

Gold standard for the global goals
Monitoring report



June 2017, version 1

Title of the project	21 MW Wind Energy Project by Shree Cement Limited
Gold Standard project id	GS 6999
Version number of the monitoring report	02
Completion date of the monitoring report	23/04/2020
Date of project design certification	20/11/2019
Start date of crediting period	28/03/2018 ¹
Duration of this monitoring period	28/03/2018 to 31/10/2019 (inclusive of both dates)
Duration of previous monitoring period	Not Applicable
Project representative(s)	Shree Cement Limited
Host Country	India
Certification pathway (activity certification/impact certification)	Impact Certification
SDG Contributions targeted (as per approved PDD)	1 – SDG 7 – Affordable and Clean Energy Contribution to Climate Security & Sustainable Development 2 – SDG 8 – Decent Work and Economic Growth 3 – SDG 13 – Climate Action
Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.)	GSVER
Selected methodology(ies)	ACM0002- Grid-connected electricity generation from renewable sources - Version 20 ²
Estimated amount of annual average certified SDG impact (as per approved PDD)	47,829 MWh/annum (For SDG 7) 44,806 tCO _{2e} /annum (For SDG 13) 1 Training and 10 employment (For SDG 8)
Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period	81,675 MWh (For SDG 7) 76,503 tCO _{2e} (For SDG 13) 22 Training and 27 employment (For SDG 8)

¹The project is registered under Retroactive Mechanism. So the start date of crediting period can be from two years before the registration date, but as the project was commissioned on 28/03/2018, the start date of crediting period has been taken since then.

² <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

SECTION A. Description of project**A.1. Purpose and general description of project**

The purpose of the project activity is to generate power using renewable energy source (wind energy) and sell the power generated to the state grid. The project activity generates electricity using wind energy. The generated electricity is exported to the regional grid system, which is under the purview of the INDIAN electricity grid of India.

Further the project owner has no legal dispute regarding the project activity and the same can be verified from company annual reports³.

The project activity resulted in emission reduction of 76,503 tCO_{2e} during this monitoring period, thereon displacing 81,675 MWh 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 total installed capacity of the current project activity is 21 MW; which involves operation of WTGs in the state of Karnataka in India. The project is promoted by Shree Cement Limited.

WTG Details	Date of Commissioning (DOC)
KST 091	28/03/2018
KST 129	28/03/2018
KST 134	28/03/2018
KST 145	31/03/2018
KST 146	31/03/2018
KST 127	31/03/2018
KST 179	31/03/2018
KST 132	28/06/2018
KST 133	28/06/2018
KST 092	28/06/2018

The project activity is a new facility (Greenfield) and the purpose of the project activity is to generate energy electricity by the utilization of renewable wind energy and further selling the generated energy to the Indian Grid. In this process, there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Thus, electricity would being generated through sustainable means without causing any negative impact on the environment.

Major Milestone of Project activity:

1. The letter of intent is on 29/11/2017 and order is placed on 20/12/2017.
2. The project activity is commissioned in three phases like 28/03/2018, 31/03/2018 and 28/06/2018

Further major milestones and timeline being followed towards implementation of the project activity are as follows:

³ <https://www.shreecement.com/pages/compliance.php>

Sr No.	Particulars	Date
1	DPR of project submitted by third party	13/07/2017
2.	Stakeholder consultation meeting	16/09/2017
3.	LOI Issued to technology supplier	29/11/2017
4.	PO Issued to technology supplier	20/12/2017
5.	Commissioning of project activity	28/03/2018, 31/03/2018 and 28/06/2018
6.	Registration in GS4GG	20/11/2019

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.

During the current monitoring period 28/03/2018 to 31/10/2019 (Inclusive of both the dates) the project resulted in emission reductions of 76,503 tCO₂e and underwent continued operation other than scheduled maintenance and breakdowns.

Vintage wise emission reduction during the entire Monitoring Period are as follows:

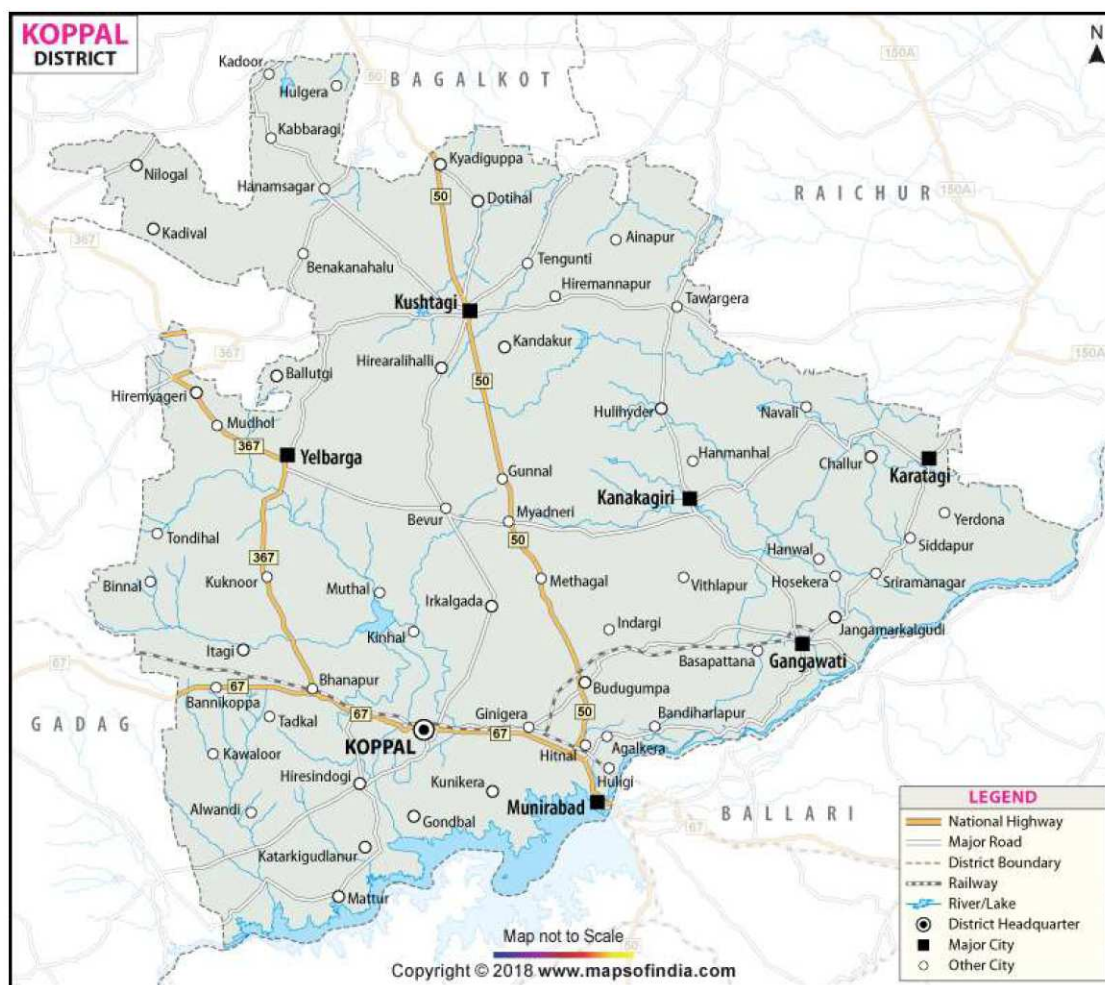
Period	Amount
28/03/2018 to 31/12/2018	34,461
01/01/2019 to 31/10/2019	42,042

A.2. Location of project

The project activity is located in Kushtagi Wind Farm in Koppal district, Karnataka, India. The project activity consists of ten 2.1 MW wind turbines in the district of Koppal in the state of Karnataka, India. The specific geographical coordinates of the individual WTGs are mentioned in table below:

Project Investor	WTG Location No	Latitude (D° M' Sec'')	Longitude (D° M' Sec'')
Shree Cement Limited	KST 091	15°52'49.43"	76°12'00.23"
	KST 092	15°52'58.59"	76°13'46.39"
	KST 127	15°53'57.68"	76°13'12.72"
	KST 129	15°53'15.44"	76°11'16.37"
	KST 132	15°53'05.95"	76°12'01.57"
	KST 133	15°53'34.38"	76°10'35.56"
	KST 134	15°52'28.57"	76°12'12.61"
	KST 145	15°53'05.62"	76°13'06.86"
	KST 146	15°53'21.05"	76°13'40.58"
	KST 179	15°52'49.83"	76°13'02.40"

The location of the project activity has been highlighted in the map shown below:



A.3. Reference of applied 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 20.0 ⁴
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 system⁵ - Version 07.0 (EB 100, Annex 04)
- Methodological Tool- Tool for the demonstration and assessment of additionality⁶ - Version 07.0.0 (EB 70, Annex 08)
- Methodological Tool- Investment analysis⁷ - Version 08.0.0 (EB 97, Annex 08)
- Methodological tool "Common Practice", version 03.1 EB84, Annex 7⁸:

⁴ <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

⁵ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

⁶ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

⁷ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v7.0.pdf>

⁸ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf>

A.4. Crediting period of project

Start date	28/03/2018
Crediting Period	28/03/2018 to 27/03/2023
Duration	5 years
Type	Renewable

SECTION B. Implementation of project

B.1. Description of implemented project

The total installed capacity of the project is 21 MW, which comprises of total 10 number of Wind Turbine Generator (WTG) in Karnataka. The WTGs used in the project activity are of Suzlon S-97 model. Three WTGs were commissioned on 28 March 2018, Four WTGs were commissioned on 31 March 2018 and the rest three WTGs were commissioned on 28 June 2018

The technical specification of the S-97 model of WTGs are as follows:

MODEL	S97 - 2.1MW
Operating Data	
Rated power	2.1MW
Cut-in wind speed	4 m/s
Rated wind speed	11 m/s
Cut-out wind speed	25 m/s
Rotor	
Pitch system	Electric drive with electric brake, gear box, frequency converter and batteries
Diameter	97 m
Swept area	7386 m ²
Blade material type	Glass-fibre reinforced plastic (GRP)/Polyester
Generator	
Type	Asynchronous 3 phase induction with slip rings operated with rotor circuit inverter system (DFIG)
Frequency	50/60 Hz
Protection	IP 54, IP23 for slip ring unit
Cooling system	Air cooled
Insulation	Class H
Braking System	
Aerodynamic brake	Pitch/full blade
Mechanical brake	Hydraulic disc brake, activated by hydraulic pressure
Gearbox	
Type	3 stages (One planetary & Two helical)
Yaw System	
Type	Electric motors with brake, gear box and pinion
Bearings	3 (1 per blade) , Material - 42CrMo4 QT
Tower	
Type	Tubular Steel Tower (4 sections)

Technology Transfer

No technology transfer from other countries is involved in the project.

B.2. Post-registration changes

B.2.1. Temporary deviations from Certified Key Project Information, Project Design Document, Monitoring & Reporting Plan, applied methodology or applied standardized baseline

Not Applicable as there is no request for deviation applied during this monitoring period.

B.2.2. Corrections

There have not been any corrections to project information or parameters fixed at validation during the current monitoring period.

B.2.3. Changes to start date of crediting period

Not applicable.

B.2.4. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

Not Applicable

B.2.5. Changes to project design of approved project

There has not been any change in the PDD during the current monitoring period.

SECTION C. Description of monitoring system applied by the project

The monitoring methodology specified in the methodology requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y . In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, forms the baseline for the project activity.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid.

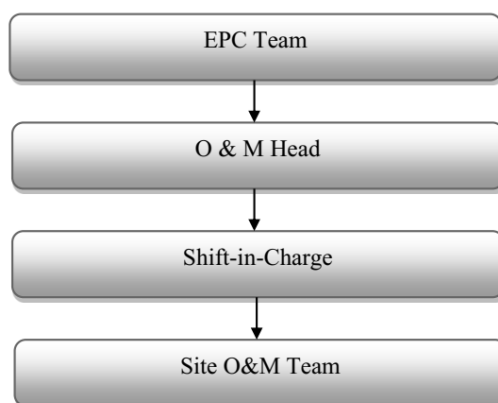
Monitoring roles and responsibilities

The operational and management structure implemented for data monitoring is as follows:

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

The authority and responsibility for monitoring, measurement, reporting and reviewing of the data rests with the project proponent. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity.

The team comprises of the following members:



Responsibilities of O & M Head: Overall functioning and maintenance of the project activity and overall responsibility of compliance with the Monitoring Plan.

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Responsibilities of Plant In-charge: Responsibility for Maintains the data records, ensures completeness of data, and reliability of data. Regularly verifying the monthly energy generation date with energy sales receipt or installed meters reading for identification of any discrepancies in data collection and taking suitable action to rectify them.

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day log book for monitored data. Responsibility for monthly and annual report generation. Quality assurance of the data/reports and preliminary check of data for any discrepancies.

QA/QC procedures:

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records are cross-checked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

Data Measurement:

The export and import energy are measured continuously using above mentioned Main & Check meters. Export & Import readings of Main & Check meters are taken on monthly basis by authorized officer of state electricity board in the presence of PP or representative of PP. The meter reading are taken jointly and signed by the representatives of the state electricity board and project investors. Based on the readings, invoices are raised by project investors. These invoices can be used for cross checking the meter readings taken for the project activity. It is to be noted though PP or PP representative is available during meter reading, the calculations of net electricity supplied to grid is completely under purview of state electricity board officer and PP do not have any control on it. Also accuracy class of meters and calibration frequency is under purview of state electricity board officer and PP do not have any control on it. PP got the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations.

