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Climate Security & Sustainable Development

TEMPLATE

MONITORING REPORT

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VERSION v. 1.1

RELATED SUPPORT - **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

Key Project Information

Q - Description of project

Q - Implementation of project

Q - Description of monitoring system applied by the project

Q - Data and parameters

Q - Calculation of SDG Impacts

Q - Safeguards Reporting

Q - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	7726
Title of the project (s) covered by monitoring report	300 MW Solar PV Plant at Bhadla, Rajasthan
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	05
Version number of the monitoring report	05
Completion date of the monitoring report	30/08/2022
Date of project design certification	27/09/2021
Date of Last Annual Report	NA
Monitoring period number	01
Duration of this monitoring period	10/12/2019 to 31/07/2021 (Including both the days)
Project Representative	Clean Solar Power (Bhadla) Pvt. Ltd.
Host Country	India
Activity Requirements applied	<input type="checkbox"/> Community Services Activities <input checked="" type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Methodology (ies) applied and version number	ACM0002 "Grid-connected electricity generation from renewable sources" Version 20.0
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7: Affordable and Clean Energy	MWh of renewable energy generated	1,154,195	MWh

SDG 8: Decent Work and Economic Growth	Trainings Employees	33 28	Training Employees
SDG 13: Climate Action	Emission Reduction	1,078,700	VERs

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VER'S
10/12/2019	31/12/2019	14,045
01/01/2020	31/12/2020	659,326
01/01/2021	31/07/2021	405,329

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The main purpose of the project activity is to generate electrical energy through sustainable means using solar power resources, the generated green electricity is contributing to climate change mitigation efforts. This project activity is a large scale solar project. Clean Solar Power (Bhadla) Pvt. Ltd. is the project investors for this project activity. The project is replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 672,954 tCO_{2e} per annum, thereon displacing 720,045 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/ fossil fuel based power plant.

The project activity is the installation of a new grid-connected renewable power plant/unit and this is not a CPA that has been excluded from a registered CDM PoA as a result of erroneous inclusion of CPAs.

The details of the project are mentioned in the table:

1.	Power Purchase Agreement	27/04/2018
2.	Start date (EPC Contract)	19/02/2019
3.	Stakeholder Feedback Round	26/07/2020

Project Investors' Name	Commissioning Date	Capacity in MW	District	State
Clean Solar Power (Bhadla) Pvt. Ltd. (R1)	15/02/2020	100 MW	Jodhpur	Rajasthan
Clean Solar Power (Bhadla) Pvt. Ltd. (R2)	28/02/2020	100 MW	Jodhpur	Rajasthan
Clean Solar Power (Bhadla) Pvt. Ltd. (R3)	10/12/2019	100 MW	Jodhpur	Rajasthan

Scenario existing prior to the implementation of the project activity

As the project activity is the installation of a new grid-connected renewable power plant/unit. The scenario existing prior to the implementation of project activity is 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, as reflected in the

combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system” (Version 7.0, EB 100 annex 4).

Baseline Scenario

Baseline scenario and Scenario existing prior to the implementation of the project activity are both same.

Sustainable Development

The project’s contribution towards sustainable development has been addressed based on the following sustainable development aspects:

- **Social well being**

The project activity provides job opportunity to local people during erection, commissioning and maintenance of the Solar power project. Frequency of visiting to villages and nearby areas by skilled, technical and industrialist has increased due to installation /site visit/operation and maintenance work related to the project at plant site. This directly and indirectly positively effects the economy of nearby populace.

- **Environmental well being**

Solar power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. The impact on land, water, air and soil is negligible. Thus the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment.

- **Economic well being**

The project activity generates permanent and temporary employment opportunity within the vicinity of the project. The electricity supply in the nearby area improves which directly and indirectly improves the economy and life style of the area.

