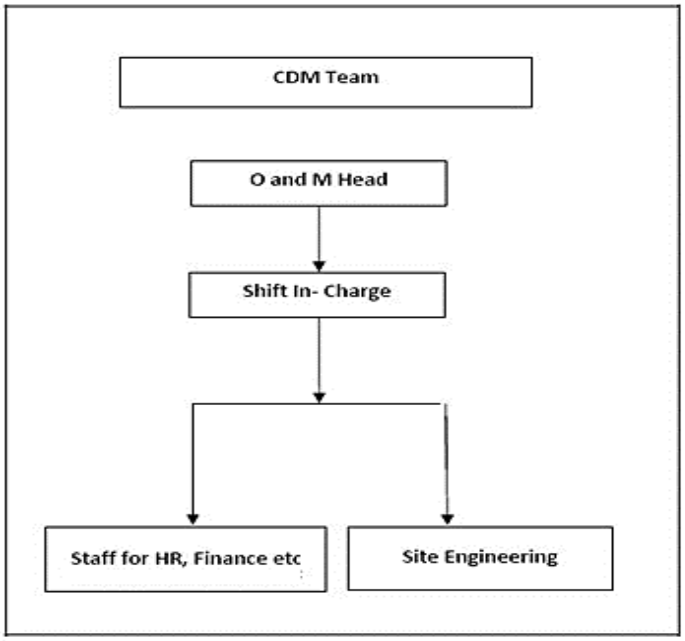
<table>
<tr><td>and procedures to be applied</td><td>activity and same value are being considered for ER calculations.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Continuous measurement & monthly recording</td></tr>
<tr><td>Value monitored</td><td>21,354.351<table><tr><td>Net Generation of Theni</td><td>11,419.85 MWh</td></tr><tr><td>Net Generation of Dindigul</td><td>4,488.79 MWh</td></tr><tr><td>Net Generation of Palayam</td><td>5,445.70 MWh</td></tr><tr><td>Total Net Generation of Tamil Nadu</td><td>21,354.351 MWh</td></tr></table></td></tr>
<tr><td>Monitoring equipment</td><td>The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years[11]. The monthly electricity supplied/exported by the project activity in the JMR report is crosschecked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines are being applied appropriately to confirm the conservativeness of metering.
The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do nothave any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter.
The billing is raised based on substation meters.
Please refer appendix 1 for meter details</td></tr>
<tr><td>Purpose of the data</td><td>Calculation of baseline emissions</td></tr>
<tr><td>Calculation method</td><td>Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh</td></tr>
<tr><td>Comments</td><td>Data would be archived during the whole crediting period + 2 years</td></tr>
</table>

[11] https://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected wind power project being implemented. The monitoring plan, which has been implemented by the project participant describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



Responsibility
• Reviewing the monthly and annual generation statistics. • Evaluating the GHG performance of the project activity. • Identifying the opportunities for future improvement • Addressing grievance related to project activity.
• Implementation of corrective appropriate measures in case any discrepancies are identified in the reported parameters. • Review of monthly report. • Ensuring calibration of monitoring equipment as and when required.
• Monitoring and reporting the GHG performance related parameters following the guidance provided in the project design document • Preparation of monthly and annual generation statistics. • Reporting of any discrepancies identified in the reporting parameters. • Ensuring calibration of the monitoring equipments as and when required.

Data Measurement

The export and import energy has been measured continuously using above mentioned Main meter located at the substations. Readings of meters are being taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices are being raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

QA/QC Procedures for WTG's operational in Tamil nandu State:

Data Archiving: The metering equipment has been maintained in accordance with electricity standards and have the capability of recording daily and monthly readings. Records of joint

meter reading is maintained at site and a copy is kept with the project owner. Necessary records of calibration are maintained by both State Electricity Board and project proponent. The Generation Data and other related documents will be kept for 2 years after the whole crediting period. All monitored data is stored / archived under safe custody of the project executor and controller for a period of crediting period + 2 years.

QA/QC Procedure: - The main meter has been tested for accuracy, with a portable standard meter, by the SEB or authorized Testing Laboratories at the cost of PP. The TANGENCO is carrying out the calibration, periodical testing, sealing & maintenance of meters once in 5 years in the presence of authorized representative(s) of PP sign on the result thereof. The frequency of meter testing has been done once in 5 years, as per CEA Guidelines. All meters are usually tested only at the metering point. If during testing, the main meter is found within the permissible limits of error i.e. 0.2%, the energy computation is as per the main meter. The main meter shall be calibrated & the energy for the period thereafter shall be as per the calibrated main meter. During any point of time if the main meter turns faulty, the reading for that period will be considered as nil. The correction required as per result of testing will be applied to generation & consumption of energy for the period from last meter reading to the time of such test checks. Energy from the period there after shall be in accordance with calibrated main meter. The net electricity supplied to the grid can be cross checked with the invoices raised / sales receipts by project investor to State Electricity Board or Third Party.

