المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

Project Submission Form

V4.0- 2022

CONTENTS

COVER PAGE- Project Submission Form (PSF)	
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the Project Activity as per LON/LOA	50 MWp Solar power project in Solapur, Maharashtra by AMP Energy
PSF version number	01.1
Date of completion / Updating of this form	22/12/2022
Project Owner(s) as per LON/LOA (Shall be consistent with De-registered CDM Type B Projects)	Amp Energy Markets India Private Limited[1]
Country where the Project Activity is located	India
GPS coordinates of the project site(s)	Latitude (N): 17° 58' 51.1212" (17.980867); Longitude (E): 75° 58' 46.3584" (75.979544) Latitude (N): 17° 58' 17.364"(17.971490); Longitude (E): 75° 58' 12.9612"(75.970267)
Eligible GCC Project Type as per the Project Standard (Tick applicable project type)	☒ **Type A:** ☐ Type A1 ☒ Type A2 ☒ Sub-Type 1 ☐ Sub-Type 2 ☐ Sub-Type 3 ☐ Sub-Type 4 ☐ Type A3 ☐ **Type B – De-registered CDM Projects:**[2]

[1] To act as project owner as per GCC definition

[2] Owners of Type B projects shall fill in the form provided in Appendix 7.

	☐ Type B1 ☐ Type B2
Minimum compliance requirements	☒ Real and Measurable GHG Reductions ☒ National Sustainable Development Criteria (if any) ☒ Apply credible baseline and monitoring methodologies ☒ Additionality ☒ Local Stakeholder Consultation Process ☒ Global Stakeholder Consultation Process ☒ No GHG Double Counting ☒ Contributes to United Nations Sustainable Development Goal 13 (Climate Action)
Choose optional and additional requirements (Tick applicable label categories)	☐ Do-no-net-harm Safeguards to address Environmental Impacts ☐ Do-no-net-harm Safeguards to address Social Impacts ☐ Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)
Applied methodologies including version No. (Shall be approved by the GCC or the CDM)	ACM0002: Grid-connected electricity generation from renewable sources --- Version 21.0[3]
GHG Sectoral scope(s) linked to the applied methodology(ies)	GHG-SS: Scope 1 Energy (renewable/non-renewable sources)

[3] https://cdm.unfccc.int/methodologies/DB/HF3LP6O41YY0JIP1DK6ZRJO9RSCX3S

Applicable Rules and Requirements for Project Owners

(Tick applicable Rules and Requirements)

Rules and Requirements		Version
☒ ISO 14064-2		
☒ Applicable host country legal requirements /rules		
☒ GCC Rules and Requirements[4]	☒ Project Standard	03.1
	☐ Approved GCC Methodology (XXXXX)	
	☒ Program Definitions	03.1
	☒ Environment and Social Safeguards Standard	03.0
	☒ Project Sustainability Standard	03.0
	☒ Instructions in Project Submission Form (PSF)-template	04.0
	☐ Clarification No. 01	
	☐ Clarification No. 02	
	☐ Clarification No. 03	
	☐ Clarification No. 04	
	☐ Clarification No. 05	
	☐ Standard on avoidance of double counting	
	☐ Add rows if required	
☒ CDM Rules[5]	☒ Approved CDM Methodology (XXXXX)	ACM0002, Version 21.0
	☒ TOOL 1- Tool for the demonstration and assessment of additionality	7.0
	☐ TOOL 02- Combined tool to identify the baseline scenario and demonstrate additionality	

[4] GCC Program rules and requirements: http://www.globalcarboncouncil.com/resource-centre/
[5] CDM Program rules: https://cdm.unfccc.int/Reference/index.html

		☒ TOOL 07- Tool to calculate the emission factor for an electricity system	7.0
		☐ TOOL 19- Demonstration of additionality of microscale project activities	
		☐ TOOL 21- Demonstration of additionality of small-scale project activities	
		☐ TOOL 23- Additionality of first-of-its-kind project activities	
		☒ TOOL 24- Common practice	3.1
		☒ TOOL 27- Investment analysis	11.0
		☐ TOOL 32- Positive lists of technologies	
		☐ Guidelines for objective demonstration and assessment of barriers	
		☐ Add rows if required	
Choose Third Party Project Verification by approved GCC Verifiers[6] (Tick applicable verification categories)	☒ GHG emission reductions (i.e., Approved Carbon Credits **(ACCs)**) ☒ Environmental No-net-harm Label (**E+**) ☒ Social No-net-harm Label (**S+**) ☒ United Nations Sustainable Development Goals (**SDG+**) ☐ Bronze SDG Label ☐ Silver SDG Label ☐ Gold SDG Label ☐ Platinum SDG Label ☒ Diamond SDG Label ☒ CORSIA requirements (**C+**)		

[6] **Note:** GCC Verifiers under the Individual Track are not eligible to conduct verifications for GCC Project Activities whose owners intend to supply carbon credits (ACCs) for use within CORSIA.

	☐ Host Country Attestation on Double counting
Declaration by the 'Authorized Project Owner[7] and focal point' (Tick all applicable statements[8])	The Project Owner(s) declares that: **Generic Requirements applicable to all Project Types:** ☒ We confirm that the Project Activity complies with the eligibility of the applicable project type (A1, A2, A3, B1 or B2) as stipulated by the Project Standard and relevant clarifications. ☒ We confirm that the Project Activity shall start or have started operations, and shall start or have started generating emission reductions, on or after 1 January 2016. ☒ We confirm that the Project Activity is eligible to be registered under the GCC program. We shall ensure the following for the Project Activity (tick at least one of the two options): ☒ No outcomes (e.g., emission reductions, environmental attributes) generated by the Project Activity under GCC will be claimed as carbon credits or environmental attributes under any other GHG/non-GHG[9] program, either for compliance or voluntary purposes, during the entire GCC crediting period; or ☒ If the project activity has been issued with carbon credits or environmental attributes of compensating nature[10] by any other GHG/ non-GHG program, either for compliance or voluntary purposes, the ACCs will be claimed only for the remaining crediting period (subject to a maximum of 10 years of crediting period including the periods under other programs and GCC program) for which carbon credits/ environmental attributes of compensating nature have not been issued by any other GHG/ non-GHG program. **Specific requirements applicable to respective Project Types:** ***For Project Type A1:*** ☐ For Project Type A1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other

[7] The Project Owner means the legal entity or organization that has overall control and responsibility for the Project Activity

[8] **Consequences in case of Non-compliance with declaration statements:**
If at any point in time non-compliance with the declared statements is established as a result of negligence, fraud or wilful misconduct of the GCC Project Owner/s the GCC project activity will be disqualified, and the registration of the proposed Project Activity will be rejected.

[9] Non-GHG programs could be such as I-REC facilitating reliable energy claims with Renewable Energy Certificate (REC) schemes

10 The environmental attributes of compensating nature are those which are used by captive users (e.g., corporates/industries) for offsetting their GHG emissions

	voluntary program and has not issued or will not issue credits under any other program. ***For Project Type A2 (Sub-Type 1):*** ☒ For Project Type A2 Sub-Type 1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program. ***For Project Type A2 (Sub-Type 2 or Sub-Type 3):*** For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options): ☐ Submit a proof for deregistration from CDM; or ☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program. ☐ For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that the Project Activity is NOT included as a component Project Activity (CPA) in any registered GHG Programme of Activities (PoA) or any other functionally equivalent grouped/aggregated activities under any GHG program (such as the CDM or any other voluntary program). ***For Project Type A2 (Sub-Type 4):*** For Project Type A2 Sub-Type 4, we confirm that the Project Activity has been included in a registered CDM-POA and we shall (tick at least one of the two options): ☐ Submit the proof for exclusion of CPA(s) from registered CDM-POA prior to the date of initial submission to the GCC Program; or ☐ Submit the proof of exclusion of CPA(s) from the registered CDM-PoA after the request for registration has been submitted to GCC Program but before the final decision is made by the GCC Steering Committee. ***For Project Type A3:*** ☐ For Project Type A3, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program. ***For Project Type B1 or B2:***

	For Project Type B1 or Project Type B2, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options): ☐ Submit a proof for deregistration from CDM; or ☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program. **Requirements to avoid double counting:** We intend to submit or have submitted a written attestation[11] (Host Country Letter of Authorization - HCLOA) from the host country's national focal point or focal point designee for CORSIA eligible units generated beyond 31 December 2020 at the following stages[12] (tick at least one of the three options): ☐ The initial submission for GSC; or ☐ Along with the submission for a request for registration (after Project Verification is completed); or ☒ Along with the submission for a request for the first or subsequent issuance of ACCs. **Project specific requirements:** ***CORSIA specific requirements:*** ☒ We confirm that bundled projects or grouped projects shall have registered crediting period starting on or after 1 Jan 2016 for the grouped/aggregated project as a whole. ☒ We confirm that the Project Activity meets all the requirement of the CORSIA Eligible Emissions Units[13] required for GCC projects and does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes. ☒ We confirm that the Project Activity aims to achieve at least Silver or higher SDG+ label (i.e., positively impact at least 3 or more United Nations Sustainability Development Goals). ☒ We confirm that the Project Activity will be implemented in a country which is UN member state[14].