- **Technological well being**

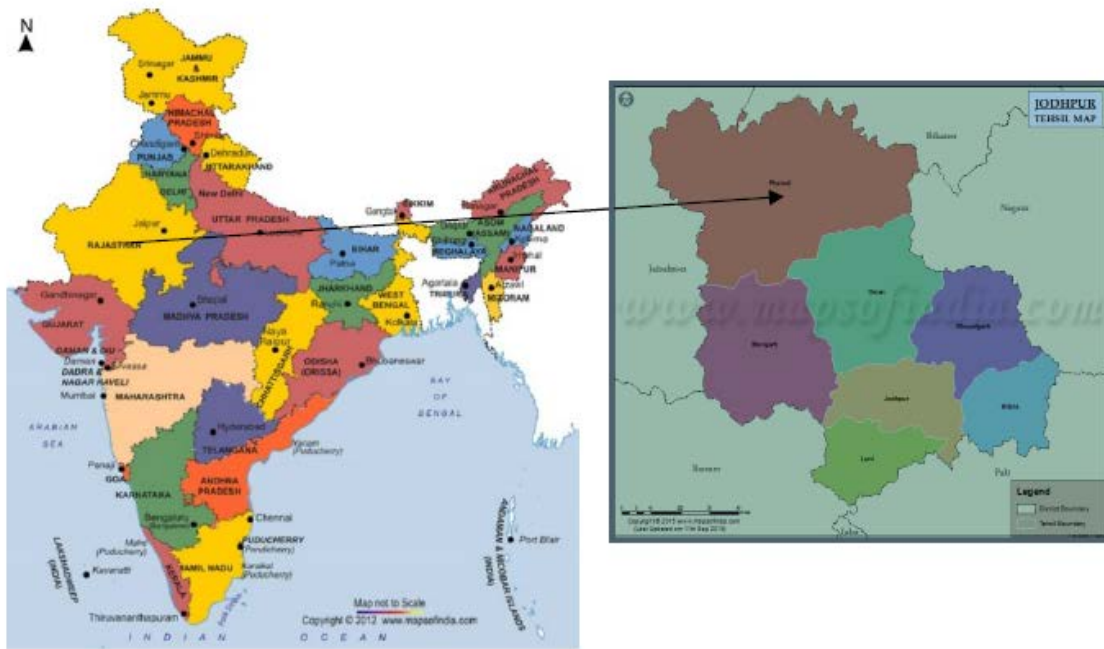
The project activity is step forward in harnessing the untapped solar potential and further diffusion of the solar technology in the region. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well-being.

A.2. Location of project

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The project activity is located at R1, R2 and R3 plot- Bhadla phase III Solar Park, Village – Bhadla, Tehsil: Phalodi at Jodhpur district in Rajasthan.

Project Investors' Name	Commissioning Date	Capacity in MW	UTM Coordinate	Village/ Tehsil/ District	State
Clean Solar Power (Bhadla) Pvt. Ltd. (R1)	15/02/2020	100 MW	27° 28' 20.7336'' (N) 72° 0' 13.572'' (E)	Bhadla/ Phalodi/Jodhpur	Rajasthan
Clean Solar Power (Bhadla) Pvt. Ltd. (R2)	28/02/2020	100 MW		Bhadla/ Phalodi/Jodhpur	Rajasthan
Clean Solar Power (Bhadla) Pvt. Ltd. (R3)	10/12/2019	100 MW		Bhadla/ Phalodi/Jodhpur	Rajasthan



A.3. Reference of applied methodology

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Title : Grid-connected electricity generation from renewable sources.

References : Approved Large Scale Consolidated Methodology: ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0.

<https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQCOPIWPGWDN8ED5PG>

Tools : Tool for the demonstration and assessment of additionality 7.0

<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.pdf>

Tool to calculate the emission factor for an electricity system 7.0

<https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

A.4. Crediting period of project

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Start date of Crediting Period-10/12/2019 -10/12/2024

Total Length of crediting period- 5 Years.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The project activity involves installation of 300 MW grid connected solar photovoltaic power plant. The PV system mainly consists of PV modules, module mounting structures, inverters, regulators, monitoring devices etc.

Item	Description
Plant Capacity	300 MW
Solar PV Module	433 MWpf
Module Type	Polycrystalline
Capacity of each Module proposed	335 Wp/325 Wp/315Wp
Inverter Capacity	2500 kWac
Solar Inverter	Central

Electrical Characteristic are as below:

- 3-phase alternating current
- Nominal frequency is 50 Hz
- Final Voltage at Delivery Point is 400/220/132/66kV

The project activity is operating at a plant load factor of 28.37 % exporting 741,845 MWh of electrical energy to the Indian grid, throughout its entire life span of 25 years. This is resulting in average annual reduction of 693,327 tCO₂ per annum from the project activity. The project activity does not involve any technology transfer.

