

TEMPLATE

MONITORING REPORT

PUBLICATION DATE 14.10.2020

VERSION v. 1.1

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

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Key Project Information

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS7745
Title of the project (s) covered by monitoring report	300 MW Wind Power Project in Gujarat by Alfanar Power
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	07.1
Version number of the monitoring report	05
Completion date of the monitoring report	31/10/2024
Date of project design certification	24/01/2022
Date of Last Annual Report	Not Applicable
Monitoring period number	02
Duration of this monitoring period	01/05/2022 – 31/12/2023 (Both Days Included)
Project Representative	Kosher Climate India Private Limited
Host Country	India
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 7	Renewable Electricity Generated	1,331,259	MWh

SDG 8	Trainings provided to O&M staff	16	Nos.
	Cost spent on O&M	110.29	Million INR
	Number of jobs generated	22	Nos.
SDG 13	Emission Reduction	1,244,195	VER

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	GSVER
01/05/2022	31/12/2022	503,221
01/01/2023	31/12/2023	740,974

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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Alfanar Energy Private Limited has setup wind power project in Kutch Districts of Gujarat with capacity of 301.4 MW from 22 WTGs (Wind Turbine Generators) of 2.3 MW each and 114 WTGs of 2.2 MW each. Full Capacity of the project activity has been commissioned and is operational. The entire capacity of the project has been connected to the national grid and the generated electricity from the project has been supplied to the SECI (Solar Energy Corporation of India) through the long-term power purchase agreement. Project has been commissioned phased manner starting from 28/07/2020 to 31/03/2021.

The purpose of the project activity is to generate electrical power using wind energy through operation of WTG's. The electricity generated by the project is exported to the Indian national grid. The project activity will therefore displace an equivalent amount of carbon intense electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The monitoring of SDG indicators has been carried out in accordance to respective registered PDD. The project proponent has chosen the 1st crediting period from 28/07/2020 to 27/07/2025. The first monitoring period started from 28/07/2020 to 30/04/2022. The present monitoring period is from 01/05/2022 to 31/12/2023 through which emission reduction claimed is 1,244,195 tCO₂e. The emission reduction units from this project activity have not been claimed by any other entities such as National Determined Contributions, Climate Policies or progress towards a voluntary climate mitigation pledge. Hence, there is no risk of presence of a risk of double counting with national climate policies for the project has been observed. Since the emission reduction units has not been shared with any other entity, GSVERs are not included within and counted under a regulated domestic climate mitigation target or NDC.

A.2. Location of project

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The project is located in multiple villages of Kutch district in Gujarat state of India. The Physical and Geographical location of the project is described below. Village: Dayapar, Virani Nani, Khatiya, Junachay, Haroda, Paneli, Amara, Nadapa, Lakhapur, Amiya, Dasalpur Gunthali, Ravapar Navavas, Valka Nana, Siyot, Vigodi, Ashaladi, Muru, Umrapur, Matana mudh.

The details of the project location are given below:



Sl. No	WTG LocationID	Village	Taluk	Geo Coordinate	
				Longitude	Latitude
1	UNT077	Dayapar	Lakhpatri	23°38'43.1"N	68°56'09.2"E
2	UNT080	Dayapar	Lakhpatri	23°38'24.3"N	68°55'27.5"E
3	UNT078	Dayapar	Lakhpatri	23°38'37.2"N	68°55'51.4"E
4	UNT087	Dayapar	Lakhpatri	23°39'11.8"N	68°54'31.4"E
5	N209	Dayapar	Lakhpatri	23°38'10.9"N	68°56'01.7"E
6	UNILTS76	Virani Nani	Lakhpatri	23°39'01.6"N	68°53'27.2"E
7	UNIP005	Khatiya	Lakhpatri	23°42'01.9"N	68°57'31.6"E
8	3011	Dayapar	Lakhpatri	23°39'56.8"N	68°56'10.4"E
9	UNT090	Virani Nani	Lakhpatri	23°40'13.6"N	68°55'33.1"E
10	UNT089	Virani Nani	Lakhpatri	23°40'28.1"N	68°55'32.1"E
11	UNT091	Virani Nani	Lakhpatri	23°40'08.0"N	68°54'53.9"E
12	UNP105	Khatiya	Lakhpatri	23°42'03.2"N	68°58'01.5"E
13	UNILTS60	Junachay	Lakhpatri	23°36'30.7"N	69°01'35.4"E
14	UNPN25	Haroda	Lakhpatri	23°39'21.0"N	69°00'13.4"E
15	UNPN24	Haroda	Lakhpatri	23°39'00.7"N	69°00'38.9"E
16	UNIP31	Haroda	Lakhpatri	23°40'38.0"N	69°00'07.7"E
17	UNIP042	Khatiya	Lakhpatri	23°42'27.2"N	68°57'49.4"E
18	UNPN8	Khatiya	Lakhpatri	23°41'05.8"N	68°59'30.1"E
19	N204	Paneli	Nakhatrana	23°37'09.0"N	68°57'24.6"E

