Gold Standard
for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

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

This document contains the following Sections

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS7164
Title of the project (s) covered by monitoring report	72 MW Wind power project in the South Sulawesi Province of Indonesia
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	Version 03
Version number of the monitoring report	2
Completion date of the monitoring report	/06/10/2022
Date of project design certification	23/09/2020
Date of Last Annual Report	NA
Monitoring period number	2
Duration of this monitoring period	01/11/2020 to 30/06/2022 (Inclusive of both days)
Project Representative	Kosher Climate India Private Limited
Host Country	Indonesia
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20.0)
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 3	Local development Activities	27	Nos
SDG 7	Renewable Electricity Generated	346,073	MWh
SDG 8	Trainings provided to O&M staff	41	Nos
	Cost Spent on O&M	10.48	Million USD
	Number of Jobs generated	69.3	Nos
SDG 13	Emission Reduction	293,328	tCO_2e

Table 2 – Product Vintages

		Amount Achieved		
Start Dates	End Dates	GS VER	NA	NA
01/11/2020	31/12/2020	27,161	-	-
01/01/2021	31/12/2021	195,973	-	-
01/01/2022	30/06/2022	70,194	-	-

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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PT Energy Bayu Jeneponto has set up a wind power project at Jeneponto Regency in the province of South Sulawesi with capacity of 72 MW. The purpose of the project activity is to generate electrical power through operation of Wind power plant. The project activity installation comprises of setting up 20 Wind Turbine Generator (WTGs) of 3.6 MW each

The project activity generates clean electricity with utilization of wind energy. The electricity generated by the project is exported to the Sulselbar regional Grid of Indonesia. The project activity displaces an equivalent amount of electricity that would have otherwise been generated by fossil fuel dominant electricity grid and thereby has resulted in reduction of the associated CO2 emissions. The monitoring of SDG indicators has been carried out in accordance to respective registered PDD.

The project is also registered under International REC (I-REC) mechanism and the details are given below:
Device ID: JENEPON1
Web link: https://v-1.evident.app/Public/ReportDevices/[1]
However, PP did not claim GS VER for the period REC is claimed to avoid double counting.

The project activity is commissioned on 10/12/2018. The project proponent has chosen the 1st crediting period from 10/12/2018 to 09/12/2023

The present monitoring period is from 01/11/2020 to 30/06/2022 through which emission reduction claimed is 293,328 tCO2e.

[1] To find the project page, search using the device ID

A.2. Location of project

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The wind energy generators (WTGs) are installed at Jeneponto Regency, South Sulawesi, Indonesia.

Geographical coordinates of the all WTGs are given below:

Turbine	Latitude	Longitude	Village	Subdistrict
TO01	05°36’15.542"S	119°46’31.670"E	Bontomatene	Turatea
TO02	05°36’26.181"S	119°46’24.479"E	Bontomatene	Turatea
TO03	05°36’38.271"S	119°46’19.893"E	Bontomatene	Turatea
TO04	05°37’23.507"S	119°45’50.071"E	Parasangan Beru	Turatea
TO05	05°37’34.111"S	119°45’41.550"E	Kayuloe Barat	Turatea
TO06	05°37’43.468"S	119°45’30.230"E	Kayuloe Barat	Turatea
TO07	05°37’52.789"S	119°45’19.753"E	Kayuloe Barat	Turatea
TO08	05°38’20.780"S	119°45’23.360"E	Kayuloe Timur	Turatea
TO09	05°38’31.709"S	119°45’16.722"E	Empoang Utara	Binamu
TO10	05°38’42.961"S	119°45’9.8604"E	Empoang Utara	Binamu
TO11	05°38’56.268"S	119°45’13.397"E	Empoang Utara	Binamu
TO12	05°39’3.9134"S	119°45’3.1389"E	Empoang Utara	Binamu
TO13	05°37’37.076"S	119°46’35.270"E	Kayuloe Timur	Turatea
TO14	05°37’49.064"S	119°46’31.658"E	Kayuloe Timur	Turatea
TO15	05°38’1.7234"S	119°46’30.647"E	Kayuloe Timur	Turatea
TO16	05°38’16.473"S	119°46’27.600"E	Kayuloe Timur	Turatea
TO17	05°38’32.523"S	119°46’24.883"E	Kayuloe Timur	Turatea
TO18	05°38’46.094"S	119°46’23.714"E	Kayuloe Timur	Turatea
TO19	05°38’58.612"S	119°46’24.780"E	Empoang Utara	Binamu
TO20	05°39’11.627"S	119°46’24.193"E	Empoang Utara	Binamu

A.3. Reference of applied methodology

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Title: Consolidated baseline and monitoring methodology for “Grid-connected electricity generation from renewable sources”

References: Approved consolidated baseline methodology ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20.0[2])

A.4. Crediting period of project

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Type of Crediting Period: Renewable

Start date of the crediting period: 10/12/2018 (Retroactive crediting start date)

Length of the current crediting period: 5 years

[2] https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The project activity comprises of 20 WTGs of Gamesa's SWT-3.6-130 model.