S.No	Project ID	Project location	Capacity(MW)	Commissioning Date

1	R1 Plot	Village –Bhadal, Tehsil- Phalodi, Dist-Jodhpur	100 MW	15-02-2020
2	R2 Plot	Village –Bhadal, Tehsil- Phalodi, Dist-Jodhpur	100 MW	28-02-2020
3	R3 Plot	Village –Bhadal, Tehsil- Phalodi, Dist-Jodhpur	100 MW	10-12-2019

B.1.1 Forward Action Requests

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FAR-1 At the time of verification, VVB shall check the rainwater drains and confirm its functionality.

Response- During this verification, site visit is conducted

FAR-2 At the time of verification, VVB shall check that salaries paid to the local, unskilled workers is as per local standards.

Response- The salary slips are submitted for verification.

FAR-3 Site visit shall be performed at the time of 1st verification for this project activity. Verifying VVB shall confirm the location of the project activity in line with geo-coordinates.

Response- During this verification, site visit is conducted

B.2. Post-Design Certification changes

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B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

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There are no deviations/delays regarding the implementation status from registered PDD, Monitoring and Reporting Plan, applied methodology or applied standardized baseline.

B.2.2. Corrections

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Not Applicable.

B.2.3. Changes to start date of crediting period

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Not Applicable.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

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Not Applicable.

B.2.5. Changes to project design of approved project

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Not Applicable.

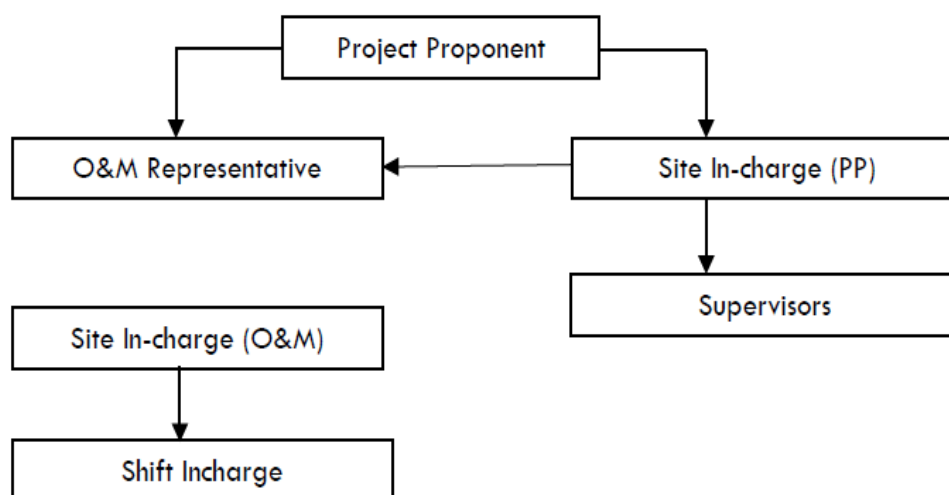
SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected solar power project/ unit being implemented in Rajasthan, India. The monitoring plan, which is 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.

The monitoring team is composed the following staff:



Responsibilities of Site Incharge (PP): Overall functioning and maintenance of the project activity, the Site incharge is coordinating with the O&M operator as well as the site supervisors.

The DSA statement issued by NRPC (Northern Regional Power Committee) contains the information of the Scheduled Power, Actual Power and the Deviation between actual & scheduled power. The scheduled power being feed into the grid can be cross-checked from the monthly Invoices raised by the PP. For ER calculations, the values of Actual power will be considered.

In any case where values have slightest of variation in different records the most conservative value will be taken in the project monitoring report.

Responsibilities of O&M Representative: Co-ordination between Site incharge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day monitored data.

Data archiving policy: All monitored data is archived electronically for a period of two years after the end of the crediting period or the last issuance of GS VERs, whichever occurs later.