20	UNILTS12	Virani Nani	Lakhpat	23°40'39.9"N	68°55'30.2"E
21	UNT075	Dayapar	Lakhpat	23°39'34.1"N	68°56'13.0"E
22	UNT037	Amara	Nakhatrana	23°33'35.5"N	69°08'23.1"E
23	UNT041	Amara	Nakhatrana	23°32'46.7"N	69°09'04.5"E
24	UNT038	Amara	Nakhatrana	23°33'23.9"N	69°08'40.8"E
25	UNT036	Amara	Nakhatrana	23°33'47.2"N	69°08'19.5"E
26	N173	Amara	Nakhatrana	23°33'19.2"N	69°07'04.0"E
27	UN645	Amara	Nakhatrana	23°33'13.3"N	69°06'24.9"E
28	UNT042	Amara	Nakhatrana	23°32'51.1"N	69°08'25.0"E
29	N704	Nadapa	Nakhatrana	23°32'37.5"N	69°05'13.4"E
30	UNPNI	Lakhapar	Lakhpat	23°42'35.1"N	68°56'44.9"E
31	UNIP045	Khatiya	Lakhpat	23°40'43.9"N	68°58'11.8"E
32	UNIP34	Junachay	Lakhpat	23°38'26.8"N	69°02'11.1"E
33	UNT120	Haroda	Lakhpat	23°40'58.3"N	69°00'18.2"E
34	UNIP012	Junachay	Lakhpat	23°38'36.1"N	69°01'16.8"E
35	NADAPARNE W-03	Nadapa	Nakhatrana	23°34'05.2"N	69°04'56.8"E
36	UNILTS26	Virani Nani	Lakhpat	23°40'09.4"N	68°54'40.0"E
37	UNT096	Paneli	Nakhatrana	23°37'03.7"N	68°57'06.2"E
38	UNT095	Paneli	Nakhatrana	23°37'16.5"N	68°57'11.3"E
39	UNE064	Paneli	Nakhatrana	23°37'11.2"N	68°56'11.5"E
40	UNE065	Paneli	Nakhatrana	23°37'20.4"N	68°55'49.8"E
41	5751	Paneli	Nakhatrana	23°34'51.1"N	68°56'42.8"E
42	N163	Paneli	Nakhatrana	23°34'27.1"N	68°57'36.7"E
43	PANELI-23	Paneli	Nakhatrana	23°34'39.6"N	68°57'19.1"E
44	UNIP30	Amiya	Lakhpat	23°39'15.3"N	68°58'56.6"E
45	UNIP003	Amiya	Lakhpat	23°39'37.6"N	68°59'02.2"E
46	UNP098	Amiya	Lakhpat	23°39'27.8"N	68°58'39.4"E
47	UNIP016	Amiya	Lakhpat	23°39'53.8"N	68°58'34.3"E
48	UNP042	Amiya	Lakhpat	23°40'04.7"N	68°58'56.4"E
49	UNPN16	Khatiya	Lakhpat	23°40'36.6"N	68°58'38.5"E
50	UNPN21	Amiya	Lakhpat	23°39'41.0"N	68°58'27.1"E
51	Harada-09	Haroda	Lakhpat	23°41'15.2"N	69°00'44.8"E
52	UNIP024	Junachay	Lakhpat	23°37'39.6"N	69°02'52.2"E
53	UNIP33	Haroda	Lakhpat	23°39'26.8"N	69°01'41.2"E
54	UNILTS28	Junachay	Lakhpat	23°38'04.8"N	69°02'21.0"E
55	UN1LTS63	Junachay	Lakhpat	23°38'01.8"N	69°02'46.6"E
56	UNILTS66	Junachay	Lakhpat	23°36'27.9"N	69°02'11.3"E
57	UNT039	Amara	Nakhatrana	23°33'10.8"N	69°08'49.1"E
58	UNTO40	Amara	Nakhatrana	23°33'00.5"N	69°08'59.4"E
59	DESHALPAR- 08	Desalpur Gunthali	Nakhatrana	23°29'17.3"N	69°09'25.1"E
60	DESHALPAR- 17	Desalpur Gunthali	Nakhatrana	23°28'25.3"N	69°09'29.6"E

61	N46	Ravapar Navavas	Nakhatrana	23°31'38.2"N	69°00'22.1"E
62	N47	Ravapar Navavas	Nakhatrana	23°31'55.3"N	69°00'14.3"E
63	UNT115	Ravapar Navavas	Nakhatrana	23°32'08.9"N	69°00'11.5"E
64	UNP103	Khatiya	Lakhpat	23°41'11.7"N	68°59'06.1"E
65	UNT116	Ravapar-Navavas	Nakhatrana	23°31'41.4"N	68°59'50.8"E
66	UNPN7	Khatiya	Lakhpat	23°40'53.4"N	68°59'20.6"E
67	N203	Paneli	Nakhatrana	23°36'44.7"N	68°57'39.7"E
68	N206	Paneli	Nakhatrana	23°37'17.9"N	68°58'12.9"E
69	N281	Paneli	Nakhatrana	23°36'26.7"N	68°58'04.8"E
70	N267	Valka Nana	Nakhatrana	23°35'41.7"N	69°01'58.3"E
71	N268	Valka Nana	Nakhatrana	23°35'18.5"N	69°01'33.3"E
72	N200	Valka Mota	Nakhatrana	23°35'45.3"N	69°00'32.0"E
73	N202	Valka Mota	Nakhatrana	23°36'12.0"N	68°59'28.4"E
74	N274	Valka Mota	Nakhatrana	23°36'26.2"N	68°59'04.3"E
75	PANELI-18	Paneli	Nakhatrana	23°36'42.8"N	68°57'57.6"E
76	N201	Valka Mota	Nakhatrana	23°35'20.4"N	69°00'56.1"E
77	UNIP109	Mudhan	Lakhpat	23°43'50.6"N	68°55'00.6"E
78	UNPI45	Shiyot	Lakhpat	23°43'35.2"N	68°54'17.2"E
79	UNJP147	Shiyot	Lakhpat	23°44'40.1"N	68°53'59.9"E
80	UNP138	Mudhan	Lakhpat	23°44'57.5"N	68°54'18.9"E
81	UNP043	Amiya	Lakhpat	23°40'07.3"N	68°58'25.1"E
82	ILTS87	Dayapar	Lakhpat	23°38'50.9"N	68°54'46.7"E
83	UNP176	Siyot	Lakhpat	23°43'16.2"N	68°55'17.6"E