The project has been commissioned on 10/12/2018. The technical details of the project are given below:

TECHNICAL SPECIFICATION	
Nominal power	3600 kW
Number of WTG	20
Installed Capacity	72 MW
Average total height	200 m
Wind class	IIA
Concept	3-bladed; horizontal axis direct drive; pitch regulation with variable speed upwind clockwise rotation
Control System	Built-in computer control system coupled with remote access system (Supervisory Control and Data Acquisition or SCADA in short).
TOWER	
Tubular	135 m
Material	Tubular Steel
Color	White (non-glossy) to light grey
Crane Hardstand	44m x 144 m
OPERATIONAL DATA	
Cut-in wind speed	3-5 m/s
Cut-out wind speed	25 m/s
Nominal power at approximate	11-12 m/s
ROTOR	
Diameter	130 m
Blade length	63.5 m
Swept area	13,300 M^2
Material	Glass reinforced epoxy fibre (GRE)
Speed	6.5 – 12.8 rpm

GENERATOR	
Type	Synchronous, Permanent Magnet Generator
INDICATIVE WEIGHT	
Blade	17 metric tons
Rotor	96 metric tons
Nacelle	103 metric tons
Tower	80 metric tons
FOUNDATION	
Shape	Octagonal
Horizontal dimension	About 20 m diameter
Thickness	Up to 4 m
Material	Up to 650 m^3 of reinforced concrete
Foundation type	Floating foundation
SUB STATION COMPLEX	
Area	approximately 2 ha
Comprises	Distribution substation and switchgear with 33 kV ratings; 45 MVA Power transformers; Control/management facility and service; Parking; Traffic access; Landscape area; Internal infrastructure supply; Sewage
	Low voltage power supply 33/0.4 kV internal transformer
TRANSMISSION LINE	
Voltage	150 kV
Length	3.5 km

The project is registered on 23/09/2020 under Gold Standard. There are no changes from the project design that was envisaged at Design Certified PDD

The project is also registered under International REC (I-REC) mechanism (Device ID: JENEPON1) however the project does not claim any I-REC during the monitoring period. This can be confirmed from the I-REC registry (https://evident.services/device-register/JENEPON1)

Hence there is no double counting of environmental attributes involved.

B.1.1 Forward Action Requests

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This is the 2nd verification of the project. The followings FAR has been raised during the previous performance review:

FAR	Response
FAR#1: The VVB shall verify the physical implementation of WTGs, Monitoring system and implemented monitoring plan.	This will be addressed by VVB. No action from PP is required
FAR#2: The VVB shall interview the local stakeholders and confirm the SDG and Safeguarding Principle monitoring parameters.	This will be addressed by VVB. No action from PP is required

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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No temporary deviation is applied

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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SDG 7 & 13:

PP has dedicated O&M team in site for the operation and maintenance of WTGs. The O&M team is technically well-equipped and it will take care of day-to-day Operation and maintenance of each WTG. O&M team will provide a monthly report, which includes generation data, major breakdown events and machine availability.

The project activity has entered a power purchase agreement with PLN for a period of 30 years. The electricity is fed to the Sulselbar regional Grid of Indonesia. Monitoring consists of metering the net electricity supplied to the grid ($EG_{facility,y}$). This parameter is based on the Monthly energy generation statement issued by PLN (BA-I or JMR).

Metering

The project activity includes metering at the Tolo substation managed by PLN & PP. The electricity generated is supplied at 150 kV to grid through two electricity lines (Line 1 & Line 2 or TRAFO 1 or TRAFO 2). The electricity exported & imported from each line are measured by Energy meters (main meter) installed at each line in substation. The reading is recorded and the difference from last month reading gives the number of units imported/exported.

In each line, a check meter is installed which reading will be considered for billing when the main meter is found to be malfunctioning.

All the meters used in the project activity will be calibrated on an at least once in 5 years.

Recording

The energy meter reading (both export & import) will be recorded by PLN & PP. The difference between current reading and previous month reading will be determined. Based on the energy meter reading, a Monthly energy generation statement will be issued by PLN (BA-I or JMR). The PP will then raise monthly electricity sales invoices to PLN based on the BA-I reading.