Data Measurement: The scheduled generation is published on REA website and invoice is raised on the scheduled generation. But for emission reduction calculation actual generation is referred provided by Northern Regional Power Committee as Deviation Settlement Account. The link for DSA is mentioned below-

http://164.100.60.165/archives/ar_comm2021-2022.html

The DSA is uploaded on weekly basis and given in LU and will be converted into MWh

Data collection and archiving

Export & Import readings from main and check meters is collected under the supervision of the O&M Team or authorized representatives of PP. The net electricity supplied to grid is be calculated based on export & import readings. The period of storage of the monitored data is 2 years after the end of crediting period or till the last issuance of GS VERs for the project activity whichever occurs later.

Mismatch in Monitoring Period and the Billing Period

In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid is calculated from: $D = (A/B)*C$

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month. The calculated value after apportioning would be used for calculation of emission reductions during that period.

Emergency preparedness

The project activity is not 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.

In the unlikely event of failure of both Main meter &/or Check meter installed at sub-station, where both the faulty meters are required to repair or replaced simultaneously, the meters shall be replaced immediately by the spare meter kept available at the site.

Personnel training

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

SECTION D. DATA AND PARAMETERS

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

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Relevant SDG Indicator	SDG13: Climate Action
Data/parameter:	EF _{OM,y}
Unit	tCO ₂ e/MWh
Description	Operating Margin Emission Factor of Indian Grid in year y
Source of data	Calculated from CEA database, Version 16 ¹

¹

https://cea.nic.in/wp-content/uploads/baseline/2021/06/User_Guide_ver_16_2021-1.pdf

Value(s) applied)	0.9568
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07.0.0" as 3-year generation weighted average using data for the years 2017-18, 2018-19 and 2019-20. The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 16.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG13: Climate Action
Data/parameter:	EF _{BM,y}
Unit	tCO ₂ e/MWh
Description	Build Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 16
Value(s) applied)	0.8682
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07.0" as 3-year generation weighted average using data for the years 2019-20. The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 16.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG13: Climate Action
Data/parameter:	EF _{CM,y}
Unit	tCO ₂ e/MWh
Description	Combined Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 16

Value(s) applied)	0.9346
Choice of data or measurement methods and procedures	<p>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 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%</p>
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	-

D.2 Data and parameters monitored

Relevant SDG Indicator	SDG 7.2.1: Affordable and Clean Energy
Data / Parameter	EG _{facility,y}
Unit	MWh
Description	Total electricity exported to the grid
Source of data	REA data from Northern Regional Power committee
Value(s) applied	1,154,195
Measurement methods and procedures	<p>Data Type: Measured</p> <p>Monitoring equipment: Electrical Energy Meters which are electronic tri-vector meter of accuracy class 0.2s (Main & check meters)</p> <p>Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually.</p> <p>Archiving Policy: Paper &/or Electronic</p> <p>Calibration frequency: Once in 5 years as per CEA guidelines</p> <p>Recording frequency: Daily</p> <p>Responsibility: The O & m site-in charge is responsible for the regular recording of data.</p> <p>The details of meter are given below-</p>
Monitoring frequency	Continuous measurement and Monthly recording
QA/QC procedures	The meters are calibrated in every 5 years by an independent testing laboratory.
Purpose of data	The Data/Parameter is required to calculate the baseline emission
Additional comment	The data is kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Meter	Meter number	Make	First calibration date	Due Date	Calibration date	Calibration due date
Main meter	2106286	G Tech	15/02/2020	14/02/225	23/06/2021	22/05/2026
Main meter	E8272938	KYORI TSU	28/02/2020	27/02/2025	23/06/2021	22/05/2026
Main meter	19090774	Amprobe	10/12/2019	09/12/2019	23/06/2021	22/05/2026
Check meter	NA	Fluke	15/02/2020	14/02/225	23/06/2021	22/05/2026
Check meter	R190000453	AIT501	28/02/2020	27/02/2025	23/06/2021	22/05/2026
Check meter	R190014149	AET23	10/12/2019	09/12/2019	23/06/2021	22/05/2026

New installed meters are pre-calibrated and the calibration frequency was of 5 years. The meters were calibrated before the due date to maintain accuracy.