84	UNIP32	Haroda	Lakhpat	23°40'34.5"N	69°01'58.4"E
85	ILTS29	Junachay	Lakhpat	23°36'36.1"N	68°59'46.3"E
86	UNT102	Vigodi	Nakhatrana	23°30'28.0"N	69°04'04.2"E
87	N41	Nagviri	Lakhpat	23°30'02.4"N	69°03'38.3"E
88	UNT108	Vigodi	Nakhatrana	23°29'32.8"N	69°03'48.8"E
89	UNT104	Vigodi	Nakhatrana	23°30'16.4"N	69°04'25.8"E
90	UNIP021	Junachay	Lakhpat	23°38'17.0"N	69°01'07.6"E
91	UNTIII	Vigodi	Nakhatrana	23°28'32.4"N	69°05'31.5"E
92	UNP180	Chhuger	Lakhpat	23°43'35.6"N	68°51'21.1"E
93	UNT106	Vigodi	Nakhatrana	23°30'02.5"N	69°04'26.4"E
94	UNEP085	Khatiya	Lakhpat	23°40'24.8"N	68°57'54.5"E
95	UNTI10	Vigodi	Nakhatrana	23°29'04.5"N	69°05'01.7"E
96	UNEP019	Siyot	Lakhpat	23°42'46.8"N	68°55'30.0"E
97	UNT121	Haroda	Lakhpat	23°40'25.5"N	69°00'05.3"E
98	UNILTS48	Lakhapar	Lakhpat	23°41'34.3"N	68°55'36.2"E
99	UNILTS49	Lakhapar	Lakhpat	23°41'54.0"N	68°56'00.9"E
100	UNP142	Mudhan	Lakhpat	23°44'30.9"N	68°56'16.5"E
101	UNILTS50	Lakhapar	Lakhpat	23°42'14.2"N	68°55'59.0"E
102	Haroda-05	Haroda	Lakhpat	23°40'51.4"N	68°59'56.5"E
103	UNI'032	Valka Mota	Nakhatrana	23°35'48.2"N	68°58'30.3"E
104	N162	Paneli	Nakhatrana	23°35'17.4"N	68°57'56.7"E
105	N09	Paneli	Nakhatrana	23°34'32.0"N	68°56'31.8"E
106	UNT097	Mata na Madh	Lakhpat	23°33'46.7"N	68°56'13.2"E
107	UNE046	Ashaladi	Lakhpat	23°33'57.4"N	68°54'00.2"E
108	UNE042	Ashaladi	Lakhpat	23°33'11.0"N	68°54'09.7"E

109	UNE044	Ashaladi	Lakhpatt	23°33'37.3"N	68°53'36.1"E
110	UNE026	Ashaladi	Lakhpatt	23°32'58.3"N	68°52'52.7"E
111	UNE031	Ashaladi	Lakhpatt	23°33'11.0"N	68°53'28.8"E
112	N280	ValkaVlota	Nakhatrana	23°36'42.1"N	68°58'38.6"E
113	5726	Mata na Madh	Lakhpatt	23°34'34.3"N	68°55'52.3"E
114	UNT098	Mata na Madh	Lakhpatt	23°32'46.5"N	68°55'49.5"E
115	5657	Mata na Madh	Lakhpatt	23°32'24.4"N	68°55'54.2"E
116	N168	ValkaVlota	Nakhatrana	23°34'32.5"N	69°00'57.4"E
117	5654	Mata na Madh	Lakhpatt	23°32'45.4"N	68°55'32.3"E
118	N43	Ravapar-Navavas	Nakhatrana	23°30'28.7"N	69°02'08.1"E
119	UNIP027	Junachay	Lakhpatt	23°36'55.6"N	69°01'39.2"E
120	UNEP096	Aiyar	Nakhatrana	23°31'16.1"N	69°09'01.6"E
121	UNEP102	Muru	Nakhatrana	23°30'47.5"N	69°10'39.0"E
122	UNEPI10	Muru	Nakhatrana	23°31'04.4"N	69°10'09.0"E
123	UNT109	Vigodi	Nakhatrana	23°29'22.9"N	69°04'45.7"E
124	N695	Nadapa	Nakhatrana	23°34'00.8"N	69°04'15.2"E
125	UNEP105	Desalpar	Nakhatrana	23°28'47.3"N	69°10'01.4"E
126	UMRAPAR-02	Umrappar	Nakhatrana	23°26'07.0"N	69°11'31.8"E
127	UMRAPAR-04	Umrappar	Nakhatrana	23°26'47.0"N	69°11'38.4"E
128	UMRAPAR-06	Umrappar	Nakhatrana	23°26'48.2"N	69°12'06.4"E
129	UMRAPAR-07	Umrappar	Nakhatrana	23°26'58.9"N	69°12'24.8"E
130	UMRAPAR-09	Umrappar	Nakhatrana	23°25'58.9"N	69°12'10.5"E
131	UNE033	Ashaladi	Lakhpatt	23°32'38.0"N	68°53'39.8"E
132	UNEPIII	Aiyar	Nakhatrana	23°31'53.1"N	69°10'02.3"E