11 In case of any change of Host Country Letter of Authorisation (HCLOA) the project owner shall inform the GCC operations team immediately

12 If the host country attestation is not submitted at the initial submission of GSC, the project can be tagged with an indicative CORSIA flag if it's confirmed to be submitted later. If the host country attestation is not submitted at the request for registration, the project can be tagged with an indicative CORSIA flag if at least the PSF and Verification Report confirms to submit this letter, at first issuance. If the host country attestation is not submitted at request for first issuance, the ACCs will not be tagged as CORSIA (C+) compliant if this letter is not submitted.

13 CORSIA Eligible Emissions Units containing approval and conditions for GCC Program: https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Emissions-Units.aspx

14 The list of UN member states countries can be found at https://www.un.org/en/about-us/member-states

	Provide details (if any) below for the boxes ticked above:
	The Project Owner(s) declares that: ☒ All the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct. ☒ They understand that a failure by them to provide accurate information or data, or concealing facts and information, can be considered as negligence, fraud or willful misconduct. Therefore, they are aware that they are fully responsible for any liability that arises as a result of such actions. Provide details below for the boxes ticked above
Appendixes 1-9	Details about the Project Activity are provided in Appendixes 1 through 9 to this document.
Name, designation, date and signature of the Focal point (as per LON/LOA)	Mr. Aditya Malpani AMP Energy Markets India Pvt. Ltd. Designation: Director (Amp Energy Markets India Private Limited)
	Signature Date: 21/12/2022

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

A.1. Purpose and general description of the Project Activity

The project involves installation of 33.125 MW_{AC} (50 MWp) grid connected solar photovoltaic based power plant by AMP Energy India Private limited in Kasari village, Solapur district and Dahiwadi village, Osmanabad District of Maharashtra. The project aims to contribute to reducing national energy deficit and development of local industries as it allows the use of cheaper energy for industrialists and gain advantage in a competitive environment. The onsite solar radiation has been observed to be most favorable for the project. The project is expected to generate approx. 68,136 MWh[15] of electricity annually. The project is implemented in four different project companies with the following details.

S.I No.	Project Company	Capacity (MW_{AC})	Location	CoD[16]
1	AMP Energy Green Eleven Pvt. Ltd	10	Village: Kasari, Taluka: Barshi, District: Solapur, State: Maharashtra, India	31/03/2022
2	AMP Energy Green Twelve Pvt. Ltd	10		31/03/2022
3	AMP Energy Green Fifteen Pvt. Ltd	10		31/03/2022
4	AMP Energy C&I one Private Limited	3.125	Village: Dhaiwadi, Taluka: Tuljapur, District: Osmanabad, State: Maharashtra	16/11/2022
Total Capacity		**33.125**		

The crediting period chosen for the project is taken from 31/03/2022 to 30/03/2021. The annual estimated emission reductions from this project activity is 68,136 tCO2e/annum[17]. Total number of emission reduction estimated to be generated throughout the 10 years crediting period is 681,360 tCO_2e.

The Project contributions to the sustainable development of the local area as well as the host country are as follows:

Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, has stipulated the following indicators for sustainable development in the interim approval guidelines for CDM projects.

1. Social well-being;
2. Economic well-being;
3. Environmental well-being; and

[15] Average for entire 10 years of crediting period
[16] Date of commissioning
[17] Average for entire 10 years of crediting period

4. Technological well-being

1. Social well-being

The Project Activity will result in creating job opportunities for the local population on temporary and permanent basis. Manpower is required both during erection and operation of the renewable energy projects. This would result in the improvement in living standards of the local community. The installation of the renewable energy projects also led to development of basic infrastructure like roads, communication with the nearby cities etc. which also improved in living standards of the local population.

2. Economic well-being

The Project Activity will create direct and indirect job opportunities to the local community during installation and operation of the renewable energy projects. The investment for the Project Activity would lead to the improvement in the economic activity in the local area.

3. Environmental well-being

The Project Activity utilizes renewable energy for generating electricity which otherwise would have been generated through alternate fuel (most likely - fossil fuel) based power plants, contributing to reduction in specific emissions (emissions of pollutant/unit of energy generated) including GHG emissions. As renewable energy projects produce no end products in the form of solid waste (ash etc.), they address the problem of solid waste disposal encountered by most other sources of power. Being a renewable resource, to generate electricity contributes to resource conservation. Thus, the Project Activity causes no negative impact on the surrounding environment.

4. Technological well-being:

Clean technology transfer in renewable energy generation and optimal use of renewable energy in the industry.

A.2. Location of the Project Activity

Three units(30 MWac) of the project are situated at the same location, at a common solar park and remaining 3.125 MWac is located in another location. The details of the project locations are mentioned in the table below:

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	**Latitude***	**Longitude***
Village: Kasari, Taluka: Barshi District: Solapur, State: Maharashtra, India	17° 58' 51.1212" (17.980867)	75° 58' 46.3584" (75.979544)
Village: Dahiwadi, Taluka: Taljapur, District: Osmanabad, State: Maharashtra	17° 58' 17.364"(17.971490)N	75° 58' 12.9612"(75.970267)E

The project is located in Kasari village in Barshi Taluka in Solapur district and Dahiwadi village in Taljapur Taluka in Osmanabad District of Maharashtra state, India. It belongs to Desh or Paschim Maharashtra region . It belongs to Pune Division. Kasari is located 50 KM towards North from District headquarters Solapur. 35 KM from Barshi. 406 KM from State capital Mumbai. Dahiwadi is located 50 KM from Solapur and 35 KM from Osmanabad Railway Station. The map of project location is given in Annexure 01 of PSF.

A.3. Technologies/measures

Grid connected solar power plant comprises of the main equipment and components listed below:

- Solar PV Modules
- Central inverters
- Module Mounting system
- Grid connect equipment
- Monitoring system
- SCADA
- Cables & connectors

A. Solar PV Modules

A photovoltaic module is a packaged interconnected assembly of photovoltaic cells, which converts sunlight into energy. For this project, mono crystalline silicon PV technology solar module of 445 Wp has been considered.

B. Inverter

Inverters are used for DC voltage to AC voltage conversion. According to output voltage form they could be rectangle, trapezoid or sine shaped. The most expensive, yet at the same time the best quality inverters have output voltage in sine wave. Inverters connecting a PV system and the public grid are purposefully designed, allowing energy transfers to and from the public grid. Central inverters are used in large applications. Many times, they can be connected according to the "master-slave" criteria, when the succeeding inverter switches on only when enough solar radiation is available or in case of main inverter malfunction. Inverters connected to module strings are used in wide power range applications allowing for more reliable operation.

In the proposed project, the inverters will connect string of modules (each module of 445 Wp) approx. The output of the strings will be connected to central solar inverters. The inverter converts the DC Power into AC power and feeds it to the grid. The inverters are designed with a high efficiency >98% with IGBT technology. It has a provision to deliver the maximum power generated through solar modules in to grid due to its in-built feature of MPPT operations. The inverter is having internal self-protection in case of any fault in the grid in addition to the inbuilt contactors/breakers with fuses for self-protections.

C. String Combiner Box

Dust, water and vermin proof string combiner boxes of adequate rating and adequate terminal

facility made of Fire-Resistant Plastic (FRP) shall be provided for wiring. Each box shall be provided with fuses and surge arrestors of adequate rating to protect the solar arrays from accidental short circuit.

D. Module Mounting Structure (MMS)

Solar PV modules are mounted on the structure, generally casted of galvanized steel. Designing of mounting structure is majorly dependent on two factors namely orientation scheme and wind load. Second important consideration in the design of mounting structure is the nature of wind loads in the proposed location, taking into knowledge any seasonal /local winds that may exert additional load. This is done through STAAD Pro analysis or Field flow analysis. In general, “galvanized steel” is used to make the structures. The mounting structures are designed as per the soil and wind conditions at the site. However, the typical practice is to design mounting structure to withstand a wind load of 160-170 km/hr. The support structure design & foundation shall also be designed to withstand wind speed applicable for the site conditions.

E. Monitoring System

The monitoring system provides all technical information on daily solar radiation availability, hours of sunshine, duration of plant operation and the quantum of power fed to the grid. This helps in estimation of generation and number of other generation parameter of array capacity installed at the site. The system also enables diagnostic and monitoring functions for these components. Communication: Data modem (analogue/Ethernet), few features are presented as follows.

- Monitors the performance of the entire power plant (string wise monitoring, junction boxes, inverters, etc.)
- Evaluates (strings, inverter, nominal/actual value), quantity of DC Power & AC Power produced.
- Measures instantaneous irradiation level and temperature at site. It also measures the module back surface temperature.