Apportioning:

In case of common metering arrangement, the apportioning is done by state electricity board and PP is getting break up sheet where the energy supplied by project activity to grid is mentioned.

The same break up sheet is used for invoice purpose. This apportioning process is under control of state electricity board and PP do not have any control on it.

Data Archiving:

Monthly data is archived electronically and in paper form and stored for the entire crediting period and two years thereafter.

Emergency preparedness:

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

In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.

Training and maintenance requirements:

Each and every site personnel is provided with proper training to meet the requirements of the Operations and maintenance. This ultimately leads to creativity in problem solving.

Personnel training:

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

Apportioning:

In case of mismatch of date between the start date of the billing cycle and the start date of monitoring period the data is apportioned in line to the daily generation values for the said mismatch period.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Relevant SDG Indicator	SDG 13
Data/parameter:	$EF_{grid,OM,y}$
Unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018 ⁹
Value(s) applied	0.9610
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most three recent years 2015-16, 2016-17 and 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
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG 13
Data/parameter:	$EF_{grid,BM,y}$
Unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
Value(s) applied	0.8644
Choice of data or measurement methods and procedures	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
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG 13
Data/parameter:	$EF_{grid,CM,y}$
Unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
Value(s) applied	0.9368
Choice of data or measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$

⁹ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

	Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/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
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

D.2. Data and parameters monitored

Relevant SDG Indicator	7.2.1 Renewable energy share in the total final energy consumption							
Data/parameter:	EG _{PJ, y}							
Unit	MWh							
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh							
Measured/calculated/default	Calculated							
Source of data	Monthly joint meter reading reports/B-Forms							
Value(s) of monitored parameter	81,675 Below is the breakup of net power generation achieved during present monitoring period: <table><tr><td>Year</td><td>Net Power Generated</td></tr><tr><td>2018</td><td>36,792</td></tr><tr><td>2019</td><td>44,883</td></tr></table>		Year	Net Power Generated	2018	36,792	2019	44,883
Year	Net Power Generated							
2018	36,792							
2019	44,883							
Monitoring equipment	Energy meters							
Measuring/reading/recording frequency:	Continuous measurement & monthly recording							
Calculation method (if applicable):	Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh The 11.5% of import and transmission loss if any would be accounted while calculating net electricity supplied to grid as per PPA.							
QA/QC procedures:	The meters is 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 ¹⁰ . The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines are 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. For detailed schedule of calibration during present monitoring period please refer annexure- 1.							
Purpose of data:	To Monitor the SDG 7 Indicator							
Additional comments:	Data are archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-VERs for this project activity, whichever occurs later.							

Relevant SDG Indicator	SDG13
Data/parameter:	ER_y
Unit	tCO _{2e}
Description	Emission reductions achieved
Measured/calculated/default	Calculated
Source of data	As per actual ER sheet.

¹⁰ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

Value(s) of monitored parameter	76,503 Below is the breakup of emission reductions achieved during present monitoring period: <table border="1"> <tr> <th>Year</th><th>Emission Reductions achieved</th></tr> <tr> <td>2018</td><td>34,461</td></tr> <tr> <td>2019</td><td>42,042</td></tr> </table>	Year	Emission Reductions achieved	2018	34,461	2019	42,042
Year	Emission Reductions achieved						
2018	34,461						
2019	42,042						
Monitoring equipment	-						
Measuring/reading/recording frequency:	Monthly Recording						
Calculation method (if applicable):	The baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.						
QA/QC procedures:	Not Applicable						
Purpose of data:	To Monitor the SDG 13 Indicator						
Additional comments:	Data is archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-VERs for this project activity, whichever occurs later						