133	UNPI79	Atdo	Lakhpat	23°44'42.1"N	68°52'01.3"E
134	UNT125	Haroda	Lakhpat	23°39'03.7"N	69°00'55.6"E
135	UNEP113	Valka Nana	Nakhatrana	23°34'44.4"N	69°02'36.9"E
136	5655	Mata na Madh	Lakhpat	23°32'49.4"N	68°56'13.9"E

A.3. Reference of applied methodology

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Title: CDM approved Consolidated baseline and monitoring methodology for "Grid-connected electricity generation from renewable sources".

References: ACM0002 "Grid-connected electricity generation from renewable sources", Version 20.0¹

TOOL07: "Tool to calculate the emission factor for an electricity system" , Version7.0²

A.4. Crediting period of project

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Type of crediting period: Renewable

Start date of the crediting period: 28/07/2020

End date of the crediting period: 27/07/2025

Length of current crediting period: 5 years

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The total installed capacity of the project activity is 301.4 MW from 22 WTGs of 2.3 MW each and 114 WTGs of 2.2 MW each.

The technical specifications of the WTGs have been provided as below.

Senvion make: M120- 2.3 MW	
Design data	
Rated power	2.3 MW

¹ <https://cdm.unfccc.int/UserManagement/FileStorage/AG07ZJQ3EXD42LT5YV9HR16M8KINPO>

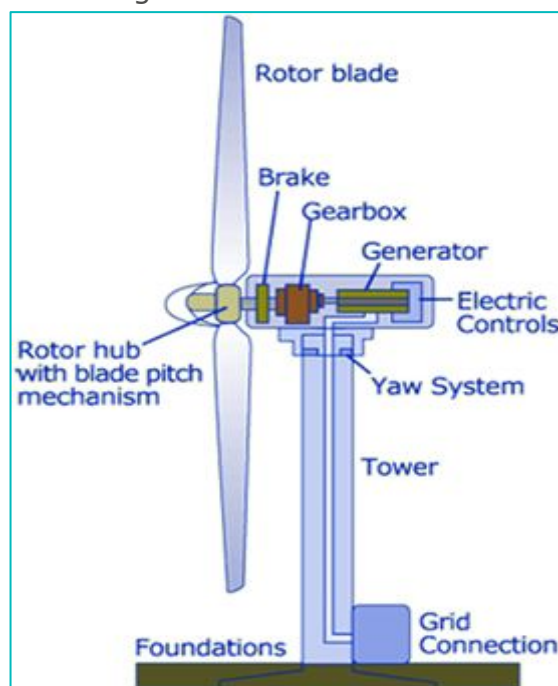
² <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

Cut-in wind speed	3 m/s
Cut-out wind speed	20 m/s
Operating temperature range	0-45 °C
Rotor	
Diameter	120.0 m
Swept area	13,273 m ²
Number of blades	3
Pitch system	AC-motors with multi-stage gearbox
Power control	Electrical pitch
Blades	
Length	63.7 m
Type	Glass fiber-reinforced plastic (GFRP)
Max. chord width	4 m
Generator	
Type	Electrically excited synchronous generator with IGBT converter
Frequency	50Hz
Voltage	600V
Protection class	IP 54
Gearbox	
Gearbox type	multi-stage planetary / spur gearbox
Yaw system type	Active alignment with yaw drives and active hydraulic brake systems
Number of yaw brakes	06

SG122 - 2.2 MW	
General Data	
Rated power:	2.2 MW
Wind Class	IEC III/S
Control	Pitch and variable speed
Rotor	
Diameter:	122.0 m
Swept area:	11,690 m ²
Number of blades:	3
Power Density	188.19 W/m ²

Blades	
Length	60 m
Airfoils	Siemens Gamesa
Material	Fiberglass reinforced with epoxy or polyester resin
Gearbox	
Type	3 stages
Tower	
Hub height	108, 127 m and site-specific
Generator	
Type	Doubly fed induction machine
Voltage	690V AC
Frequency	50Hz/ 60Hz
Protection class	IP 54

The design of the WTG model is given below:



Project activity has been allotted by SECI on 23/02/2018. Project construction has been started from 28/06/2019 by placing the supply order to procure the WTGs and entire capacity has been commissioned in phased manner starting from 28/07/2020 to 31/03/2021. Since commissioning the project is continuously running without any major breakdowns. There are no changes or modifications in the project design or specifications of the equipment during this monitoring period. Commissioning details of the project are given below.