F. Cables and Connectors

The size of the cables between array interconnections, array to junction boxes, junction boxes to PCU etc. are so selected to keep the voltage drop and losses to the minimum. These wires are insulated with a special grade PVC compound formulated. The skin coloration offers high insulation resistance and long life. Cable is of high temperature resistance and excellent weather proofing characteristics which provides a long service life to the cables used in large scale projects. The connectors/lugs of copper material with high current capacity and easy mode of assembly are used.

Below are the details of the major equipment used at the project site.

Project Developer	M/s AMP Energy Green Eleven Pvt. Ltd M/s AMP Energy Green Twelve Pvt. Ltd M/s AMP Energy Green	M/s AMP Energy Green C and IOne Pvt ltd

	Fifteen Pvt. Ltd	
Project Capacity	Capacity: 30 MWac	Capacity: 3.125 MWac
Proposed Site Location	Kasari, Solapur, Maharashtra	Dahiwadi, Osmanabad, Maharashtra
Annual degradation (%) after first year of operation	0.5% YoY	0.5% YoY
Solar PV Technology	Mono C-Si	Mono C-Si
Module Make	ReneSola Jiangsu Ltd	ReneSola Jiangsu Ltd
Capacity of each Module/ Model	445 Wp	445 Wp
No. of Modules	101136	11256
PV System Mounting Structure	Fixed Tilt	Fixed Tilt
Tilt angle	15°	13°
Inverters Make	SUNGROW	SUNGROW
Power Conditioning Unit (Inverters) Capacity/ Model	5 MVA	3.125 MVA
No. of Inverters	6 Nos.	1 Nos.
Available Land Area	~125 acres	~20 acres
Power Evacuation	132 kV at 220/132 kV Grid Substation Tuljapur, Latitude 18.01°N, Longitude 76.07° E Owned By MSETCL	132 kV at 220/132 kV Grid Substation Tuljapur, latitude 18.01°N, Longitude 76.07°E, Owned By MSETCL
Mode of Implementation	100% Captive	100% Captive
Project tenure	25 years	25 years
GSS performance	>99.5% Annual	>99.0% Annual

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[18], indicate if the host country has provided approval (Yes/No)
India	Amp Energy	Not Applicable

[18] For example, *Project Coordination Form* is to be filled-in by Project Owners for projects located in Qatar. A written attestation from the host country's national focal point or the focal point's designee, as required by CORSIA (Refer section A.5 of the PSF guidelines).

	Markets India Pvt Ltd	

A.5. Declaration of intended use of Approved Carbon Credits (ACCs) generated by the Project Activity

The Project Activity is expected to generate ACCs for a full 10-year crediting period and supply the credits to offset the following GHG emissions:

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
31/03/2022	30/03/2022	Amp Energy Markets India Pvt Ltd	68,136/annum (average for crediting period)

A.6. Additional requirements for CORSIA

Please see Section E and F.

Section B. Application of selected methodology(ies)

B.1. Reference to methodology(ies) and tools applied in the project

Title: Grid-connected electricity generation from renewable sources
Reference: ACM0002 Version 21[19]
Tools applied for this Project activity are:

- TOOL01: Methodological Tool: Tool for the demonstration and assessment of additionality- Version 07.0.0, EB 70, Annex 8[20]
- TOOL 07: Tool to calculate the emission factor for an electricity system - Version 7.0[21]
- TOOL 24, "Common Practice" - Version 03.1[22]
- TOOL27: Investment analysis – Version 11.0[23]

B.2. Applicability of methodology(ies) and tools applied in the project

The project activity meets the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 21.0, as described below:

[19] https://cdm.unfccc.int/methodologies/DB/HF3LP6O41YY0JIP1DK6ZRJO9RSCX3S
[20] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[21] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[22] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf
[23] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v11.0.pdf

Applicability Criterion	Project Case
1. This methodology applies to grid-connected renewable energy generation project activities that include: (a) Construction and operation of a Greenfield power plant; or (b) Retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant.	The project activity is a greenfield solar power plant.
2. Further, the methodology applies to grid-connected renewable energy generation project activities which integrate Battery Energy Storage System (BESS) to a Greenfield power plant or to an existing solar photovoltaic or wind power plant.	The project does not involve battery Energy Storage System (BESS), so this condition is not applicable for the project.
3. This methodology is applicable to grid- connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s)	The project activity is a Renewable Energy Project i.e. Solar Power Project which falls under applicability criteria option 1 (a) i.e., “Install a Greenfield power plant”. Hence the project activity meets the given applicability criterion.
4. In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Integrate BESS with a Greenfield power plant; (b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic1 or wind power plant(s)/unit(s); (c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s).	The project activity is a greenfield solar energy project and hence applicable as per Table 2.

Renewable Energy Technology / Mode of installation of BESS	**Solar photovoltaic or wind**	**Other renewable technologies**
BESS + (a) Greenfield plant(s)	Eligible	Eligbile
BESS+ capacity addition to existing plant(s)	Eligible	Not eligible
BESS with no other changes to the existing plant(s)	Eligible	Not eligible
BESS + retrofit to existing plant(s)	Eligible	Not eligible

5. The methodology is applicable under the following conditions: (a) Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity; (c) In case of Greenfield project activities applicable under paragraph 5 (a) above, the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g. by referring to feasibility studies or investment decision documents);	The project is a greenfield solar power generation project and does not involve BESS and hence the criteria is not applicable. .

(d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies24 may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section **Error! Reference source not found.**. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant	
6. In case of hydro power plants, one of the following conditions shall apply:[25] (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2 shall be: a) Lower than or equal to 15 MW; and	The project is installation of new solar power plant (not a hydro power plant). Hence this criterion is not applicable.

[24] For example, upon deep discharge of the batteries.

[25] Project participants wishing to undertake a hydroelectric project activity that result in a new reservoir or an increase in the volume of an existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.

b) Less than 10 per cent of the total installed capacity of integrated hydro power project.	
7. In the case of integrated hydro power projects, project participant shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under VCS project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of VCS project activity.	The project is solar energy project and thus the criterion is not applicable to this project activity.
8. The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units.	The project activity is Greenfield and there is no switching of fossil fuel to renewable energy. Hence the criteria is not applicable to the project activity The project is not a biomass fired power plant. Hence the criteria is not applicable to the project activity.
9. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.	Not applicable, the solar energy project is a Green field project activity and this project is not the enhancement or up gradation project.

Applicability conditions of "Tool to calculate the emission factor for an electricity system"

This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	This condition is applicable. OM, BM and CM are estimated using the tool under section B.6.1 for calculating baseline emissions.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.
Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	The project activity is a grid connected solar power project and not a hydro power plant. Therefore, this criterion is not applicable for the project activity.

In addition to the above applicability criteria, the project also meets the criteria of the flowing methodological tools;

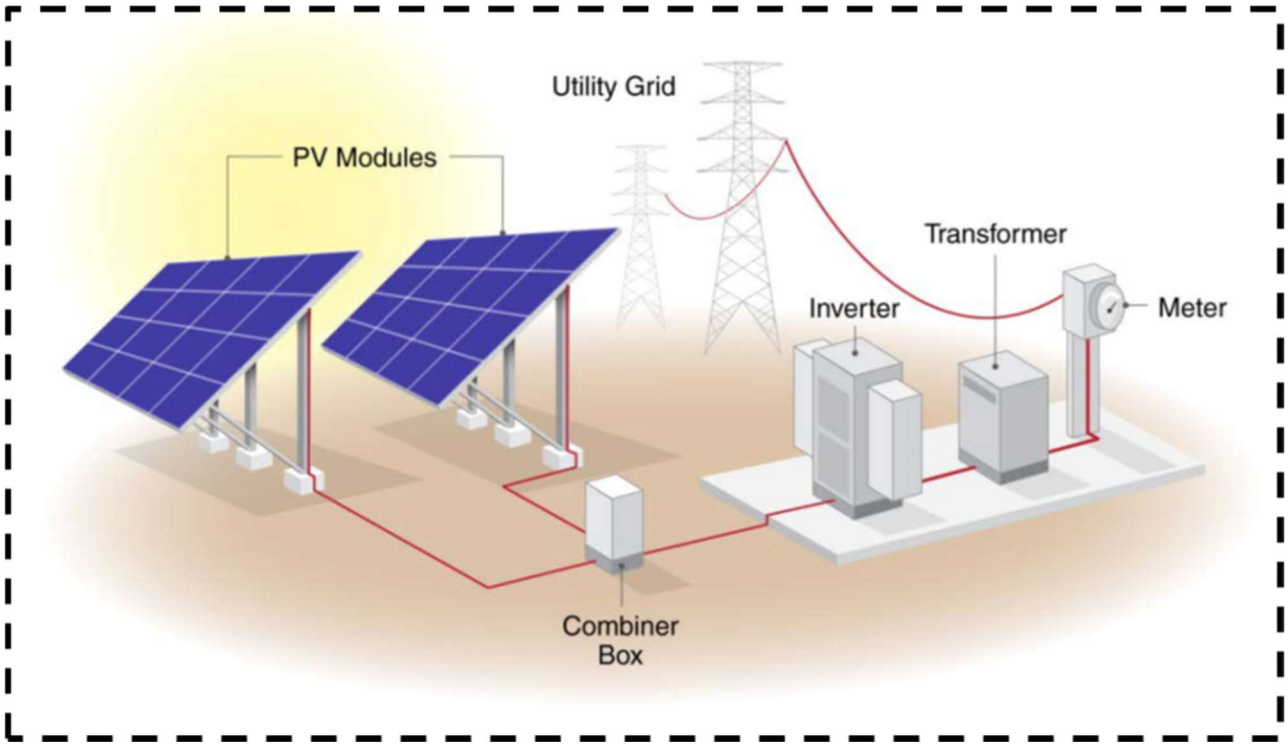
1. Compliance to applicability conditions of Methodological Tool, TOOL01: "Tool for the demonstration and assessment of additionality- Version 07.0.0, EB 70, Annex 8 is demonstrated in section B.5
2. Compliance to applicability conditions of Methodological Tool: TOOL 27: Investment analysis - Version 11.0 is demonstrated in section B.5 (step 2)
3. Compliance to applicability conditions of Methodological Tool: TOOL24: common practice - Version 3.1 is demonstrated in section B.5 (step 4)