Relevant SDG Indicator	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities																						
Data/parameter:	Number of employment generation																						
Unit	Number																						
Description	Number of people employed directly due to the project activity																						
Measured/calculated/default	-																						
Source of data	Plant records or The training records for all the employees/Letter from O&M contractor for employment generation/ DOE interview with employees, local stakeholders etc																						
Value(s) of monitored parameter	Total employment for present monitoring period is 27 with below breakup 2018 : 27 2019 : 25 Further below is the breakup of employment generated during the monitoring period <table border="1"> <tr> <th>Year</th><th>Skilled</th><th>Unskilled</th><th>Total</th></tr> <tr> <td>2018</td><td>20</td><td>7</td><td>27</td></tr> <tr> <td>Male</td><td>19</td><td>Female</td><td>8</td></tr> <tr> <td>2019</td><td>20</td><td>5</td><td>25</td></tr> <tr> <td>Male</td><td>19</td><td>Female</td><td>6</td></tr> </table> PP has provided salary slips and employment agreements of persons getting direct employment opportunity from the project activity PP has provided salary slips and employment agreement of persons directly getting employment opportunity from the project activity. Further the average hourly earnings of a person are higher than the local level. For e.g a person is getting a monthly salary of INR 62,000 then his average hourly earnings will be as follows: $= 62,000 / (30 \times 7) = \text{INR } 210$. This is higher than the average wage per hour in India (Average hourly earning of highly skilled workers for Zone C is INR 26.85¹¹). Further the same has been crosschecked by the VVB during on site visit by means of attendance register and physical interviews and Salary Slips. The Project thus provides employment opportunities and pays salaries and welfares and also helps to increase the income and living standards of the employees.			Year	Skilled	Unskilled	Total	2018	20	7	27	Male	19	Female	8	2019	20	5	25	Male	19	Female	6
Year	Skilled	Unskilled	Total																				
2018	20	7	27																				
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Male	19	Female	6																				
Monitoring equipment	-																						
Measuring/reading/recording frequency:	Monthly monitoring and annual compilation																						
Calculation method (if applicable):	The total number of persons working in the plant is calculated based on the daily log available at site.																						

¹¹ <https://clc.gov.in/clc/min-wages>

	This parameter also monitor number of men/women employed by the project activity. The project activity ensures that “equal pay for work of equal value” for both men and women and there is no any discrimination against women. "The employment covers number of men and number of women employed by the project activity. The job is of type temporary/permanent or skilled/unskilled, local/non-local etc. In addition, it is ensured that peoples get equal payment for equal work. The payment is based on work and no any gender inequality for payment for work of equal value".
QA/QC procedures:	The number of persons employed are mentioned in the plant register, which can be crossed checked with attendance register.
Purpose of data:	To Monitor the SDG 8 Indicator
Additional comments:	Data are archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-VERs for this project activity, whichever occurs later.