S I · N O	No of WT G	WTG Capacity (MW)	Total Capacity (MW)	Commissio ning Date	Cumulative Capacity Commissioned (MW)
1	4 0	2.2	88	28/07/2020	88
2	2 3	2.2	50.6	02/08/2020	138.6
3	3	2.2	29.6	04/09/2020	168.2
	1 0	2.3			
4	7	2.2	15.4	11/09/2020	183.6
5	7	2.2	15.4	01/10/2020	199
6	7	2.2	15.4	20/10/2020	214.4
7	5	2.2	20.2	18/11/2020	234.6
	4	2.3			
8	5	2.2	15.6	29/12/2020	250.2
	2	2.3			
9	1	2.2	11.4	22/02/2021	261.6
	4	2.3			
1 0	5	2.2	11	04/03/2021	272.6
1 1	7	2.2	15.4	25/03/2021	288
1 2	4	2.2	13.4	31/03/2021	301.4
	2	2.3			

B.1.1 FORWARD ACTION REQUESTS

>> One forward action request has been raised in the previous verification Report. Summary of FARs and response for the same has been provided below.

FAR	Description of FAR	Response
1	PP shall confirm how the comments from SFR is addressed in the next monitoring period and verifying VVB shall verify the same. Also, the verifying VVB shall interview participant/invitee during next verification audit and provide their assessment considering the meeting and LSC requirements	PD conducted LSC on 07/10/2022 and the SFR has been opened for local people access for 2 months (21/12/2022 to 21/02/2023). There were no comments received from the stakeholders during this feedback round.

B.2. Post-Design Certification changes

>>

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

>>

During the monitoring period, the calibration is not done as per the calibration frequency mentioned in the PDD. So, PP applied the maximum possible error. As per Appendix of 'CDM Validation and Verification standard for Project Activities' Version 3, the corrected value shall be applied to both export & import.

However, in the monthly energy meter reading statement, the DISCOM does not provide export & import details. It directly provides the electricity generation. Hence, the export & import details are not available with us. Hence, the maximum possible error is applied only on the net export as described below:

Parameter	Measured Value	Corrected Value
Net Export	X	$X \times (1 - 0.2\%)$

No other temporary deviation is applied.

B.2.2. Corrections

>> Not applicable

B.2.3. Changes to start date of crediting period

>> Not applicable

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

>> Not applicable

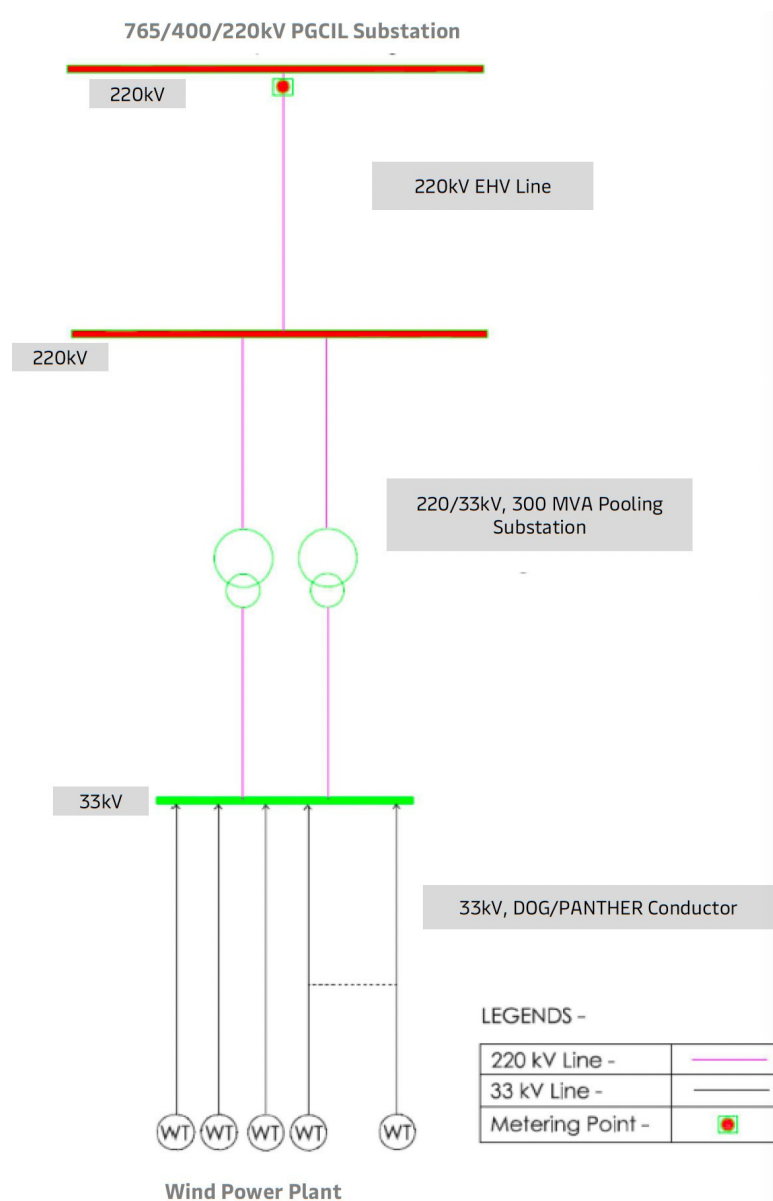
B.2.5. Changes to project design of approved project

>> Not applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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The project proponent has entered into agreement with the WTG Suppliers for the operation and maintenance of WTGs. O&M contractor will provide a monthly report, which includes generation data, major breakdown events and machine availability. Project manager is responsible for recording of monthly meter readings of export and import. Monthly power generation data will be sent regularly to site in charge of each project separately. The power evacuation & metering SLD (Single Line Diagram) is provided below:



The entire power generated will be exported to the Indian National grid. The electricity generated will be sold to Solar Energy Corporation of India (SECI) under a long-term Power Purchase Agreement (PPA). The SECI will sell the power to the different buyers and power utilities comes under the Western Regional Power Committee (WRPC) of Central Electricity Authority (CEA) owned and controlled by Govt. of India which is an integral part of the Indian Grid.