B.3. Project boundary, sources and greenhouse gases (GHGs)

The table below provides an overview of the emissions sources included or excluded from the project boundary for determination of baseline and project emissions.

	Source	GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project Activity	Wind energy projects under the Project activity	CO_2	No	As a zero-emission grid connected solar power project no emissions will result.
		CH_4	No	As a zero-emission grid connected solar power project no emissions will result.
		N_2O	No	As a zero-emission grid connected solar power project no emissions will result.

The pictorial depiction of the project boundary is given below:



B.4. Establishment and description of the baseline scenario

As per the approved consolidated methodology ACM0002,

If the project activity is the installation of a new grid-connected renewable power plant/unit with or without a BESS as described under paragraph 4(a) or paragraph 5(a) of the methodology, the baseline scenario is the following:
The project activity involves setting up of solar projects to harness the solar energy to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM), in accordance with the Tool to calculate the emission factor for an electricity system - Version 07 Calculations for this combined margin must be based on data from an official source (where available) and made publically available. In India, Central Electricity Authority (CEA), Government of India provides this data, and accordingly the same has been used.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid, CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM).

Calculations for this combined margin must be based on data from an official source (where available) and made publically available. The CEA database version 17 is the latest available data at the time of PSF submission to GCC verifier for project verification, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid, CM,y}$	0.9305 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.25) & build margin (0.75) values, sourced from Baseline CO_2 Emission Database, Version 17.0, October - 21 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9522tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system in year y	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 17.0, October -21 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$	0.8653 tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 17.0, October -21 published by Central Electricity Authority (CEA), Government of India

B.5. Demonstration of additionality

The additionality of a GCC Project shall be demonstrated by applying the following approach, consisting of two components:

(i) A Legal Requirement Test; and

(ii) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

(a) *Legal Requirement Test*

The project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally-binding mandates requiring its implementation. Since voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement, the outcome of the legal requirement test is concluded as positive.

(b) *Additionality Test*

Additionality Assessment

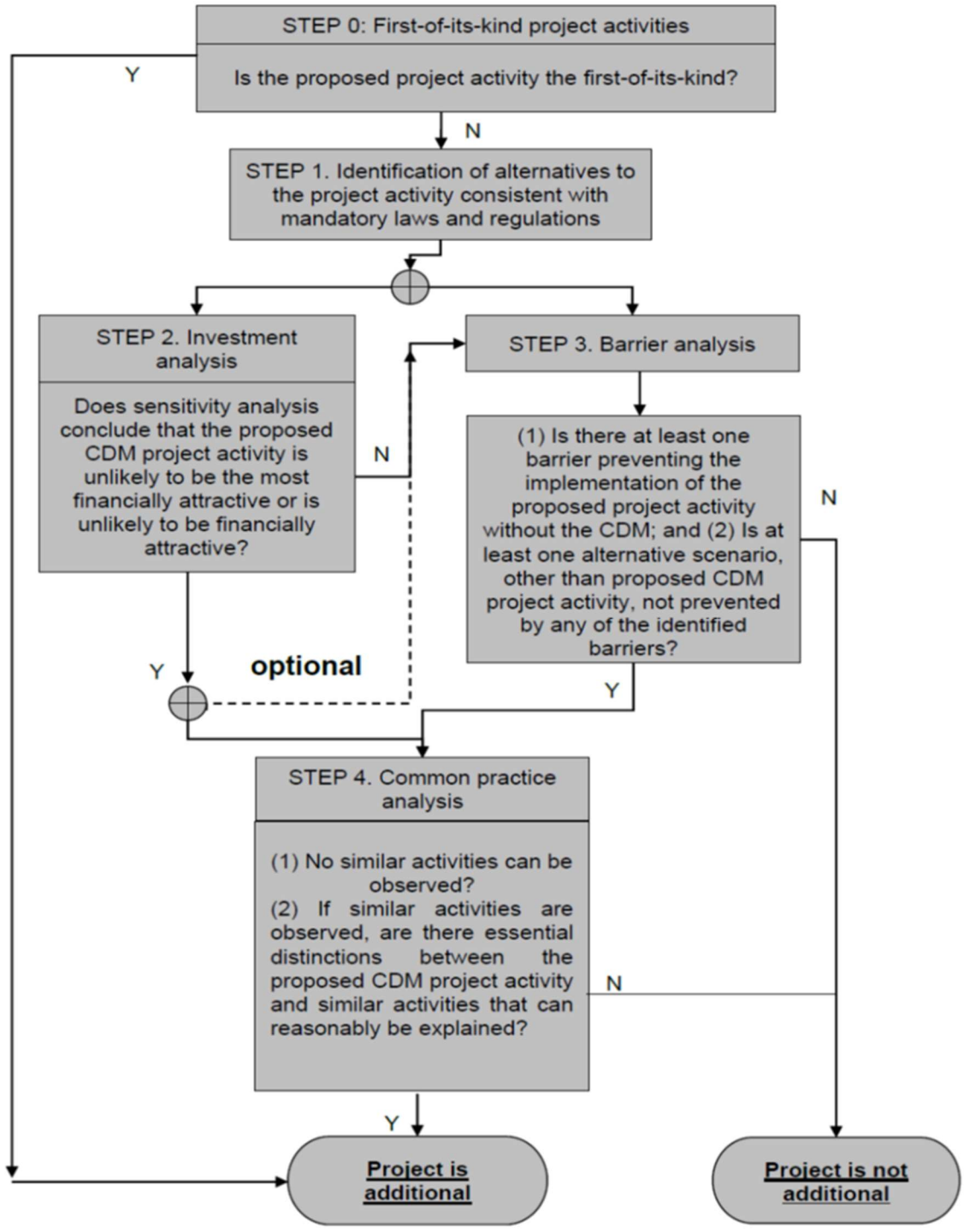
Demonstration as per GCC Clarification No. 01, V1.1 – 2022:

The proposed project is a single project comprising of 4 units developed by a single parent company, AMP Energy India Private limited located in the state of Maharashtra. The investment decision for the project activities were taken together on 26/08/2021. All the four units use the same technology (solar photovoltaic), located in the same state solar park in Solapur district and Osmanabad district of Maharashtra, using the same methodology, ACM 0002, version 21, apply common additionality approach with the same input parameters (as demonstrated below). Therefore, this is considered as a single project GCC clarification No. 01. V1.1-2022.

The project generates power using solar energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 21).

Thus, the project follows section 5.3.2 of the applied methodology which requires the project proponent to determine the additionality based on “Tool for the demonstration and assessment of additionality”, Version 07.0.0.

The step-wise approach to establish additionality of the project activity has been followed, details of which are provided in the following paragraphs:



Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

The proposed project activity is solar project; hence not the first of its kind. Hence, this step is not applicable.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

As per the applied methodology ACM0002 version 21; Para 24, "If the project activity is the installation of a Greenfield power plant with or without a BESS as described under paragraph 4(a) or paragraph 5(a), the baseline scenario is electricity delivered to the grid by the project activity that 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 TOOL07.".

As the baseline scenario is prescribed by applied methodology, hence no further analysis is carried out to identify alternatives.

Step 2: Investment Analysis

As per para 29 of "Tool for the demonstration and assessment of additionality" v7.0.0, it is determined that the proposed project activity is not an economically or financially feasible option. To conduct the investment analysis, Methodological tool: Investment analysis, version 10.0 (EB 105 annex 06) has been referred.