Quality Check:

The monitored data will be reported by the PP to the GS consultant on a monthly basis for the calculation and estimation of emission reductions. This data will be checked against invoices raised.

Data storage and Archiving

In accordance with the methodology all the data collected during the crediting period will be archived electronically and kept for at least two years after the end of crediting period.

SDG 3:

As and when a community development activity is undertaken the same will be recorded in the CSR records. Details such as date of the activity, location, money spent, number of people benefited are recorded and maintained in the Head office.

SDG 8

Number of Training conducted to Employees & O&M Staffs will be recorded as and when training is conducted to employees and O&M staffs. Training topic, training date, duration & number participant are recorded and maintained by site in-charge.

Number of staff employed in the project is maintained by HR department which will be updated as and when required.

The money spent on the operation and maintenance activities are recorded on daily basis by accounts department which will be reported annually in the company balance sheet.

SECTION D. DATA AND PARAMETERS

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

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Data/Parameter	NA
Unit	NA
Description	NA
Source of data	NA

Value(s) applied	NA
Choice of data or measurement methods and procedures	NA
Purpose of data	NA
Additional comment	NA

D.2 Data and parameters monitored

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SDG 13:

Data/parameter:	**$EF_{OM, y}$**
Unit	tCO2/MWh
Description	Operating Margin CO_2 emission factor for the Indonesia Power Grid in year y
Measured/calculated/default	Calculated
Source of data	Directorate General of Electricity (Ministry of Energy and Mineral Resources or DNA Indonesia) for the Sulselbar Grid http://gatrik.esdm.go.id/frontend/download_index/?kode_category=emisi_pl
Value(s) of monitored parameter	OM for year 2018: 0.85 (Applicable for year 2020) OM for year 2019: 0.73 (Applicable for year 2021 & 2022)
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Measurement: Annual Recording: Annual
Calculation method (if applicable):	This has been calculated as per "Tool to calculate the emission factor for an electricity system", version 7 which is published by Directorate General of Electricity (Ministry of Energy and Mineral Resources or DNA Indonesia)" This is calculated using ex-post option.
QA/QC procedures:	-
Purpose of data:	Baseline emission calculation
Additional comments:	Since the OM data is published 18 months after the end of year y, the emission factor of the year proceeding the previous year y-2 has been used. As the 2020 data is not published yet, the 2019

	data (which is the latest available data) is considered for the 2022 vintage as well.

Data/parameter:	**$EF_{BM, y}$**
Unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor for the Indonesia Power Grid in year y
Measured/calculated/default	Calculated
Source of data	Directorate General of Electricity (Ministry of Energy and Mineral Resources or DNA Indonesia) for the Sulselbar Grid https://gatrik.esdm.go.id//frontend/download_index/?kode_category=emisi_pl
Value(s) of monitored parameter	BM for year 2018: 1.17 (Applicable for year 2020) BM for year 2019: 1.17 (Applicable for year 2021 & 2022)
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Measurement: Annual Recording: Annual
Calculation method (if applicable):	This has been calculated as per "Tool to calculate the emission factor for an electricity system", version 7 which is published by Directorate General of Electricity (Ministry of Energy and Mineral Resources or DNA Indonesia)" This is calculated using ex-post option.
QA/QC procedures:	-
Purpose of data:	Baseline emission calculation
Additional comments:	Since the OM data is published 18 months after the end of year y, the emission factor of the year proceeding the previous year y-2 has been used. As the 2020 data is not published yet, the 2019 data (which is the latest available data) is considered for the 2022 vintage as well.

Data/parameter:	**$EF_{grid,CM,y}$**
Unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor for the Indonesia Power Grid in year y

Measured/calculated/default	Calculated
Source of data	Directorate General of Electricity (Ministry of Energy and Mineral Resources or DNA Indonesia) for the Sulselbar Grid (year 2018) https://gatrik.esdm.go.id//frontend/download_index/?kode_category=emisi_pl
Value(s) of monitored parameter	CM for year 2018: 0.93 (Applicable for year 2020) BM for year 2019: 0.84 (Applicable for year 2021 & 2022)
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Measurement: Annual Recording: Annual
Calculation method (if applicable):	This has been calculated as per "Tool to calculate the emission factor for an electricity system", version 7 which is published by Directorate General of Electricity (Ministry of Energy and Mineral Resources or DNA Indonesia)" This is calculated based on Operating Margin (OM) and Build Margin (BM) using the weights of w_{OM} = 0.75 and w_{BM} = 0.25
QA/QC procedures:	-
Purpose of data:	Baseline emission calculation
Additional comments:	Since the OM data is published 18 months after the end of year y, the emission factor of the year proceeding the previous year y-2 has been used. As the 2020 data is not published yet, the 2019 data (which is the latest available data) is considered for the 2022 vintage as well.