QA/QC Procedures for WTG's operational in Gujarat State:

Data Archiving: The metering equipment has been maintained in accordance with electricity standards and have the capability of recording daily and monthly readings. Records of Monthly Share Certificates is being maintained at site and a copy also kept with the project owner. Necessary records of calibration are maintained by both State Electricity Board and project proponent. The Generation Data and other related documents will be kept for 2 years after the whole crediting period. All monitored data is stored / archived under safe custody of the project executor and owner for a period of crediting period + 2 years.

QA/QC Procedure: - The main meter is being tested for accuracy, with a portable standard meter, by the SEB or authorized Testing Laboratories at the cost of PP. GETCO carry out the calibration, periodical testing, sealing & maintenance of meters once in 5 years in the presence of authorized representative(s) of PP shall sign on the result thereof. The frequency of meter testing is done once in 5 years, as per CEA Guidelines. All meters are being tested only at the metering point. The SEB provide a copy of the test reports to the PP. The energy computation is as per the main meter. The main meter is calibrated immediately & the energy for the period thereafter is as per the calibrated main meter. During any of the monthly meter readings, if the main meter is faulty the value for that period will be considered as nil. Correction required as per result of testing will be applied to generation & consumption of energy for the period from last meter reading to the time of such test checks.

Energy from the period there after shall be in accordance with calibrated main meter. The net electricity supplied to the grid can be cross checked with the monthly electricity bills.

Emergency preparedness

The project activity has not been resulting in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff are also trained. The plant helpers have been trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

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

Where:

BE_y : Baseline emissions in year y (tCO_2e)

$EG_{PJ,\ y}$: 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)

$EF_{grid,CM,y}$: Combined margin CO_2 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" (tCO_2e/MWh)

Parameter	Unit	Value
$EG_{PJ,\ y}$ (Gujarat + Tamil Nadu)	MWh	21,297.988+ 15,908.64+5,445.71 = 42,652 MWh
$EF_{grid,CM,y}$		0.9368

BE_y	tCO_2e	39,951 39,951 tCO_2e (Round down)

5.2 Project Emissions

Since the project activity involves generation of power through wind, there is no project emissions associated with the project activity.
Hence, PEy = 0

5.3 Leakage Emissions

Leakage is not applicable, as the conditions prescribed for leakage in para 13 (Page no 4) of the methodology AMS I.D. version 18 is not applicable for the present case.
Hence, LEy = 0

5.4 GHG Emission Reductions and Carbon Dioxide Removals

:

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
01 – August-2021 To 31-December-2021	12,223	0	0	12,223	0	12,223
01-January-2022 To 31-October-2022	27,728	0	0	27,728	0	27,728
Total	39,951	0	0	39,951	0	39,951

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01 – August-2021 To 31-December-2021	12,570	12,223		Due to environmental impact
01-January-2022 To 31-October-2022	24,975	27,728		However actual electricity generation is high for current monitoring period than the estimated, also exceeded generation and PLF is within limit of +-10% of the sensitivity analysis in additionality demonstration. The actual VCU is about 6.02% higher than the estimated VCUs. There are no any design changes for the project activity and increase is due to high production only. Also, there is no any impact on additionality of the project activity for the current monitoring period.
Total	37,545	39,951	6.02%	

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Not Applicable

APPENDIX 2: < METER DETAILS >

S. No.	WTG No.	Meter No.	Make	class	Calibration Date	Validity
	1x2.1 MW WTG of M/s J B Ecotex LLP					
1	SEL/2100/17- 18/4938	GJ- 3896-B	EDMI	0.2 s	07-Aug-17	06-Aug-22
	1x2.1 MW WTG of M/s J Korin Spinning Mills Private Limited					
1	SEL/2100/17- 18/4868	GJ- 3947-B	EDMI	0.2 s	30-August-17	29-August-22
	1x2.1 MW WTG of M/s Oriilion India Private Limited					
1	SEL/2100/17- 18/4973	GJ- 3893-B	EDMI	0.2 s	28-Feb-18	27-Feb-23
	3x1.5 MW WTG of Venus Textile Service					
1	T-62	TNW00877	Secure	0.2 s	31-Mar-17	30-Mar-22
2	T-48	TNW00762	Secure	0.2 s	30-Mar-17	29-Mar-22
3	T-49	TNW00755	Secure	0.2 s	30-Mar-17	29-Mar-22
	1x2.0 MW WTG of Venus Textile Service					
1	2.0 MW	TNW02182	Secure	0.2 s	31-Mar-19	30-Mar-24