Relevant SDG Indicator	8.6.1 Proportion of youth (aged 15-24 years) not in education, employment or training																																																																																														
Data/parameter:	Quality of Employment																																																																																														
Unit	-																																																																																														
Description	Training of Staff																																																																																														
Measured/calculated/default	-																																																																																														
Source of data	Plant records or The training records for all the employees/Letter from O&M contractor for employment generation/ DOE interview with employees, local stakeholders etc																																																																																														
Value(s) of monitored parameter	2018: 12 2019: 10 The detailed schedule of training is mentioned below: <table border="1"> <thead> <tr> <th>Sr No.</th><th>Date</th><th>Topic</th><th>No. of participants</th></tr> </thead> <tbody> <tr><td>1.</td><td>17/04/2018</td><td>Working at height & safety</td><td>13</td></tr> <tr><td>2.</td><td>26/04/2018</td><td>Lubricant refilling</td><td>11</td></tr> <tr><td>3.</td><td>15/05/2018</td><td>LT Switchgear maintenance</td><td>12</td></tr> <tr><td>4.</td><td>26/05/2018</td><td>Power Line Management</td><td>14</td></tr> <tr><td>5.</td><td>20/06/2018</td><td>WTG Maintenance</td><td>13</td></tr> <tr><td>6.</td><td>19/07/2018</td><td>Software Operations</td><td>11</td></tr> <tr><td>7.</td><td>20/08/2018</td><td>Computer operating</td><td>11</td></tr> <tr><td>8.</td><td>26/09/2018</td><td>Power Line Management</td><td>14</td></tr> <tr><td>9.</td><td>17/10/2018</td><td>Working at Height and Safety</td><td>13</td></tr> <tr><td>10.</td><td>20/11/2018</td><td>WTG Maintenance</td><td>13</td></tr> <tr><td>11.</td><td>26/09/2018</td><td>Lubricant refilling</td><td>11</td></tr> <tr><td>12.</td><td>22/11/2018</td><td>Behavioural Changes and Stress Management</td><td>12</td></tr> <tr><td>13.</td><td>09/01/2019</td><td>Fire Fighting training</td><td>12</td></tr> <tr><td>14.</td><td>19/02/2019</td><td>First Aid Training</td><td>13</td></tr> <tr><td>15.</td><td>26/03/2019</td><td>Power Line Management</td><td>14</td></tr> <tr><td>16.</td><td>20/03/2019</td><td>WTG Maintenance</td><td>13</td></tr> <tr><td>17.</td><td>11/04/2019</td><td>Working at height & safety</td><td>13</td></tr> <tr><td>18.</td><td>26/04/2019</td><td>Lubricant refilling</td><td>11</td></tr> <tr><td>19.</td><td>10/05/2019</td><td>LT Switchgear maintenance</td><td>12</td></tr> <tr><td>20.</td><td>04/07/2019</td><td>Software Operations</td><td>11</td></tr> <tr><td>21.</td><td>20/08/2019</td><td>Computer Operating</td><td>11</td></tr> <tr><td>22.</td><td>11/09/2019</td><td>Power Line Management</td><td>14</td></tr> </tbody> </table>			Sr No.	Date	Topic	No. of participants	1.	17/04/2018	Working at height & safety	13	2.	26/04/2018	Lubricant refilling	11	3.	15/05/2018	LT Switchgear maintenance	12	4.	26/05/2018	Power Line Management	14	5.	20/06/2018	WTG Maintenance	13	6.	19/07/2018	Software Operations	11	7.	20/08/2018	Computer operating	11	8.	26/09/2018	Power Line Management	14	9.	17/10/2018	Working at Height and Safety	13	10.	20/11/2018	WTG Maintenance	13	11.	26/09/2018	Lubricant refilling	11	12.	22/11/2018	Behavioural Changes and Stress Management	12	13.	09/01/2019	Fire Fighting training	12	14.	19/02/2019	First Aid Training	13	15.	26/03/2019	Power Line Management	14	16.	20/03/2019	WTG Maintenance	13	17.	11/04/2019	Working at height & safety	13	18.	26/04/2019	Lubricant refilling	11	19.	10/05/2019	LT Switchgear maintenance	12	20.	04/07/2019	Software Operations	11	21.	20/08/2019	Computer Operating	11	22.	11/09/2019	Power Line Management	14
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1.	17/04/2018	Working at height & safety	13																																																																																												
2.	26/04/2018	Lubricant refilling	11																																																																																												
3.	15/05/2018	LT Switchgear maintenance	12																																																																																												
4.	26/05/2018	Power Line Management	14																																																																																												
5.	20/06/2018	WTG Maintenance	13																																																																																												
6.	19/07/2018	Software Operations	11																																																																																												
7.	20/08/2018	Computer operating	11																																																																																												
8.	26/09/2018	Power Line Management	14																																																																																												
9.	17/10/2018	Working at Height and Safety	13																																																																																												
10.	20/11/2018	WTG Maintenance	13																																																																																												
11.	26/09/2018	Lubricant refilling	11																																																																																												
12.	22/11/2018	Behavioural Changes and Stress Management	12																																																																																												
13.	09/01/2019	Fire Fighting training	12																																																																																												
14.	19/02/2019	First Aid Training	13																																																																																												
15.	26/03/2019	Power Line Management	14																																																																																												
16.	20/03/2019	WTG Maintenance	13																																																																																												
17.	11/04/2019	Working at height & safety	13																																																																																												
18.	26/04/2019	Lubricant refilling	11																																																																																												
19.	10/05/2019	LT Switchgear maintenance	12																																																																																												
20.	04/07/2019	Software Operations	11																																																																																												
21.	20/08/2019	Computer Operating	11																																																																																												
22.	11/09/2019	Power Line Management	14																																																																																												
Monitoring equipment	-																																																																																														
Measuring/reading/recording frequency:	Annual																																																																																														
Calculation method (if applicable):	Together with the technology supplier, the Project organise training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures.																																																																																														
QA/QC procedures:	The training records for all the employees																																																																																														

Purpose of data:	To Monitor the SDG 8 Indicator
Additional comments:	Data are archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-VERs for this project activity, whichever occurs later.

D.3. Implementation of sampling plan

No sampling is required

SECTION E. Calculation of SDG outcomes

E.1. Calculation of baseline value or estimation of baseline situation of each SDG outcome

SDG 7 : Affordable and Clean Energy and SDG 13 Climate Action:

For a given year, the emission reductions contributed by the project activity (ER_y) is calculated as follows:

As per the approved methodology ACM0002, Version 20.0 (EB 105), Sectoral Scope: 01, baseline emissions for the project activity is calculated by multiplying the net quantity of electricity supplied by this project activity ($EG_{PJ,y}$) with the CO₂ baseline emission factor for the electricity displaced due to the project (EF_{CO_2}) as follows:

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

Where,

$EF_{grid,CM,y}$	=	CO ₂ emission factor of the grid in year y
$EG_{PJ,y}$	=	Net electricity supplied to the Indian grid (MWh)
BE_y	=	Baseline emissions in year y (tCO ₂)

Baseline emissions

$$\begin{aligned}
 BE_y &= EG_{PJ,y} \times EF_{grid,CM,y} \\
 &= 81,675 * 0.9368 \\
 &= 76,503 \text{ tCO}_2\text{e (round down value)}
 \end{aligned}$$

Project activity emissions (PE_y)

As there are no emissions due to the implementation of the project, the project emissions are zero.