SDG 7 & 13:

Data/parameter:	**$EG_{facility,y}$**		
Unit	MWh		
Description	Quantity of net electricity supplied to the grid during the year y.		
Measured/calculated/default	Measured		
Source of data	Monthly energy generation statement issued by PLN. These are called JMR (Joint Meter Reading) or BA-I		
Value(s) of monitored parameter	Period	Actual (MWh)	Considered excluding IREC claim (MWh)

<table>
<tr><td></td><td>
<table>
<tr><td>01/11/2020 to 31/12/2020</td><td>29,206</td><td>29,206</td></tr>
<tr><td>01/01/2021 to 31/12/2021</td><td>233,302</td><td>233,302</td></tr>
<tr><td>01/01/2022 to 30/06/2022</td><td>83,565</td><td>83,565</td></tr>
<tr><td>Total</td><td>346,073</td><td>346,073</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>Monitoring equipment: Energy meters (installed at TRAFO 1 and TRAFO 2 lines)
<table>
<tr><th>Meter</th><th>Meter Number</th><th>Accuracy</th></tr>
<tr><td>Main meter TRAFO1</td><td>1712A587-02</td><td>0.2</td></tr>
<tr><td>Main meter TRAFO2</td><td>1801A140-02</td><td>0.2</td></tr>
<tr><td>Check meter TRAFO1</td><td>1712A590-02</td><td>0.2</td></tr>
<tr><td>Check meter TRAFO1</td><td>1712A589-02</td><td>0.2</td></tr>
</table>
Metering Location: 150 kV side of Tolo Substation
Accuracy of Energy meters: 0.2
Monitoring Method: recording export & import in “generation statement”
This statement includes, monthly recording of electricity export & import.</td></tr>
<tr><td>Measuring/reading/recording frequency:</td><td>Measurement: Continuous
Recording: Monthly</td></tr>
<tr><td>Calculation method (if applicable):</td><td>Net electricity supplied will be calculated based on the difference between values of “export” and “import” on the energy meter at the sub-station (evacuation point).
(Net Electricity = Export – Import)
The net electricity will be calculated by PLN and provided in the monthly generation statement. Hence, the net electricity reading will be directly sourced from the monthly generation statement.</td></tr>
<tr><td>QA/QC procedures:</td><td>Net electricity supplied to the grid by the project activity has been cross checked with invoices. The energy meters are calibrated as per the minimum calibration frequency mentioned in the PDD. The calibration details of the energy meters are given below:
<table>
<tr><th>Meter Number</th><th>Calibration date</th><th>Validity</th></tr>
<tr><td rowspan="2">Main- TRAFO1 (1712A587-02)</td><td>17/10/2018</td><td>16/10/2023</td></tr>
<tr><td>26/02/2020</td><td>25/02/2025</td></tr>
</table>
</td></tr>
</table>

	<table><tr><td></td><td></td><td></td></tr><tr><td>Main-TRAFO2 (1801A140-02)</td><td>17/10/2018</td><td>16/10/2023</td></tr><tr><td></td><td>26/02/2020</td><td>25/02/2025</td></tr><tr><td>Check-TRAFO1 (1712A590-02)</td><td>17/10/2018</td><td>16/10/2023</td></tr><tr><td></td><td>26/02/2020</td><td>25/02/2025</td></tr><tr><td>Check-TRAFO2 (1712A589-02)</td><td>17/10/2018</td><td>16/10/2023</td></tr><tr><td></td><td>26/02/2020</td><td>25/02/2025</td></tr></table>
Purpose of data:	Baseline emission calculation
Additional comments:	The project is also registered under International REC (I-REC) mechanism (Device ID: JENEPON1). However there is no I-REC claimed for the monitoring period.

SDG 3:

Data/parameter:	**Good Health & Well being**
Unit	No of Community Development Activities
Description	Community Development Activities
Measured/calculated/default	Measured
Source of data	CSR records and photographic evidence
Value(s) of monitored parameter	<table><tr><td>Period</td><td>Number of community development activities</td></tr><tr><td>01/11/2020 to 31/12/2020</td><td>0</td></tr><tr><td>01/01/2021 to 31/12/2021</td><td>23</td></tr><tr><td>01/01/2022 to 30/06/2022</td><td>4</td></tr><tr><td>Total</td><td>27</td></tr></table>
Monitoring equipment	No monitoring equipment is involved. As and when a community development activity is undertaken the same will be recorded in the CSR records. Details such as date of the activity, location, money spent, number of people benefited are recorded.
Measuring/reading/recording frequency:	Yearly once
Calculation method (if applicable):	-