Relevant SDG Indicator	SDG 8.5.1: Decent Work and Economic Growth												
Data / Parameter	<ul style="list-style-type: none"> Quantitative employment 												
Unit	<ul style="list-style-type: none"> Number (employees) 												
Description	<ul style="list-style-type: none"> Number of project employees with Number of male/female, permanent/temporary, age and person with disabilities. 												
Source of data	<ul style="list-style-type: none"> Employee Records, O&M contract declaration 												
Value(s) applied	<p>28 employments occurred during this monitoring period. 24 employees are non-local and 4 are local.</p> <table border="1" data-bbox="438 723 823 824"> <tr> <td>Year 2020</td> <td>28 employees</td> </tr> <tr> <td>Year 2021</td> <td>28 employees</td> </tr> </table> <table border="1" data-bbox="497 875 1064 1072"> <thead> <tr> <th>Year</th> <th>Salary Payout (INR)</th> </tr> </thead> <tbody> <tr> <td>2019</td> <td>583,333</td> </tr> <tr> <td>2020</td> <td>7,000,000</td> </tr> <tr> <td>2021</td> <td>7,000,000</td> </tr> </tbody> </table> <p>The income generation during the current monitoring period is 14,583,333 INR. The minimum wage for unskilled worker is INR 252 per day. The salaries are provided in line with the minimum wage requirement as per Rajasthan government.</p> <p>https://labour.rajasthan.gov.in/notification.aspx</p>	Year 2020	28 employees	Year 2021	28 employees	Year	Salary Payout (INR)	2019	583,333	2020	7,000,000	2021	7,000,000
Year 2020	28 employees												
Year 2021	28 employees												
Year	Salary Payout (INR)												
2019	583,333												
2020	7,000,000												
2021	7,000,000												
Measurement methods and procedures	<ul style="list-style-type: none"> Employee Records Salary records of the employee 												
Monitoring frequency	Annually												
QA/QC procedures	The number of persons employed is mentioned in the plant register, which can be crossed checked with daily attendance register. Salary slip can be checked for earnings of employees												
Purpose of data	Continuation of regular trainings/workshops for employees & O&M staff												
Additional comment	-												

Data / Parameter	Quality of employment
Unit	Numbers
Description	Number of Trainings provided to employees
Source of data	Plant records or the training records for all the employees/ DOE interview with employees, etc.
Value(s) applied	Total 33 trainings were provided during the entire monitoring period In year 2020- 22 trainings were held In year 2021 – 11 trainings were held The details of the training year wise is mentioned below.
Measurement methods and procedures	The technology supplier and the Project developer organize training for the staff on the technology, the monitoring of the plant operation, and the emergency and safety procedures.
Monitoring frequency	Annually
QA/QC procedures	The training records for all the employees
Purpose of data	To monitor the SDG 8
Additional comment	

Trainings-

For Year 2020						
S.no	Topic	Date of training	Number of Interviewer	Number of Interviewee	Duration of training	Targeted audience
1.	Use of PPE	09/11/2020	1	11	45 Minutes	All the employees
2.	First aid Training	30/10/2020	1	8	40 Minutes	All the employees
3	Electric Shock	31/10/2020	1	7	30 Minutes	All the employees
4	Biological Hazard Prevention	22/09/2020	1	7	35 Minutes	All the employees

5	Lockout/tag out training	27/08/2020	1	05	45 Minutes	All the employees
6	Work at height	28/08/2020	1	06	45 Minutes	All the employees
7	Heat Stress	25/07/2020	1	06	30 Minutes	All the employees
8	Heat Stress	21/07/2020	1	12	30 Minutes	All the employees
9	Near Miss/linesafe condition	27/06/2020	1	04	40 Minutes	All the employees
10	Safety Induction	27/06/2020	1	05	30 Minutes	All the employees
11	Awareness session on Covid-19	30/04/2020	1	07	30 Minutes	All the employees
12	MCR	09/03/2020	1	7	30 Minutes	All the employees
13	Material Handling	22/1/2020	1	10	30 Minutes	All the employees
14	Defensive training	16/02/2020	1	12	30 Minutes	All the employees
15	Awareness training about coronavirus disease	15/03/2020	1	39	30 Minutes	All the employees
16	Fire safety	24/04/2020	1	7	30 Minutes	All the employees
17	Use of Electricity	31/05/2020	1	09	30 Minutes	All the employees
18	Work at height	28/08/2020	1	12	30 Minutes	All the employees