Leakage (LE_y)

As per ACM 002 Version 20, no leakage emissions is to be considered.

Thus,

$$ER_y = BE_y - PE_y$$

$$ER_y = BE_y - 0$$

$$ER_y = BE_y$$

Therefore,

$$ER_y = BE_y = 76,503 \text{ tCO}_2\text{e}$$

For SDG 8

Employment opportunities created for 27 persons and 22 trainings conducted during the current monitoring period.

E.2. Calculation of project value or estimation of project situation of each SDG outcome

47,829 MWh (for SDG 7)

1 training / annum and 10 people employed (for SDG 8)

44,806 tCO_{2e} / annum (for SDG 13)

E.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

No.		1
Indicator		8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
Mitigation measure		N.A.
Chosen parameter		No. of staff employed in the project activity
Current situation of parameter		Employment has been generated during the current monitoring period, which can be checked from the employee record and the salary slips provided. In total 27 people are employed due to project activity with below breakup. 2018- 27 2019- 25
Estimation of baseline situation of parameter		N.A.
Future target for parameter		Hiring of skilled and unskilled personnel in the plant and providing specific trainings to them
Way of monitoring	How	Employee rolls, pay-slips, attendance registers, etc.
	When	Annually
	By who	Monitored by the project owner

No.	2	
Indicator	8.6.1 Proportion of youth (aged 15-24 years) not in education, employment or training	
Mitigation measure	N.A.	
Chosen parameter	Training of Staff	
Current situation of parameter	Trainings have been given to employees for skilled as well as unskilled jobs during the current monitoring period, which can be checked from the training records provided. During present monitoring period total 22 trainings had been provided. 2018- 12 2019- 10	
Estimation of baseline situation of parameter	N.A.	
Future target for parameter	Hiring of skilled and unskilled personnel in the plant and providing specific trainings to them	
Way of monitoring	How	Training records, attendance registers, etc.
	When	Annually
	By who	Monitored by the project owner

No		3
Indicator		7.2.1 Renewable energy share in the total final energy consumption
Mitigation measure		N.A.
Chosen parameter		Net energy generation by power plant
Current situation of parameter		The net electricity generation during this monitoring period is 81,675 MWh which is higher than the estimated.
Estimation of baseline situation of parameter		N.A.
Future target for parameter		The future target for parameter is that the annual net electricity generation will be 47,829 MWh/year.
Way of monitoring	How	Interviews with the local inhabitants near the project sites about change in power generation and quality of electricity supplied
	When	Ongoing, shall be monitored at least annually
	By who	Monitored by the project owner

No	4
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Indicator		SDG 13
Mitigation measure		N.A.
Chosen parameter		Emission reductions achieved per year
Current situation of parameter		The emission reductions achieved during this monitoring period is 76,503 tCO ₂ e which is higher than the estimated.
Estimation of baseline situation of parameter		N.A.
Future target for parameter		The future target for parameter is that the annual emission reductions should be 44,806 tCO ₂ e/year.
Way of monitoring	How	Interviews with the local inhabitants near the project sites about change in power generation and quality of electricity supplied.
	When	Ongoing, shall be monitored at least annually.
	By who	Monitored by the project owner.

E.4. Summary of ex-post values of each SDG outcome for the current monitoring period

Item	Baseline estimate	Project estimate	Net benefit
SDG 7: Affordable and Clean Energy	-	81,675 MWh	81,675 MWh
SDG 8: Decent Work and Economic Growth	-	No. of employment opportunities created: 27 2018- 27 2019- 25 No. of trainings conducted: 22 2018- 12 2019- 10	No. of employment opportunities created: 27 2018- 27 2019- 25 No. of trainings conducted: 22 2018- 12 2019- 10
SDG 13: Climate Action	76,503 tCO ₂ e	-	76,503 tCO ₂ e