Sub-step 2a: Determine appropriate analysis method

As per "Tool for the demonstration and assessment of additionality" (version 07.0.0), for financial analysis of the project, the following three options are available:

Option I: Simple Cost Analysis
Option II: Investment Comparison Analysis
Option III: Benchmark Analysis

The project will generate revenues from sale of electricity; therefore, Option I is not applicable. Option II also does not apply since there is no comparable investment alternative available to the project participant in line with para 32 of the Methodological tool: "Tool for the demonstration and assessment of additionality" (version 07.0.0)

The most appropriate financial analysis method is therefore option III: the benchmark analysis, where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country.

Sub-step 2b: Option III. Apply benchmark analysis

Project owner has considered Post-Tax Equity IRR for investment analysis at the time of decision-making. As Project proponent is only interested in the returns project is generating on the portion of investment costs, which is financed by them in the form of equity. As per Para 15 of TOOL 27: Investment analysis, Version 11.0 states that Required/expected returns on equity are appropriate benchmarks for an equity IRR. Therefore, the Expected return on equity is considered appropriate benchmark. Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for **Investment Analysis.**

The purpose of investment analysis is to determine whether the project activity is economically or

financially less attractive than other alternatives without additional funding that may be derived from the sale of carbon credits. The investment analysis was conducted in accordance with guidelines on investment analysis.

Suitability of Benchmark:

As per TOOL27: Investment analysis, Version 11.0, EB 112, Annex 2 "In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented."

Accordingly, the project owner has selected required/expected returns on equity as the appropriate benchmark for the project.

The default value of cost of equity as per the latest version of TOOL27: Investment analysis, Version 10.0, EB 105, Annex 6[26] available at the time of investment decision has been considered and the costs of equity of group 1 (including energy industries) applicable for India which is 10.24. This cost of equity is expressed in real terms and therefore needs to be adjusted to represent the nominal terms as does the financial indicator. This is done by adjusting for the average forecasting inflation rate at the time of the investment decision. As per paragraph 16 of the Tool 27: Investment analysis, Version 11.0, EB 112, Annex 2, the inflation forecast should be for the duration of the crediting period. However, since RBI provides forecast inflation only for 5 & 10 years, the project investor has calculated benchmark using 10 years durations and the same is considered as Benchmark for the project activity.

The benchmark has been computed in the following manner:

Nominal Benchmark[27] = {(1+Real Benchmark) * (1+Inflation rate)} - 1

where,

Real Benchmark = Default Value, i.e., 10.24%

Inflation rate = Projected Inflation Rate for India, i.e., 4.50[28]

The latest Results of the Survey of Professional Forecasters on Macroeconomic Indicators – Round 51 published by Reserve Bank of India on 5th April 2018 has been referred for the projected inflation rate of India.

The nominal benchmark has been calculated as = {(1+10.24) * (1+4.50)} – 1 = **15.20%**

[26] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf
[27] As per Fisher Equation, https://en.wikipedia.org/wiki/Fisher_equation
[28] https://rbi.org.in/Scripts/PublicationsView.aspx?id=18113

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

Details of the project		Source
Project Location	Kasari, Solapur, Maharashtra	
Total Capacity (MWp)	50.00	DPR
Expected Date of Commissioning	31-03-2022	DPR
Life of the plant (Yrs.)	25	DPR
Generation of electricity		
PLF (%)	17.10%	DPR
Annual generation (kWh)	7,49,11,140	Calculated Value
Annual Degradation per year from 2nd Yr onwards	0.50%	DPR
Tariff rate at the decision making (INR/kWh)	3.70	DPR
Operation and maintenance cost and Insurance		
O & M Expenses (INR Mn.)	25.08	DPR
O & M free for (Yr.)	-	
Escalation in the operational expenses (%)	5.00%	DPR
Management Fee	5.90	DPR
Escalation (%)	0.00%	DPR
Admin Fee (₹ mn)	2.00	DPR
Escalation (%)	5.72%	DPR
Salary (₹ mn)	0.75	DPR
Escalation (%)	5.72%	DPR
Lenders maintainance (₹ mn)	1.20	DPR
Escalation (%)	5.72%	DPR
Insurance (₹ mn)	2.95	DPR
Escalation (%)	0.00%	DPR
DSM - Penalty (~0.5% of revenue) (₹ mn)	1.39	DPR
Financial parameters		
TOTAL COST (INR Mn.)	2,140.00	DPR
Loan Amount (INR Mn.)	1,498.00	DPR
Equity Investment (INR Mn.)	642.00	Calculated Amount
Term loan		
Loan Amount (INR Mn.)	1,498.00	70:30 ratio as per DPR
Interest rate (%)	10.00%	DPR
Loan Tenure (Qtr.)	68.00	DPR
Moratorium Period (Qtr.)	4.00	DPR
Repayment Period (Qtr.)	64.00	Calculated Value
Repayment instalments value (INR Mn.)	23.41	Calculated Value

Details of the project		Source
1st instalment from (Qtr. end)	31-Mar-23	Considered from the next Quarter End
Book Depreciation (SLM Method)		
Gross Depreciable Value (INR Mn.)	2,140.00	Calculated Value
Salvage Value (%)	10.00%	DPR
Salvage value (INR Mn.)	214.00	Calculated Value
Net Depreciable Value (INR Mn.)	1,926.00	Calculated Value
Residual Value (INR Mn.)	214.00	Calculated Value
IT Depreciation		
IT Depreciation(%)	40.00%	IT act
Income Tax		
Financial Year	**FY 2021-22**	
Income tax rate (%)	15.00%	As Per Income Tax Rule
Corporate Tax / MAT (%)	0.00%	As Per IT rule
GST (%)	18.00%	As Per Income Tax Rule
Surcharge (%)	12.00%	As Per Income Tax Rule
Health & Education cess (%)	4.00%	As Per Income Tax Rule
Final Tax rates		
Income tax rate (%)	17.47%	Calculated Value
MAT (%)	0.00%	Calculated Value
GST (%)	18.00%	Calculated Value

Sub-step 2d: Sensitivity Analysis

In line with Guidance 27 & 28 of TOOL 27: Investment analysis, Version 11.0, following factors has been subjected to sensitivity analysis: 1. PLF 2. O&M Cost 3. Project Cost 4. Tariff

The rationale of sensitivity is, "The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis."

The results of sensitivity analysis are as follows:

Variation %	-10%	Normal	10%	Breaching Value
PLF	4.03%	6.96%	10.08%	25.19%
O&M	7.61%	6.96%	6.31%	-134.50%
Project Cost	9.73%	6.96%	4.87%	-23.55%
Tariff Rate	4.03%	6.96%	10.08%	25.91%

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost,

O&M cost, PLF and Tariff Rate, Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favorable conditions.

Parameters	Probability to breach the benchmark
PLF	A variation of PLF of 25.191 % to breach the benchmark corresponds to the PLF values of 22.41 against the assumed value of 17.10%. To achieve this PLF on a sustained basis for the entire lifetime of the project is improbable.
O&M	A reduction of more than 100% in the O&M cost to breach the benchmark is impossible.
Project Cost	The project is already commissioned and the actual project cost has been found to be higher than what has been assumed for the investment analysis. Hence, any further reduction in project cost is impossible.
Tariff Rate	Long term PPAs for the project are already executed and the tariff as per the executed PPAs are within the range which is considered for equity IRR calculation. Hence, any upward variation in tariff rate is impossible.

Outcome of Step 2:

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark Equity IRR). Thus, it can be easily concluded that project activity is additional & is not business as usual scenario.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice analysis

Stepwise approach for common practice analysis has been carried out as per Methodological tool, TOOL 24: “Common Practice”, version 03.1 EB84, Annex 7:

Step (1): calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity. For selecting the capacity of the project for common practice analysis, the AC capacity of the project, 33.125 MW is chosen as the information of the commissioned project are available on AC capacity in public domain.

Range	*Capacity (MW)*
+50%	*49.50*
Capacity of the proposed project activity	*33.125 (assumed 33)*
-50%	*16.50*

Step (2): identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

a) The projects are located in the applicable geographical area;
b) The projects apply the same measure as the proposed project activity;
c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
d) The plants in which the projects are implemented produce goods or services with comparable

quality, properties and applications areas (e.g. clinker) as the proposed project plant;
e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;
f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects[29] (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

a) As the project is located in Maharashtra state of India, therefore, the applicable geographical area of Maharashtra has been chosen for analysis.
b) The project activity is a green-field solar power project and uses measure (c) "Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies". Therefore, all projects applying same measure (b) as the proposed project activity are candidates for similar projects.
c) The energy source used by the project activity is solar. Hence, only solar energy projects have been considered for analysis.
d) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
e) The capacity range of the projects is within the applicable capacity range from 40 MW to 120 MW.
f) The start date of the project activity is 09/09/2021. As Kyoto Protocol was ratified by India on 26/08/2002[30] , therefore projects which had started commercial operation between 26/08/2002 to 09/09/2021, have been identified.