19	Biological hazard prevention	28/09/2020	1	12	40 Minutes	All the employees
20	First Aid	30/10/2020	1	10	40 Minutes	All the employees
21	Use of PPE's	17/11/2020	1	07	40 Minutes	All the employees
22	Use of arms by security guard	21/12/2020	1	15	30 minutes	All the employees

For year 2021

S.No	Topic	Date	Number of Interviewer	No. of Interviewee	Duration of training	Targeted audience
1	Defensive driving and road safety rules	25/01/2021	1	11	30 Minutes	All the employees
2.	Material handling(Refresher training)	28/01/2021	1	11	40 Minutes	All the employees
3.	Fire fighting (Refresher training)	17/02/2021	1	09	30 Minutes	All the employees
4.	Road Safety	01/02/2021	1	09	30 Minutes	All the employees
5.	Covid-19 Do's and Don'ts	17/04/2021	1	10	40Minutes	All the employees

6	Awareness on HSE policy and ESMS of HFE	30/05/2021	1	11	45 Minutes	All the employees
7	Steps to prevent impact of Excessive heat in summer	22/07/2021	1	42	30 Minutes	All the employees
8.	Material Handling (Refresher training)	31/01/2021	1	10	30 Minutes	All the employees
9.	Defensive Driving(Refresher training)	25/02/2021	1	10	30 Minutes	All the employees
10.	Fire fighting(Refresher training)	31/05/2021	1	03	30 Minutes	All the employees
11.	Heat stress(Refresher training)	27/07/2021	1	12	30 Minutes	All the employees

Relevant SDG Indicator	SDG 13.2.1: Climate Action
Data / Parameter	ER _v
Unit	tCO ₂ /year
Description	CO ₂ emission reduction due to implementation of project activity
Source of data	Calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 16.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	1,078,700
Measurement methods and procedures	Calculated from CEA database and Energy Generation
Monitoring frequency	The energy meters are calibrated once in every 5 years by an independent testing laboratory. The calibration of the meters is done once in five year as per CEA notification. ²
QA/QC procedures	Quantity of net electricity supplied to the grid will be cross checked from the Invoices/Monthly Bill raised by the Project Participants.
Purpose of data	Calculation of baseline emissions
Additional comment	The data is archived for crediting period+2 years

Safeguarding principle: 4.3.5

² http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

Data / Parameter	Hazardous Waste
Unit	-
Description	The manufacture, trade, release, and use of hazardous chemicals and/or materials
Source of data	Plant Records
Value(s) applied	0
Measurement methods and procedures	Manual
Monitoring frequency	Once in a Monitoring period
QA/QC procedures	The waste is disposed to the waste handlers and the firm is complies with all the local laws for monitoring and disposal.
Purpose of data	Analysis of safeguarding principle
Additional comment	The data is archived for crediting period+2 years

D.3. Comparison of monitored parameters with last monitoring period

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Not Applicable.

D.4. Implementation of sampling plan

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Sampling is not required for the given project activity.

SECTION E. CALCULATION OF SDG IMPACTS

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

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For SDG 7

In the baseline scenario SDG 7 i.e. generation of clean energy is zero. As in the baseline situation no clean energy would be generated in the absence of the plant.

For SDG 13

Baseline emission (BE_y in tCO_2) are the product of the baseline emission factor ($EF_{CM,Y}$ in Tco_2/MWh) times the electricity supplied by the project activity to the grid ($EG_{PJ,Y}$ in MWh) as described in registered PDD.

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

Where,

BE_y - Baseline emissions, tCO₂e

$EG_{PJ,Y}$ –Net Quantity of Electricity exported

$EF_{CM,Y}$ -Grid emission factor, i.e. 0.9368 t CO₂/MWh (it has been fixed ex-ante)

$EG_{PJ,Y} = EG_{y, Export} - EG_{y, Import}$

$BE_y = 1,154,195 \times 0.9346$

=1,078,700 tCO₂ e

For SDG 8

In the baseline situation no Decent work and Economic Growth would have increased in the absence of the project. Therefore, the value of SDG is zero.