E.5. Comparison of actual value of outcomes with estimates in approved PDD

Item	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period																				
SDG 7: Affordable and Clean Energy	76,395 MWh	81,675 MWh																				
SDG 8: Decent Work and Economic Growth	1 training /annum and 10 people employed	No. of employment opportunities created: 27 Further below is the breakup of employment generated during the monitoring period <table><tr><td>Year</td><td>Skilled</td><td>Unskilled</td><td>Total</td></tr><tr><td>2018</td><td>20</td><td>7</td><td>27</td></tr><tr><td>Male</td><td>19</td><td>Female</td><td>8</td></tr><tr><td>2019</td><td>20</td><td>5</td><td>25</td></tr><tr><td>Male</td><td>19</td><td>Female</td><td>6</td></tr></table> No. of trainings conducted: 22 2018- 12 2019- 10	Year	Skilled	Unskilled	Total	2018	20	7	27	Male	19	Female	8	2019	20	5	25	Male	19	Female	6
Year	Skilled	Unskilled	Total																			
2018	20	7	27																			
Male	19	Female	8																			
2019	20	5	25																			
Male	19	Female	6																			
SDG 13: Climate Action	68,964 tCO ₂ e	76,503 tCO ₂ e																				

E.6. Remarks on difference from estimated value in approved PDD

The emission reductions as per the registered PDD for the current monitoring period is estimated to be 68,964 tCO₂e whereas during the current monitoring period the emission reductions claimed are 76,503 tCO₂e, which is approximately 10.93% higher than the estimated emission reductions for the same monitoring period.

The marginal increase in actual emission reduction is justified, since during the current monitoring period, the project experienced favourable wind flow and is nature dependent.

The actual emission reductions achieved have been calculated based upon the connected WTG's in the respective month. It is to be noted here that as the JMR is being provided by State Electricity Board for the combined capacity of the project hence the breakup of power generation of individual WTG based upon COD is not available, however the actual emission reduction has been compared with the estimated ER based upon the JMR values obtained for respective month and same is found to be acceptable.

The detailed comparison is shown in the ER Sheet.

SECTION F. Stakeholder inputs and legal disputes

F.1. List all inputs/grievances which have been received for the project during the monitoring period together with their respective answers/actions

As a part of continuous feedback from stakeholders, the grievances register is placed at site and is being continuously monitored and addressed through the grievances cell on regular basis and maintained in a register at site office.

Some of the inputs about the project/grievances and their resolution dates are shown below:

S. No.	Date of Complaint	Topic	Date of resolution	Remark from PP
1	03/05/2018	Drinking water not available	21/05/2018	RO Plant repaired.
2	17/08/2018	Need of Games room	-	Requested HO for games room.
3	19/02/2019	Street lights not working	21/02/2019	Street lights have been changed

F.2. List all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period

Not Applicable

F.3. Provide details of any legal contest or dispute that has arisen with the project during the monitoring period

Not Applicable

Annexure 1: Meter Calibration Details

Serial No & Type	Make	Accuracy Class	Calibration Date	Validity
18015377 (Main meter)	L&T	0.2 s	23/02/2018	22/02/2023
18015378 (check meter)	L&T	0.2 s	23/02/2018	22/02/2023

Annexure 2: Breakdown Details

Gen. Date	Breakdown Remark	Breakdown Hrs.
02-Apr-18	Rep Pitch FreqConvPitch2 ErrStop	0.70
03-Apr-18	SFS CurrentTransformer Fail Stop	18.60
02-Apr-18	CLS GenBearingLubricationStop	0.10
02-Apr-18	Elec TestAkkuPitch TimeOutStop	7.10
03-Apr-18	EXTL_WTG Forced Backdown	1.10
03-Apr-18	EXTL_WTG Forced Backdown	1.60
03-Apr-18	Modification	8.60
03-Apr-18	Modification	12.00
04-Apr-18	EXTL_WTG Forced Backdown	2.70
04-Apr-18	EXTL_WTG Forced Backdown	3.10
04-Apr-18	Pitch ExtPowerSupply24VStopp Conv1	5.00

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04-Apr-18	EXTL_WTG Forced Backdown	8.80
04-Apr-18	EXTL_WTG Forced Backdown	4.10
04-Apr-18	CLS MainBearingGreaseLevelLowStop	0.10
04-Apr-18	Modification	24.00
05-Apr-18	EXTL_WTG Forced Backdown	3.20
05-Apr-18	EXTL_WTG Forced Backdown	2.30
05-Apr-18	EXTL_WTG Forced Backdown	2.60
05-Apr-18	Rep Pitch CANComFail	0.30
05-Apr-18	EXTL_WTG Forced Backdown	5.80