There are 17 numbers of projects identified in the capacity range in the state Maharashtra fulfilling the above set of conditions.

Thus, numbers of Similar projects identified, which fulfil above-mentioned conditioned are N_{solar} = 14[31]

Step (3): within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number, N_{all}.

Though out of the identified 8 nos. of projects, there might be some projects registered under various carbon standards, the project owner has considered the number of such projects as zero which is conservative from the view point of demonstration of common practice and hence should be acceptable.

Hence, N_{all} = 14

Step (4): within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff}.

[29] List of plant wise details of all India Renewable Energy Projects Published by Central Electricity Authority
[30] http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php
[31] The details list shall be provided to the verification at the time of verification of the project.

All the identified projects have been found to be commissioned on the arrangement of sell of 100% of the generated power to distribution companies (DISCOMs) under various promotional policies of the state and central government[32] whereas the candidate project sells the generated power through third party power selling mechanism. The DISCOMs are the public sector enterprises and selling power to them through long term power purchase agreements (PPAs) are risk free business proposition in contrast to third party power sell where the PPAs are executed with the with private consumers who runs the business bearing some inherent risks of business disruptions due to various external and internal factors. These factors may include economic slowdown, bankruptcy, workers strike, raw material shortage and act of God events. Therefore, all the 8 nos. of projects identified are of different technologies when compared with the candidate project in line with para 12 of methodological tool: Common Practice, Version 03.1.

Hence, $N_{diff} = 14$

Step (5): calculate factor F=1-Ndiff/Nall representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity

Calculate $F = 1-N_{diff}/N_{all} = 1-(14/14) = 0$
$N_{all} - N_{diff} = 14 - 14 = 0$

Outcome of Step 5:

F = 0, smaller than 0.20 and
$N_{all}-N_{diff} = 0$; is less than 3, thus:

As the project activity does not satisfy condition (i) and (ii) both, the proposed project activity is not a "common practice" within a sector in the applicable geographical area.

The above discussions show that solar power development is not a common practice and the project activity is not financially attractive; hence the project activity is additional.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

According to the approved baseline methodology ACM0002, version 21.0

Baseline Emission:

As per para 47, of the methodology "*Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants*". The baseline emissions are to be calculated as follows:

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

Where,

BE_y	=	Baseline emissions in the year y ;(tCO_2/year)
$EG_{PJ,y}$	=	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 the 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 the project is Greenfield activity and in line with para 49 of the applied methodology i.e., ACM0002, version 21.0:

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

Where,

$EG_{PJ,y}$ = 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)

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

As per methodology, 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", Version 7.0.

CO_2 Baseline Database for the Indian Power Sector, Version 17, October 2021[33], published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 7.0, EB 100, Annex 4), following six steps have been followed:

(a) **Step 1:** Identify the relevant electricity systems;
(b) **Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);
(c) **Step 3:** Select a method to determine the operating margin (OM);
(d) **Step 4:** Calculate the operating margin emission factor according to the selected method;
(e) **Step 5:** Calculate the build margin (BM) emission factor;
(f) **Step 6:** Calculate the combined margin (CM) emission factor.

Step 1: Identify the relevant electricity systems

As described in tool "For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems". It also states that "If the DNA

[33] https://cea.nic.in/wp-content/uploads/tpe cc/2022/02/User Guide ver 17 2021.pdf

of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used". Keeping this into consideration, the Central Electricity Authority (CEA), Government of India have Indian grid.

However, since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO_2 Baseline Database. As of 31 December 2013, the Southern grid has also been synchronized with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar& Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	**Maharashtra**	Nagaland	Puducherry
Rajasthan		Goa	Tripura	Lakshadweep
Uttar Pradesh				
Uttarakhand				

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

GCC project owner may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.
GCC project owner has chosen only grid power plants in the calculation.

Step 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step 4:

(a) Simple OM; or
(b) Simple adjusted OM; or
(c) Dispatch data analysis OM; or
(d) Average OM.

The data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/ must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, solar, low-cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
India	15.1%	14.6%	14.3%	14.5%	17.0%	16.5%

Data Source: Central Electricity Authority (CEA) database Version 17, October 2021[34]

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50 % of the total generation. Thus, the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

(a) **Ex-ante option:** if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

OR

(b) **Ex-post option:** if the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

Project Owner has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PD to the GCC Verifier for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

[34] https://cea.nic.in/cdm-co2-baseline-database/?lang=en#unfl

Step 4: Calculate the operating margin emission factor ($EF_{grid,OMSimple,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (GWh) (incl. Imports)				
	2017-18	**2018-19**	**2019-20**	**2020-21**
INDIAN Grid	9,60,693	9,95,957	9,65,009	9,58,218

Simple Operating Margin (tCO_2/MWh) (incl. Imports)				
	2017-18	**2018-19**	**2019-20**	**2020-21**
INDIAN Grid	0.9543	0.9603	0.9555	0.9405

Weighted Generation Operating Margin	
INDIAN Grid	**0.9522**

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 7.0, EB 100, Annex 4) para 72:

In terms of vintage of data, GCC project owner can choose between one of the following two options:

(a) **Option 1 -** for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of PD submission to the GCC Verifier for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the GCC Verifier. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) **Option 2 -** For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen by Project Owner to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period.

Option 1 as described above is chosen by Project Owner to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PSF and is fixed for the entire crediting period.

Build Margin (tCO_2/MWh) (not adjusted for imports)	
	2020-21
INDIAN Grid	**0.8653**

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 7.0, EB 100, Annex 4) para 81:

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

(a) Weighted average CM; or
(b) Simplified CM.

Project Owner has chosen option (a) i.e., weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$$

Where:
$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (t CO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y (t CO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (per cent)
W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM}:

For solar project activities: W_{OM} = 0.25 and W_{BM} = 0.75 (owing to their intermittent and non-dispatchable nature) for the second crediting period and for subsequent crediting periods. Since project activity is of power generation by using solar, the above weightage has been considered for OM and BM.

Therefore, $EF_{grid,CM,y}$ = 0.8653 * 0.25 + 0.9522 * 0.75
= 0.9305 tCO_2/MWh

Baseline emission factor (EF_y):
The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

Therefore, $EF_y = EF_{grid,CM,y}$ = 0.9305 tCO_2/MWh.

Project Emission
As per para 35 of ACM0002, version 21.0, Project Emission for most renewable energy power generation project activities, PEy = 0. However, some project activities may involve project emissions

that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

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

Where

PE_y	= Project emissions in year y (tCO_{2e}/yr)
$PE_{FF,y}$	= Project emissions from fossil fuel consumption in year y (tCO_2/yr)
$PE_{GP,y}$	= Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO_{2e}/yr)
$PE_{HP,y}$	= Project emissions from water reservoirs of hydro power plants in year y (tCO_{2e}/yr).
$PE_{BESS,y}$	= Project emissions from charging of a BESS using electricity from the grid or from fossil fuel electricity generators (t CO_2e/yr)

The project activity involves the generation of electricity from the installation of solar projects. Hence, as per ACM0002, Version 21.0, there is no project emission for solar projects. Therefore, project emissions are zero.

Leakage Emissions

No leakage emissions are considered in the project activity in line with para 61 of the applied methodology. 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, and transport). Since the emissions sources are small, it is neglected.

Hence, $LE_y = 0$

Emission reduction (ER_y): The project activity mainly reduces carbon dioxide through substitution of grid electricity generation with fossil fuel fired power plant by renewable electricity. The emission reduction ER_y by the project activity during a given year y is the difference between Baseline emission and Project emission & Leakage emission.

Thus, as per equation 17 (para 62) of ACM0002, version 21

$ER_y = BE_y – PE_y$

Where,

ER_y	= Emission Reduction in year (tCO_{2e}/year)
BE_y	= Baseline emissions in year (tCO_{2e}/year)
PE_y	= Project emissions in year (tCO_{2e}/year)

B.6.2. Data and parameters fixed *ex ante*

Data / Parameter Table 1.