QA/QC procedures:	The data crosschecked annually with the CSR records by the consultant
Purpose of data:	To monitor the contribution to SDG 3 (Ensure healthy lives and promote well-being for all at all ages)
Additional comments:	-

SDG 8:

Data/parameter:	Quality of employment
Unit	Nos
Description	Trainings provided to employees & O&M staffs
Measured/calculated/default	Measured
Source of data	HR records
Value(s) of monitored parameter	Period: Number of Training provided 01/11/2020 to 31/12/2020: 0 01/01/2021 to 31/12/2021: 13 01/01/2022 to 30/06/2022: 28 Total: 41
Monitoring equipment	No monitoring equipment is involved. It will be recorded as and when training is conducted to employees and O&M staffs. Training topic, training date, duration & number participant are recorded.
Measuring/reading/recording frequency:	Yearly once
Calculation method (if applicable):	NA
QA/QC procedures:	The data crosschecked annually with the CSR records by the consultant
Purpose of data:	To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)
Additional comments:	-

SDG 8

Data/parameter:	Quantitative employment and income generation

<table>
<tr><td>Unit</td><td>• Number of O&M staffs involved in the project
• Cost spent for O&M</td></tr>
<tr><td>Description</td><td>• Total employment generated due to the implementation of project activity and
• The amount spent for O&M activities due to the project.</td></tr>
<tr><td>Measured/calculated/default</td><td>Measured</td></tr>
<tr><td>Source of data</td><td>Plant employment records</td></tr>
<tr><td>Value(s) of monitored parameter</td><td>
<table>
<tr><td>Period</td><td>Number of staffs</td><td>Cost Spent in O&M (Mn USD)</td></tr>
<tr><td>01/11/2020 to 31/12/2020</td><td>70</td><td>0.577</td></tr>
<tr><td>01/01/2021 to 31/12/2021</td><td>69</td><td>6.604</td></tr>
<tr><td>01/01/2022 to 30/06/2022</td><td>69</td><td>3.302</td></tr>
<tr><td>Total/Average</td><td>69</td><td>10.483</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>No monitoring equipment is involved.
Number of staff employed in the project is maintained by HR department which will be updated as and when required. The money spent on the operation and maintenance activities are recorded on daily basis by accounts department which will be reported annually in the company balance sheet.</td></tr>
<tr><td>Measuring/reading/recording frequency:</td><td>Yearly once</td></tr>
<tr><td>Calculation method (if applicable):</td><td>NA</td></tr>
<tr><td>QA/QC procedures:</td><td>-</td></tr>
<tr><td>Purpose of data:</td><td>To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)</td></tr>
<tr><td>Additional comments:</td><td>-</td></tr>
</table>

Safeguarding Principle 8.2: Erosion and/or Water Body Instability

Data/parameter:	Soil Erosion
Unit	-

Description	As per ESIA report, following mitigation measures shall be followed: • Implement silt control measures such as silt fences and silt traps. • Stockpiles of excavated materials should be stored appropriately in designated areas and at a minimum distance of 10m from any nearby watercourses or drains. • Control of the generation of silt laden surface water runoff will be by use of mitigation measures such as bunds, settlement ponds, silt fences, silt traps, or by covering the stockpiles with plastic sheeting. Long term stockpiles will be placed at a suitable gradient and grass planted.
Measured/calculated/default	-
Source of data	Project O&M HSE logbook, or interview with maintenance staff.
Value(s) of monitored parameter	All the mitigation measures are implemented at site
Monitoring equipment	NA
Measuring/reading/recording frequency:	Yearly Once
Calculation method (if applicable):	NA
QA/QC procedures:	-
Purpose of data:	To monitor the Safeguarding Principle 8.2: Erosion and/or Water Body Instability
Additional comments:	Site in-charge and O&M Staff confirmed that all the mitigation measured are implemented.

Safeguarding Principle 9.5 Hazardous and Non-hazardous Waste

Data/parameter:	Hazardous waste management
Unit	-
Description	As per ESIA report, the following management measures shall be followed: • Provision of proper temporary storage for hazardous waste • Waste segregation

	• Waste disposal by an appointed/accredited waste disposer company
Measured/calculated/default	-
Source of data	Project O&M HSE logbook, or interview with maintenance staff.
Value(s) of monitored parameter	1. PP has provision of temporary storage for hazardous waste at site. 2. PP is following waste segregation at site 3. PP appointed a licensed third party hazardous waste contractor, MHA on 23 April 2020 for disposal of hazardous waste
Monitoring equipment	No monitoring equipment involved. The waste generation on each category & details of hazardous waste picked by contractor is recorded every month in the HSE log book.
Measuring/reading/recording frequency:	Yearly Once
Calculation method (if applicable):	NA
QA/QC procedures:	-
Purpose of data:	To monitor compliance to Safeguarding Principle 9.5 (Hazardous and Non-hazardous Waste))
Additional comments:	Site in-charge and O&M Staff confirmed that all the mitigation measured are implemented and being followed regularly.