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

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SDG Goal	Methodological choices/approaches for estimating the SDG outcome
<p>SDG 7 –Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all</p>	<p>Measurement Method: - Electricity produced and supplied to the grid is monitored through energy meter. Net electricity is calculated by state electricity board and PP on monthly basis and provided in the share certificate/monthly report or equivalent. The other parameters used for net electricity supplied to grid are mentioned in monitoring plan.</p> <p>QA/QC Process: This parameter is monitored monthly and value of parameter will be cross checked with invoices.</p>
<p>SDG 8 – Decent Work and Economic Growth: Promote inclusive and sustainable economic growth, employment and decent work for all</p>	<p>Measurement Method: - Trainings and employment generation is monitored through training records, staff register or letter from O&M contractor for training and employment details or HSE/HR records.</p> <p>QA/QC Process: This parameter is based on records, data and no any QA/QC procedure required. The DOE can confirm this parameter with interview with PP or</p>

	Site incharge or employees for training and employment generation.
SDG 13 – Climate Action: Take urgent action to combat climate change and its impacts	<p>Measurement Method: - The emission reduction parameter is calculated as product of net electricity supplied to grid and grid emission factor. The grid emission factor is ex-ante parameter and determined based on data obtained from “CO2 Baseline Database for Indian Power Sector” version 15, published by the Central Electricity Authority, Ministry of Power, Government of India. This is in line with “Tool to calculate the emission factor for an electricity system, version 7”. The emission reductions are calculated as per registered PDD and as per methodology requirement.</p> <p>QA/QC Process: This parameter is calculated, and no any QA/QC procedure required.</p>

E.3. Calculation of leakage

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No leakage emissions are considered in the project activity. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, transport). Since the emissions sources are small, it is neglected.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
7	MWh of renewable energy generated	0	1,154,195	1,154,195
8	Decent Work and Economic Growth	0	33 Trainings 28Employees 516,266,666 INR	33 Trainings 28Employees 516,266,666 INR

13	Emission Reduction (tCO ₂)	1,078,700	0	1,078,700
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E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ³ achieved during this monitoring period
	741,845MWh/Year (365 days)	
7	1,219,471 MWh for the Monitoring period (600 days)	1,154,195 MWh
8	1 training/annum 36 Jobs	33 Trainings 28Employees 516,266,666 INR
13	693,327tCO ₂ /Year 1,139,716 tCO ₂ for the monitoring period (600 days)	1,078,700tCO ₂ e

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

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It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 809,395 tCO₂e.

$$= 693,327 * 600 \text{ (days)} / 365$$

$$= 1,139,716 \text{ tCO}_2\text{e}$$

Whereas, actual emission reduction achieved are 1,078,700 tCO₂e, which is approximately 5.35 % lower than the estimated emission reductions.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

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³ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

The actual achieved emission reduction for this monitoring period is 5.35 % lower than estimated value in the PDD and is within the sensitivity range which does not breach even with the increase of 10% in line with the registered PDD. The PLF chosen is for the lifetime of the project activity and generation in some years may significantly vary: this is due to the smaller number of sunshine hours during the monitoring period. The generation of electricity depends upon many other climatic conditions, and the availability of sunlight is not within the control of the project participant.

SECTION F. SAFEGUARDS REPORTING

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Data/Parameter	Hazardous Waste management
Mitigation Measures followed	The waste is disposed to the waste handlers and the firm complies with all the local laws for monitoring and disposal.
Source	Interview with maintenance staff.
Additional comment	During current monitoring period no hazardous waste is generated.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

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No grievance received during the monitoring period.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

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No grievances received in the current monitoring period, thus no follow up required.

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

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No legal contest or dispute has been arisen with the project during the monitoring period.

Revision History

Version	Date	Remarks
1.1	14 October 2020	<p>Hyperlinked section summary to enable quick access to key sections</p> <p>Improved clarity on Key Project Information</p> <p>Section for POA monitoring</p> <p>Forward action request section</p> <p>Improved Clarity on SDG contribution/SDG Impact term used throughout</p> <p>Clarity on safeguard reporting</p> <p>Clarity on design changes</p> <p>Leakage section added for VER/CER projects</p> <p>Addition of Comparison of monitored parameters with last monitoring period</p> <p>Provision of an accompanying Guide to help the user understand detailed rules and requirements</p>
1.0	10 July 2017	Initial adoption