Monitoring consists of metering the net electricity supplied to the grid ($EG_{\text{facility},y}$). This parameter is based on the monthly JMRs (share certificates) undertaken by DISCOM (Distribution Company) and Servion which is continuously through energy meter. The PP will then raise monthly electricity sales invoices based on the JMR reading. All the meters used in the project activity will be calibrated in once in five years.

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 recording & archiving: In accordance with the methodology the data collected will be archived both in electronic form and hard copies. The monitored data shall be archived till 2 years after the completion of crediting period.

Metering Information:

The entire project capacity of 301.4 MW is connected to the 220kV side of the 765/400/220 kV PGCIL Bhuj Pool substation through dedicated 33 kV and 220 kV transmission lines constructed from the wind farm pooling substation.

Emergency Preparedness:

In case Main meter or Check meter is found to be outside the acceptable limits of accuracy or faulty or not functioning properly, it will be repaired, recalibrated or replaced as soon as possible. In the event that the Main meter is not in service as a result of maintenance, repairs or testing, the Check meter will be used for readings.

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	$EF_{\text{grid}, OM, y}$
Unit	tCO ₂ /MWh

Description	Operating margin CO ₂ emission factor of INDIAN grid
Source of data	Central Electricity Authority: CO ₂ Emission Database CEA CO ₂ Baseline database Version 16 ³
Value(s) applied	0.9568
Choice of data or Measurement methods and procedures	Calculated in line with " <i>Tool to calculate the emission factor for an electricity system</i> " using data from Central Electricity Authority of India's (CEA) " <i>Baseline Carbon Dioxide Emission Database Version 16</i> ". The value used is calculated ex-ante as generation based weighted average of last three years of the operating margin provided in the CEA database. Weighted average = $\sum_{i=1 \text{ to } n} (\text{Net generation in operating margin in year } i * \text{Simple operating margin in year } i) / \sum_{i=1 \text{ to } n} (\text{Net generation in operating margin of year } i)$
Purpose of data	Baseline Emission calculation
Additional comment	The operating margin emission factor is a 3-year generation-weighted average (2017-2020). The operating Margin is calculated ex ante and fixed during the crediting Period

Data/parameter	EF_{grid, BM, y}
Unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor of INDIAN grid
Source of data	Central Electricity Authority: CO ₂ Emission Database CEA CO ₂ Baseline database Version 16 ⁴
Value(s) applied	0.8682

³ https://cea.nic.in/wp-content/uploads/baseline/2021/06/2019_20_CO2_database.zip

⁴ https://cea.nic.in/wp-content/uploads/baseline/2021/06/2019_20_CO2_database.zip

Choice of data or Measurement methods and procedures	Calculated in line with "Tool to calculate the emission factor for an electricity system" using data from Central Electricity Authority of India's (CEA) "Baseline Carbon Dioxide Emission Database Version 16". The value is calculated ex-ante as most recent build margin provided by the CEA
Purpose of data	Baseline Emission Calculation
Additional comment	The Build Margin would be calculated ex ante and fixed during the crediting period. For ex ante calculation the most recent data (2019-20) available has been used and the build margin is thus calculated

Data/parameter	EF_{grid, CM, y}
Unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor of INDIAN grid
Source of data	Central Electricity Authority: CO ₂ Emission Database CEA CO ₂ Baseline database Version 16 ⁵
Value(s) applied	0.9346
Choice of data or Measurement methods and procedures	The date has been considered in accordance to the Tool to calculate emission factor of an electricity system. The tool guides to take 75% weightage of EF _{grid, OM_{simple}} , & 25% weightage of EF _{grid, BM, y} .
Purpose of data	Baseline Emission calculation
Additional comment	The combined margin would be calculated ex-ante and fixed for the entire crediting period and the combined margin thus calculated is 0.9346.

D.2 Data and parameters monitored

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SDG 7&13

Data/parameter	EG_{PJ,grid,y} or EG_{PJ,facility,l,y}
Unit	MWh

⁵ https://cea.nic.in/wp-content/uploads/baseline/2021/06/2019_20_CO2_database.zip

Description	Net quantity of electricity exported to the grid by the project activity during the year y							
Source of data	Joint Energy Meter reading statements issued by GEDA (Gujarat Energy Distribution Agency) /GETCO(Gujarat Energy Transmission Company) /WRPC ⁶ (West Regional Power Committee)							
Measured/Calculated/Default	Measured							
Values of monitored parameter	<table><tr><th>Period (Y)</th><th>EG_{Facility,Y} (MWh)</th></tr><tr><td>01/05/2022 to 31/12/2023</td><td>1,331,259</td></tr><tr><td>TOTAL</td><td>1,331,259</td></tr></table>		Period (Y)	EG _{Facility,Y} (MWh)	01/05/2022 to 31/12/2023	1,331,259	TOTAL	1,331,259
Period (Y)	EG _{Facility,Y} (MWh)							
01/05/2022 to 31/12/2023	1,331,259							
TOTAL	1,331,259							
Monitoring Equipment	Energy meter Accuracy of energy meters: 0.2 s Monitoring method: Based on the monthly energy statement/Reginal Energy Account statement (REA) which provides the net electricity exported by the wind power project.							
Measuring/reading/recording frequency:	Continuous monitoring and monthly recording							
QA/QC Procedures	Tri-vector Bidirectional 0.2s class energy meters are installed on HT side of PGCIL substation. Energy meters record export and import of energy. The Project Participant would raise invoice to the SECI on monthly basis for the net energy fed into the grid. Net energy supplied by the project can be cross checked with the monthly invoices raised by Project participant to SECI. Energy meters will be tested for accuracy every 5 year and will be calibrated in case of an error beyond permissible limits. Sales record to the grid and the invoice raised for receiving payment from state electricity board are used to cross check this data and hence ensure consistency.							
Purpose of data	Baseline Emission calculation & to monitor contribution to SDG 7							