Safeguarding Principle 9.1: Landscape Modification and Soil

Data/parameter:	Maintenance of Landscape visual impact
Unit	Aesthetics
Description	As per ESIA report, the following management measures shall be followed: • Maintain a uniform size and design of turbines (e.g., type of turbine and tower, as well as height). • Locals will be consulted wherever a WTG location or access road was in vicinity to a settlement.

	• The WTGs are painted with non-reflect paints and are not glary. • Re-vegetation taken up as necessary after construction, in order to reduce the risk of soil erosion.
Measured/calculated/default	-
Source of data	Technical specification of WTGs Project Grievance register, or interview with local villagers
Value(s) of monitored parameter	• All the 20 WTG used in the project are of same model ie, Gamesa's SWT-3.6-130 model. Hence all WTGs are uniform in type, turbine & height • Locals were consulted regarding the Aesthetics. No complaints/grievance received from any stakeholders. • All WTGs are painted with non-reflect paints. Photographs of WTGs are submitted to DOE • Re-vegetations are taken up at the site where he soil is disturbed during construction.
Monitoring equipment	NA
Measuring/reading/recording frequency:	Yearly Once
Calculation method (if applicable):	NA
QA/QC procedures:	NA
Purpose of data:	To monitor compliance to Safeguarding Principle 9.1 (Landscape Modification and Soil)
Additional comments:	Stakeholders are consulted for any concern over Aesthetics. But no complaints received from any stakeholders.

Safeguarding Principle 9.11: Endangered Species

Data/parameter:	Bird & Bat Deaths
Unit	Bird Carcass Count
Description	As per ESIA report, the following management measure shall be followed: • During the siting activity, it was ensured that there are no water bodies beside WTGs. • Water pits are not allowed around the WTGs.

	• Maintains a Bird strike register
Measured/calculated/default	-
Source of data	Bird Strike register, or interview with local villagers.
Value(s) of monitored parameter	• During site setting, it was confirmed that there was no water body besides WTGs. This can be confirmed from the ESIA report. • No water pits are now dug around the WTGs. • As per the bird strike register, no death of any Endangered Species reported during the monitoring period.
Monitoring equipment	NA
Measuring/reading/recording frequency:	Continuous
Calculation method (if applicable):	NA
QA/QC procedures:	NA
Purpose of data:	To monitor compliance to Safeguarding Principle 9.11 (Endangered Species)
Additional comments:	-

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period*
$EF_{OM, y}$	For year 2020 : 0.85 tCO2/MWh For year 2021 & 2022: 0.73 tCO2/MWh	For year 2019 - 0.59 tCO2/MWh For year 2020 - 0.85 tCO2/MWh
$EF_{BM, y}$	For year 2020: 1.17 tCO2/MWh For year 2021 & 2022: 1.17 tCO2/MWh	For year 2019 - 1.15 tCO2/MWh For year 2020 1.17 tCO2/MWh
$EF_{grid,CM,y}$	For year 2020: 0.93 tCO2/MWh For year 2021 & 2022: 0.84 tCO2/MWh	For year 2019 - 0.73 tCO2/MWh For year 2020 - 0.93 tCO2/MWh
$EG_{facility,y}$	346,073MWh	433,587 MWh

Good Health & Well being	27 community development activities	33 community development activities
Quality of employment	41 Training provided to O&M staff	5 Training provided to O&M staff

D.4. Implementation of sampling plan

>>

Not applicable

SECTION E. CALCULATION OF SDG IMPACTS

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

>>

SDG 3 Good Health and Well-Being:

The monitoring parameter for the SDG 3 is the community development activities like Health Camps, Knowledge and information dissemination regarding natural disasters. Since baseline and pre-project scenario are same, in the baseline condition no community development activities would have undertaken in the project location. Hence, the baseline value is zero.

Vintage	Baseline Value
	Number of community development activities
01/11/2020 to 31/12/2020	0
01/01/2021 to 31/12/2021	0
01/01/2022 to 30/06/2022	0
Total	0

SDG 7 Affordable and Clean Energy:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. Since baseline and pre-project scenario are same, in the baseline condition no renewable electricity will be supplied to grid from the project location. Hence, the baseline value is zero.