Data / Parameter:	**$EF_{grid,OM,y}$**
Methodology reference	ACM 0002 (Version 21.0)
Data unit	tCO_2e/MWh
Description	Operating Margin CO_2 emission factor in year y
Measured/calculated /default	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO_2 Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value(s) of monitored parameter	0.9522
Measurement/ Monitoring equipment (if applicable)	Not applicable
Calculation method (if applicable)	Not Applicable
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For the calculation of the Baseline Emission.
Additional comments	-

Data / Parameter:	**$EF_{grid, BM, y}$**
Methodology reference	ACM 0002 (Version 21.0)
Data unit	tCO_2e/MWh
Description	Build Margin CO_2 emission factor in year y
Measured/calculated /default	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO_2 Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value(s) of monitored parameter	0.8653

Measurement/ Monitoring equipment (if applicable)	Not applicable
Calculation method (if applicable)	Not Applicable
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For the calculation of the Baseline Emission.
Additional comments	-

Data / Parameter:	**$EF_{grid, CM, y}$**
Methodology reference	ACM 0002 (Version 21.0)
Data unit	tCO_2e/MWh
Description	Combined Margin CO_2 emission factor in year y
Measured/calculated /default	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO_2 Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value(s) of monitored parameter	0.9305
Measurement/ Monitoring equipment (if applicable)	Not applicable
Calculation method (if applicable)	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$= Build margin CO_2 emission factor in year *y* (tCO_2/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year *y* (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For the calculation of the Baseline Emission.
Additional comments	-

B.6.3. Ex-ante calculation of emission reductions

Ex-ante calculation of emission reductions is equal to ex-ante calculation of baseline emissions as project emissions and leakage are nil. The baseline emissions are to be calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$
$BE_y = 73,226$[35] MWh × $0.9305 tCO_2e/MWh$
$BE_y = 68,136\ tCO_2e$

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:
ER_y = Emission reductions in year y ($t\ CO_2e/yr$)

BE_y = Baseline emissions in year y ($t\ CO_2e/yr$)

PE_y = Project emissions in year y ($t\ CO_2/yr$)

Project emissions = 0

Leakage = 0

Hence,

$ER_y = BE_y$
$ER_y = 68,136\ tCO_2e$ (rounded down)

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions ($t\ CO_2e$)	Project emissions ($t\ CO_2e$)	Leakage ($t\ CO_2e$)	Emission reductions ($t\ CO_2e$)
Year 1	69,704	0	0	69,704
Year 2	69,356	0	0	69,356
Year 3	69,007	0	0	69,007
Year 4	68,659	0	0	68,659
Year 5	68,310	0	0	68,310
Year 6	67,962	0	0	67,962
Year 7	67,613	0	0	67,613
Year 8	67,265	0	0	67,265
Year 9	66,916	0	0	66,916
Year 10	66,568	0	0	66,568
Total	681,360	0	0	681,360

[35] Average for entire 10 years of crediting period

Total number of crediting years	10			
Annual average over the crediting period	68,136	0	0	68,136

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored *ex-post*

Data / Parameter Table 1.

Data / Parameter:	**$EG_{PJ, y}$**
Methodology reference	ACM 0002 (Version 21.0)
Data unit	MWh/y
Description	Quantity of net electricity supplied to the grid by Solar Plant in year y (MWh)
Measured/calculated /default	Measured
Data source	Monthly Joint Meter Readings taken at the project site
Value(s) of monitored parameter applied with basis	73,226 MWh (annual average for entire crediting period)
Measurement/ Monitoring equipment	

	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter(s)</td><td>Energy meter</td></tr><tr><td>Location of meter(s)</td><td>Interconnection point/ Substation</td></tr><tr><td>Accuracy of meter(s)</td><td>0.5s or better</td></tr><tr><td>Serial number of meter(s)</td><td>To be confirmed in the final version of PSF</td></tr><tr><td>Calibration frequency</td><td>As per Central Electricity Authority (Installation and Operation of Meters) (Amendment) Regulations, 2019[36], all Interface Meters shall be tested on-site using accredited test laboratory for routine accuracy testing at least once in five years and recalibrated if required.</td></tr><tr><td>Date of Calibration/ validity</td><td>To be confirmed in the final version of PSF</td></tr><tr><td>Reference No. of Calibration Certificates</td><td>To be confirmed in the final version of PSF</td></tr><tr><td>Calibration Status</td><td>To be confirmed in the final version of PSF</td></tr></table>
Frequency of Measuring/reading	Continuous measurement & monthly reading
Recording frequency	Monthly
Calculation method (if applicable)	The values of monthly net electricity supplied to the grid shall be sourced from the monthly Joint Meter Reading (JMR) reports of each of the three projects to be directly used for emission reduction calculation. The net electricity supplied to the grid in the JMR report is arrived at by deducting import from the export in a particular month.
QA/QC procedures	Net electricity supplied ($EG_{PJ,y}$) to the grid by the project activity will be cross checked with the monthly invoices submitted by the SAEL to Maharashtra State Power Generation Company
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter Table 2.

Data / Parameter:	**CO_2 emissions**
Methodology reference	-
Data unit	tCO_2
Description	-
Measured/calculated /default	Calculated
Data source	The value will be sourced from the monitoring report prepared during the time of issuance.

[36] https://cea.nic.in/old/reports/regulation/CEA_metering_regulation_amendment_2019.pdf

Value(s) of monitored parameter applied with basis	Not used for ex-ante calculations
Measurement/ Monitoring equipment	Not Applicable
Frequency of Measuring/reading	As and when ACC issuance is done.
Recording frequency	As and when ACC issuance is done.
Calculation method (if applicable)	Based on the calculation carried out in the monitoring report.
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

Data / Parameter Table 3.

Data / Parameter:	**Replacing fossil fuels with renewable sources of energy**
Methodology reference	-
Data unit	MWh/ year
Description	-
Measured/calculated /default	Measured
Data source	-
Value(s) of monitored parameter applied with basis	Not used for ex-ante calculations
Measurement/ Monitoring equipment	-
Frequency of Measuring/reading	Continuous measurement
Recording frequency	-
Calculation method (if applicable)	The electricity produced from the project is 100% clean and green which replaces equal quantity of fossil fuel dominated grid electricity. The quantity of electricity produced from the solar project will be monitored for this parameter.
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.

Additional comments	-

Data / Parameter Table 4.

Data / Parameter:	**Long-term jobs (> 1 year) created/ lost**
Methodology reference	-
Data unit	Number
Description	-
Measured/calculated /default	Measured
Data source	Payroll records of the project owner.
Value(s) of monitored parameter applied with basis	To be provided at the time of issuance.
Measurement/ Monitoring equipment	-
Frequency of Measuring/reading	Continuous
Recording frequency	Continuous Recording
Calculation method (if applicable)	Not applicable
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

Data / Parameter Table 5.

Data / Parameter:	**New short-term jobs (< 1 year) created/ lost**
Methodology reference	-
Data unit	Number
Description	-
Measured/calculated /default	Measured
Data source	Payroll records of the project owner.
Value(s) of monitored parameter applied with basis	To be provided at the time of issuance.

Measurement/ Monitoring equipment	-
Frequency of Measuring/reading	Continuous
Recording frequency	Continuous Recording
Calculation method (if applicable)	Not applicable
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

Data / Parameter Table 6.

Data / Parameter:	**Sources of income generation increased / reduced**
Methodology reference	-
Data unit	Indian Rupees
Description	-
Measured/calculated /default	Calculated
Data source	Annual Audited books of account of the project owner.
Value(s) of monitored parameter applied with basis	To be provided at the time of issuance.
Measurement/ Monitoring equipment	-
Frequency of Measuring/reading	Annually
Recording frequency	Annually
Calculation method (if applicable)	Not applicable
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

Data / Parameter Table 7.

Data / Parameter:	**Job related training imparted or not**
Methodology reference	-

Data unit	Indian Rupees (the training provided to be monitored from the amount of fund released and utilisation of the same)
Description	The project owner has allocated a special fund to develop skill development
Measured/calculated /default	-
Data source	Actual fund disbursed and utilization of the same is to be monitored from the annual books of account or any other authorized sources.
Value(s) of monitored parameter applied with basis	To be provided at the time of issuance.
Measurement/ Monitoring equipment	-
Frequency of Measuring/reading	Annually
Recording frequency	Annually
Calculation method (if applicable)	Not applicable
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

Data / Parameter Table 8.

Data / Parameter:	**Women empowerment**
Methodology reference	-
Data unit	Number of women provided with employment.
Description	The project owner shall ensure at least 1 woman is employed in its payment for this project activity
Measured/calculated /default	-
Data source	Payroll record of the project owner.
Value(s) of monitored parameter applied with basis	To be provided at the time of issuance.
Measurement/ Monitoring equipment	-
Frequency of Measuring/reading	Annually
Recording frequency	Annually

Calculation method (if applicable)	Not applicable
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

For Parameters to be monitored for E+/S+ assessments and SDG labels (positive impacts)

Data / Parameter:	**CO_2 emissions**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The49missiot will save equivalent amount of CO_2 emission as compared to the baseline scenario.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Tons of CO_{2e} saved</td></tr><tr><td>Frequency of monitoring</td><td>As and when ACC issuance is done.</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	The value will be sourced from the monitoring report prepared during the time of issuance.

Data / Parameter:	**E – Waste**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Apart from the solar panel modules, other electronic items such as inverters, cable etc. are expected to generate e-waste after their useful life.

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>E-Waste generated from the project and disposed.</td></tr><tr><td>Frequency of monitoring</td><td>Continuous (Recorded as and when there is any E-waste is generated from the project)</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>E-Waste (Management) Rules, 2016</td></tr><tr><td>QA/QC</td><td></td></tr></table>
Remarks	

Data / Parameter:	**Replacing fossil fuels with renewable sources of energy**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The50missiot activity involves generation of power using hydro energy resources which would have been otherwise generated from the fossil fuel dominant grid connected power plants in the absence of the project activity.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>MWh/ year</td></tr><tr><td>Frequency of monitoring</td><td>Continuous.</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	The electricity produced from the project is 100% clean and green which replaces equal quantity of fossil fuel dominated grid electricity. The quantity of electricity produced from the solar project will be monitored for this parameter.