⁶ <https://www.wrpc.gov.in/gl/commercial-rea.html>

Additional comment	-
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Meter Details			
Sr. No	05296063	05296072	05296111
Make	Elster	Elster	Elster
Type	ABT 3P4W	ABT 3P4W	ABT 3P4W
Class	0.2S	0.2S	0.2S
Last Calibration	15/08/2018	15/08/2018	15/08/2018
Calibration Due	14/08/2023	14/08/2023	14/08/2023

As per the PPA calibration of meters is the responsibility of the SECI & Grid authority- Power grid corporation of India, which is not under the control of Project Proponent. Though the meters were continuously calibrated as per the required frequency not all the calibration certificates for this monitoring are available with PP from the SECI. However, it is confirmed that all the meters during the monitoring period are in working condition without any faults or failures. Also letter from grid authority confirms the calibration date. However, in the absence of availability of calibration reports to be conservative Project proponent has applied the maximum error factor of 0.2% to the electricity export values for the entire monitoring period.

Project developer has applied the following procedure while applying for the calibration error correction in line with the Appendix of 'CDM Validation and Verification standard for Project Activities' Version 3.

Parameter	Measured Value	Corrected Value
Net Export	X	$X \times (1 - 0.2\%)$

It shall be noted that in the monthly energy meter reading statement issued by the WRPC, the export & import details are not available. It directly provides the Net generation. Hence, the export & import details are not available with us. Hence, the maximum possible error is applied only on the net export as described above.

SDG 8:

Data/parameter	Quality of Employment
Unit	Nos.
Description	Trainings provided to employees and O&M staff

Measured/Calculated/Default	Measured	
Source of data	Training records	
Value(s) of monitored parameter	Period	No. of Trainings provided
	01/05/2022 to 31/12/2023	16
	Total	16
Monitoring Equipment	NA	
Measuring/Reading/Recording frequency	Yearly once	
Calculation Method (if Applicable)	-	
QA/QC procedures	-	
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	-	

S.NO	Name of Training	Training Date	Number of participants
1	Mock Drill- Electrical panel fire	29-04-2023	6
2	Mock Drill- Food poisoning	28-09-2023	9
3	Mock Drill- Heat stroke	31-05-2023	8
4	Mock Drill- Natural calamities	30-06-2023	10
5	Mock Drill- property damage incidence	25-07-2023	7
6	Mock Drill- Road accident	25-01-2023	6
7	Emergency Response Drill - Fire Fighting	05-08-2023	13
8	Mock Drill- Self rescue	31-03-2023	7
9	Mock Drill- Slip due to oil spillage	09-08-2023	9
10	Mock drill-snake bite	18-02-2023	7
11	Mock drill for snake bite	21-05-2023	6
12	Mock drill- switchyard fire	18-10-2023	9
13	Mock drill- Electrocution	13-12-2022	11

14	Fire fighting	10-10-2023	10
15	Mock Drill- Road accident	21-01-2023	21
16	First Aid Training	09-12-2023	26

SDG 8:

Data/parameter	Quantitative employment and income generation		
Unit	- Number of O&M staffs involved in the project - Cost spent for O&M		
Description	- Total employment generated due to the implementation of project activity and - The amount spent for O&M activities due to the project		
Measured/Calculated/Default	Measured		
Source of data	Plant Employment records		
Value(s) of monitored parameter	Period	No. of O&M staff	O&M (Million INR)
	01/05/2022 to 31/12/2023	22	110.29
	Total	22	110.29
Monitoring Equipment	NA		
Measuring/Reading/Recording frequency	Yearly once		
Calculation Method (if Applicable)	-		
QA/QC procedures	-		
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	-		

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
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As per the GS Monitoring report template guide this section is only applicable for CSA project activities. Since this is a non-CSA project, it is not applicable.

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

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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.

Monitoring Period	Baseline Value
01/05/2022 to 31/12/2023	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.

Monitoring Period	Baseline Value		
	Number of Trainings	Cost spent on O&M (Million INR)	Number of O&M staff
01/05/2022 to 31/12/2023	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 emissions are calculated in line with para 39 of ACM0002, Version 20, using equation below

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

Where,

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

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

$EF_{grid, CM, y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the Emission Factor for an electricity system”.

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 Net generation readings are given below:

Year	Net Generation (MWh)	Grid Emission Factor (tCO ₂ /MWh)	Baseline Emission (tCO ₂)
2022	538434.6766	0.9346	503221.0487
2023	792825.2718		740974.499
Total	1,331,259		1,244,195

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

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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 1,331,259 MWh electricity during the monitoring period. This can be crosschecked from Monthly REA statement & Invoices.