Vintage	Baseline Value
	Quantity of net electricity supplied to the grid (MWh)
01/11/2020 to 31/12/2020	0
01/01/2021 to 31/12/2021	0
01/01/2022 to 30/06/2022	0
Total	0

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees & O&M staff, Cost spent for O&M and Number of O&M staffs involved in the project.

Since baseline and pre-project scenario are same, in the baseline condition these values are zero.

Vintage	Baseline Value		
	Number of training (Nos)	Cost Spent on O&M (Lakh INR)	Number of O&M Staff (Nos)
01/11/2020 to 31/12/2020	0	0	0
01/01/2021 to 31/12/2021	0	0	0
01/01/2022 to 30/06/2022	0	0	0
Total	0	0	0

SDG 13 Climate Actions

The monitoring parameter for the SDG 13 is GHG emission reduction. The baseline GHG emission is estimated as below:

The baseline emission is calculated in line with para 39 of AC0002, Version 20, using equation below

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

Where,

BE_y = Baseline emissions in year y (tCO_2/yr)

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

$EF_{grid,CM,y}$ = Combined margin 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_2/MWh)

AS per para 41 of ACM0002, version 20, when the project activity is installation of Greenfield power plant, then:

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

Where,

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

The Electricity export & import are monitored is monitored continuously and reported monthly in the JMR/BA I. The monthly reported export & import values as per JMR/ BA I and net generation calculation are given below:

Year	Net Generation (MWh)	Grid Emission Factor (tCO2/MWh)	Baseline emission (tCO2)	Project Emission (tCO2)	Emission Reduction (tCO2)
Year 2020	29,206	0.93	27,161	0	27,161
Year 2021	233,302	0.84	195,973	0	195,973
Year 2022	83,565	0.84	70194	0	70,194
Total	346,073		293,328	0	293,328

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

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SDG 3 Good Health and Well-Being:

The monitoring parameter for the SDG 3 is community development activities like Health Camps, Knowledge and information dissemination regarding natural disasters. There are 4 community development activities undertaken by PP during the monitoring period. The CSR records are submitted to DOE.

Vintage	Project Value
	Number of community development activities
01/11/2020 to 31/12/2020	1
01/01/2021 to 31/10/2021	22
01/01/2022 to 30/06/2022	4
Total	**27**

SDG 7 Affordable and Clean Energy:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. In the project situation, the project supplied 346,073MWh electricity during the monitoring period. This can be crosschecked from JMR/BA I & Invoices.

Vintage	Project Value
	Quantity of net electricity supplied to the grid (MWh)
01/11/2020 to 31/12/2020	29,206

01/01/2021 to 31/10/2021	233,302
01/01/2022 to 30/06/2022	83,565
Total	**346,073**

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of training provided to employees & O&M staff, Cost spent for O&M & Number of O&M staffs involved in the project. During the project scenario, the following is achieved:

Vintage	Project Value		
	Number of training (Nos)	Cost Spent on O&M (Mn USD)	Number of O&M Staff (Nos)
01/11/2020 to 31/12/2020	0	0.577	70
01/01/2021 to 31/10/2021	13	6.604	69
01/01/2022 to 30/06/2022	28	3.302	69
Total	**41**	**10.48**	**NA**

These can be crosschecked from the training records, O&M contract & employment records.

SDG 13 Climate Actions

As per the approved consolidated Methodology ACM0002 (Version 20.0,) para 31:

"For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y = *Project emissions in year y (t CO_2e/yr)*

$PE_{FF,y}$ = *Project emissions from fossil fuel consumption in year y (t CO_2/yr)*

$PE_{GP,y}$ = *Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO_2e/yr)*

$PE_{HP,y}$ = *Project emissions from water reservoirs of hydro power plants in year y (t CO_2e/yr)"*

As the project activity is the installation of a new grid-connected Solar power plant/ unit and does not involve any project emissions from fossil fuel, operation of dry, flash

steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$

Vintage	Project Emission (tCO2e)
01/11/2020 to 31/12/2020	0
01/01/2021 to 31/10/2021	0
01/01/2022 to 30/06/2022	0
Total	**0**

E.3. Calculation of leakage

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As per PDD, no source of leakage emissions identified under proposed project activity. Hence, LEy= 0

Vintage	Leakage (tCO2e)
01/11/2020 to 31/12/2020	0
01/01/2021 to 31/10/2021	0
01/01/2022 to 30/06/2022	0
Total	**0**

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
SDG 3	Local development Activities (Nos)	0	27	27
SDG 7	Renewable Electricity Generated (MWh)	0	346,073	346,073
SDG 8	Trainings provided to O&M staff (Nos)	0	41	41
	Cost Spent on O&M (Million USD)	0	10.48	10.48
	Number of Jobs generated	0	69.3	69.3
SDG 13	Emission Reduction (tCO2e)	293,328	0	293,328

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
3	5 local development activities	27 local development activities
7	393,336 MWh electricity generation	346,073 MWh electricity generation
8	17 Training provided to O&M Staff	41 Training provided to O&M Staff
8	7.2 million USD spent on O&M	10.48 million USD spent on O&M
8	75 jobs created	69jobs created
13	287,134 tCO_2e emission reduction	293,328 tCO_2e emission reduction

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

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SDG Goal	SDG 3	SDG 7	SDG 8		SDG 13
SDG Impact	Local development activities (Nos)	Electricity generated (MWh)	Trainings provided to O&M staff (Nos)	Money spent on O&M (Mn USD)	Jobs Created (Nos)	Emission reduction (tCO2)
Estimation as per PDD (for 1 year)	3	236,520	10	4.3	75	172,659
Number of days in the monitoring period	607	607	607	607	607	607
Estimation for the monitoring period	5	3,93,336	17	7.2	75	2,87,134

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.

For SDG 13, the actual emission reduction for the monitoring period is about 2.2% higher than the estimated emission reduction as per PDD. This is due to the higher emission factor applicable for the monitoring period. Since the project chooses, ex-post option for the calculation of emission factor, the PP has used the emission factor of year 2018 for the year 2020 and emission factor of 2019 for the year 2020 & 2021 for emission reduction calculation which are higher than the emission factor considered for the ex-ante calculation. It shall be noted that the actual generation achieved is still less than the estimated generation as per PDD.

The net benefit of SDG 3 (number of community development activities) and SDG 8 (Number of Training provided) is higher than the estimated value in the PDD. This is mainly due to conservative estimation considered in the PDD.
For other SDGs, the actual monitored parameters values are less than the estimated value. Hence no further justification is required

SECTION F. SAFEGUARDS REPORTING

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Safeguarding Principle 8.2: Erosion and/or Water Body Instability

Data/parameter:	Soil Erosion
Mitigation Measures followed	As per ESIA report, following mitigation measures shall be followed: • Implement silt control measures such as silt fences and silt traps. • Stockpiles of excavated materials should be stored appropriately in designated areas and at a minimum distance of 10m from any nearby watercourses or drains. • Control of the generation of silt laden surface water runoff will be by use of mitigation measures such as bunds, settlement ponds, silt fences, silt traps, or by covering the stockpiles with plastic sheeting. Long term stockpiles will be placed at a suitable gradient and grass planted.
Source	Interview with maintenance staff.
Additional comments:	All the mitigation measures are implemented at the site. This is confirmed from site O&M team.

Safeguarding Principle 9.5 Hazardous and Non-hazardous Waste

Data/parameter:	Hazardous waste management
Mitigation measures followed	As per ESIA report, the following management measures shall be followed: • Provision of proper temporary storage for hazardous waste • Waste segregation • Waste disposal by an appointed/accredited waste disposer company
Source	Interview with maintenance staff.
Additional comments:	All the mitigation measures are implemented at the site. This is confirmed from site maintenance staff and through HSE monthly records.

Safeguarding Principle 9.1 Landscape Modification and Soil

Data/parameter:	Maintenance of Landscape visual impact
Mitigation Measures Followed	As per ESIA report, the following management measures shall be followed: • Maintain a uniform size and design of turbines (e.g., type of turbine and tower, as well as height). • Locals will be consulted wherever a WTG location or access road was in vicinity to a settlement. • The WTGs are painted with non-reflect paints and are not glary. • Re-vegetation taken up as necessary after construction, in order to reduce the risk of soil erosion.
Source of data	Technical specification of WTGs Project Grievance register, or interview with local villagers
Additional comments:	All the mitigation measures are followed at site. This can confirmed verification WTG technical specification & grievance register.

Safeguarding Principle 9.11: Endangered Species

Data/parameter:	Bird & Bat Deaths
Unit	-
Mitigation Measures Followed	As per ESIA report, the following management measure shall be followed: • During the siting activity, it was ensured that there are no water bodies beside WTGs. • Water pits are not allowed around the WTGs. • Maintains a Bird strike register

Measured/calculated/default	Measured
Source of data	Bird Strike register, or interview with local villagers
Additional comments:	-

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 grievances received during the monitoring period.

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

>>

Not Applicable

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 arisen with the project during the monitoring period.

Revision History

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