Monitoring Period	Project Value Quantity of Net electricity supplied to the grid (MWh)
01/05/2022 to 31/12/2022	538434.6766
01/01/2023 to 31/12/2023	792825.2718
TOTAL (01/05/2022 to 31/12/2023)	1,331,259

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 & Number of O&M staffs involved in the project. During the project scenario, the following is achieved:

Monitoring Period	Project Value		
	Number of Trainings	Cost spent on O&M (Million INR)	Number of O&M staff
01/05/2022 to 31/12/2023	16	110.29	22
Total	16	110.29	22

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) 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 CO₂e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal Powerplants in year Y (t CO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year Y (t CO₂e/yr)”

As the project activity is the installation of Wind Turbine Generators 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 Emissions (tCO ₂ e)
01/05/2022 to 31/12/2023	0
Total	0

E.3. Calculation of leakage

>>

As per the registered PDD, no source of leakage emissions identified under proposed project activity.

Hence, $LE_y = 0$

Vintage	Leakage Emissions (tCO ₂ e)
01/05/2022 to 31/12/2023	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
7	Renewable Electricity Generated (MWh)	0	1,331,259	1,331,259
8	Trainings provided to O&M staff (Nos)	0	16	16
	Cost spent on O&M (Million INR)	0	110.29	110.29
	Number of Jobs generated (Nos)	0	22	22
13	Emission Reduction (tCO ₂ e)	1,244,195*	0**	1,244,195

*This is baseline emission

**This is project emission

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 ⁷ achieved during this monitoring period
7	1,749,555 MWh electricity generated	1,331,259 MWh electricity generated
8	03 Training provided to O&M staff	16 Training provided to O&M staff
8	259 million INR spent on O&M	110.29 million INR spent on O&M
8	167 jobs created	22 jobs created
13	1,635,133 tCO ₂ e emission reduction	1,244,195 tCO ₂ e emission reduction

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

⁷ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

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The estimated value is based on the estimated value provided for 1 year in the PDD and the actual number of operating days in the monitoring period. The calculation is provided below.

SDG Goal	SDG 7	SDG8			SDG 13
SDG Impact	Electricity generated (MWh)	Trainings provided to O&M staff (Nos)	Money spent on O&M (Mn INR)	Jobs Created (Nos)	Emission reduction (tCO ₂)
Estimation as per PDD (for 1 year)	1,046,865	2	155	100	978,399
Number of days in the monitoring period	610	610	610	610	610
Estimation for the monitoring period (610 days)	1,749,555	3	259	167	1,635,133

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

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Not applicable as the achieved SDG impacts are less than estimated impacts.

SECTION F. SAFEGUARDS REPORTING

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Safeguarding Principle 8.2: Erosion and/or Water Body Instability

Data / Parameter	Soil Erosion control
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Mitigation Measures followed	- The excavated areas were kept minimum and construction activities restricted to dry months to avoid heavy rainfall. - Using existing roads and lanes used by land owner. - Stockpiles of materials were placed away from drainage lines and formed with sediment control structures placed immediately down slope. - Construction debris and excavated material were cleared up at regular intervals. - Excavated material stockpiled and used for backfilling of foundations, platforms etc. - Minimization of traffic in construction zones and use of a dedicated parking area, i.e, site compound. - Re-vegetation taken up as necessary after construction, in order to reduce the risk of soil erosion.
Source	Project O&M HSE logbook, or interview with maintenance staff
Additional comments	All the mitigation measures are implemented at the site. This is confirmed from O&M HSE site logbook & site team.

Safeguarding Principle 9.5: Hazardous and Non-hazardous Waste

Data / Parameter	Hazardous Waste Management
Mitigation Measures followed	- The hazardous waste generated at the site was handed over to authorized vendor at regular intervals. - A hazardous waste inventory is maintained as per the provisions of the Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008.
Source	Project O&M HSE logbook, or interview with maintenance staff
Additional comments	All the mitigation measures are implemented at the site. This is confirmed from O & M HSE site logbook & site team. As per the HSE logbook Hazardous Waste generated during the monitoring period is given below: Cotton waste – 14,003 kg Used oil – 418 litres Grease- 69 Kg All the hazardous waste generated are disposed through waste management company which is a hazardous waste management company approved by MOEF.

Safeguarding Principle 9.11: Endangered Species

Data / Parameter	Bird and Bat deaths
Mitigation Measures followed	During the siting activity, it was ensured that there are no water bodies beside WTGs. • Water pits are not allowed around the WTGs. • The bird carcass is also monitored two times in a week. • None of the area of WTGs erection or transmission lines are under sensitive or under areas of conservation importance.
Source	Bird strike register or interview with O&M team
Additional comments	All the mitigation measures are implemented at the site. This is confirmed from O & M HSE site logbook & site team As per bird strike register, no bird nests/carcass deducted during the monitoring period.

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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The grievance mechanism was a part of PP's regular procedure which was announced to stakeholder during the stakeholder consultation conducted during ESIA (Environmental and Social Impact Assessment) study. Hence, the stakeholders are aware of the grievance mechanism. The same has been considered for the MP2. Grievance register is maintained at the project site to receive the grievances. No input or grievances received from any stakeholder during the monitoring period. Now during Gold Standard stakeholder consultation meeting, the same is again conveyed to stakeholder along with the option to intimate to gold standard.

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