Data / Parameter:	**Replacing fossil fuels with renewable sources of energy**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The50missiot activity involves generation of power using hydro energy resources which would have been otherwise generated from the fossil fuel dominant grid connected power plants in the absence of the project activity.

<table>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td>MWh/ year</td></tr>
<tr><td>Frequency of monitoring</td><td>Continuous.</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr>
<tr><td>QA/QC</td><td>-</td></tr>
</table>
</td></tr>
<tr><td>Remarks</td><td>The electricity produced from the project is 100% clean and green which replaces equal quantity of fossil fuel dominated grid electricity. The quantity of electricity produced from the hydro project will be monitored for this parameter.</td></tr>
</table>

<table>
<tr><td>Data / Parameter:</td><td>Long-term jobs (> 1 year) created/ lost</td></tr>
<tr><td>Purpose:</td><td>To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.</td></tr>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>The51missiot creates long-term job opportunities for the operational period.</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td>Number of employees appointed</td></tr>
<tr><td>Frequency of monitoring</td><td>Continuous monitoring</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr>
<tr><td>QA/QC</td><td>-</td></tr>
</table>
</td></tr>
<tr><td>Remarks</td><td>To be sourced from the payroll record of the project owner.</td></tr>
</table>

Data / Parameter:	**Employment discrimination**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The52missiotment is done on the basis of nature of job and skill required for the same irrespective of race, gender, ethnic and religion etc. The employees are hired purely on basis of their skill. Education and capability w.r.t the job requirement and it is irrespective of their identity.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Number of employees appointed</td></tr><tr><td>Frequency of monitoring</td><td>Continuous monitoring</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>Labour Laws In India</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	The employee payroll record shall be checked to confirm diversification vis-à-vis their qualification and job role.

Data / Parameter:	**Safety Training**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Occupational accidents at the site may be occurred. All trainings and precautions are completed according to the Law. The safety training is expected to be provided to the site personnel as per normal industry practice and local law.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Records of safety training for occupational hazard and other accidents shall be monitored to check if adequate training is provided to the site personnel or not.</td></tr><tr><td>Frequency of monitoring</td><td>Continuous monitoring</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	To be sourced from the training records maintained at project site.

Data / Parameter:	**Minimum wage**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There could be possibility that the workers/employee appointed are provided with less remuneration/wage than the benchmark set by the host country. Hence, this shall be monitored.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>List of employees and salary/remuneration they receive shall be monitored.</td></tr><tr><td>Frequency of monitoring</td><td>Continuous monitoring</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>Minimum Wages Act 1948</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	To be sourced from the Payroll records of the project owner.

Data / Parameter:	**Grievance record**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	There could be possibility that any of the employee show dissent to the conduct of workplace and concern in regard to abuse or misbehaviours. The necessary legal regulation in this regard shall be followed to avoid this at the workplace.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Number of grievance recorded and their resolution conclusion.</td></tr><tr><td>Frequency of monitoring</td><td>Continuous monitoring</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>-</td></tr></table>
Remarks	A complain register is maintained at project site to register any grievance any individual/group of employees at any hierarchy level.

B.7.2. Data and parameters to be monitored for E+/S+ assessments (negative impacts)

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<table>
<tr><td>Data / Parameter:</td><td>PV Modules Waste</td></tr>
<tr><td>Purpose:</td><td>To mitigate/reduce an environmental impact identified as Harmful in the risk assessment and to develop a Program of Risk Management Actions plan to address the risk of PRMA 01</td></tr>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>The defunct / damaged PV modules may be generated and storage/ disposal can lead to contamination of soil.</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td>Parameter to be monitored</td><td>PV Modules Waste</td></tr>
<tr><td>Frequency of monitoring</td><td>It shall be updated in final version of PSF</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>It shall be updated in final version of PSF</td></tr>
<tr><td>QA/QC</td><td>The details of damaged and returned solar PV modules will be maintained in records for future verification.</td></tr>
</table>
</td></tr>
<tr><td>Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)</td><td>
<table>
<tr><th>S.No.</th><th>Action and targets</th><th>Responsibility</th><th>Resource Requirement</th><th>Target to be Achieved by (insert date)</th><th>Key Performance Indicators (KPI)</th><th>Targets achieved on (insert date)</th></tr>
<tr><td>1</td><td>The damaged/defunct solar PV modules shall be stored and disposed-off</td><td>Project owner</td><td>01</td><td>To be provided in final the version of PSF.</td><td>Quantity of damaged Solar PV modules handled safely.</td><td>To be monitored</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td colspan="3">Date of Closing the Program:</td><td></td><td colspan="3"></td></tr>
</table>
</td></tr>
</table>

Data / Parameter:	End of life products/ equipment
Purpose:	To mitigate/reduce an environmental impact identified as harmful in the risk assessment and to develop a Program of Risk Management Actions plan to address the risk of PRMA 03.

<table>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>Improper disposal of generated End of life products/ equipment may create soil contamination</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td></td><td></td></tr>
<tr><td>Parameter to be monitored</td><td>End of life products/equipment</td></tr>
<tr><td>Frequency of monitoring</td><td>To be updated later</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>To be updated later</td></tr>
<tr><td>QA/QC</td><td>Record of end-of-life solar PV module will be maintained and summited during verification.</td></tr>
</table>
</td></tr>
<tr><td>Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)</td><td>
<table>
<tr><th>S.No.</th><th>Action and targets</th><th>Responsibility</th><th>Resource Requirement</th><th>Target to be Achieved by (insert date)</th><th>Key Performance Indicators (KPI)</th><th>Targets achieved on (insert date)</th></tr>
<tr><td>1</td><td>End of life solar PV modules shall be stored and disposed off as per the guidance of national/ local laws.</td><td>Project Owner.</td><td>01</td><td>Throughout the project lifetime</td><td>Quantity of damaged Solar PV modules handled safely</td><td>To be monitored</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td colspan="3">Date of Closing the Program:</td><td></td><td colspan="3"></td></tr>
</table>
</td></tr>
</table>

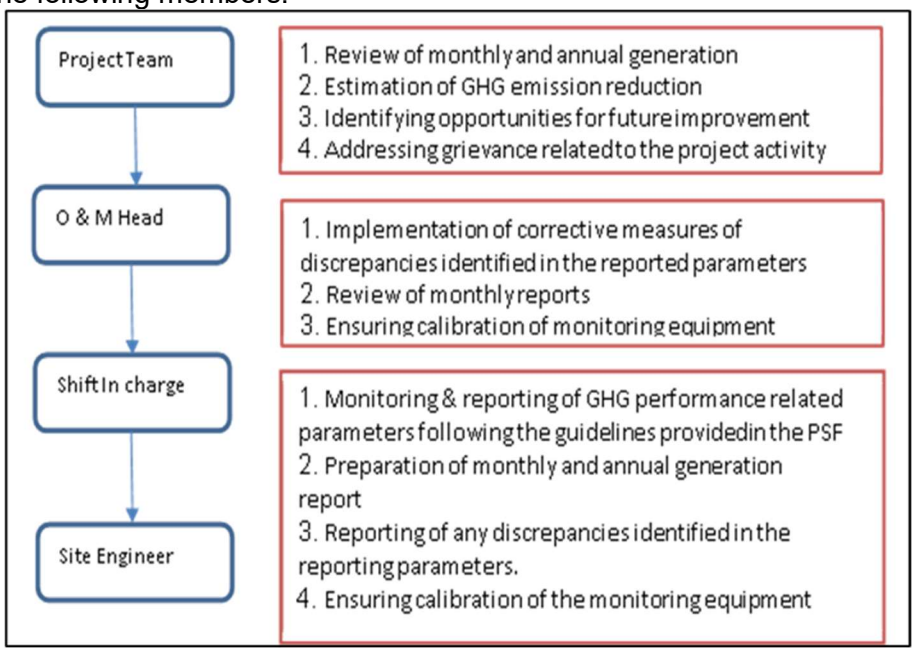
B.7.3. Sampling plan

Not applicable

B.7.4. Other elements of the monitoring plan

The monitoring plan is developed in accordance with the requirement of the methodology and is proposed for grid-connected solar power project being implemented. The monitoring plan, which will be implemented by the project owner 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 owner. Project owner proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



Data Measurement:

The export and import energy will be measured continuously using main and check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of utility in the presence of the representative of Project Owner. Based on the Meter Reading Statement, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data Collection and Achieving:

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor.

Emergency Preparedness:

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized. In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced by authorized officer of SEB and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced

Personnel Training:

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

QA/QC Procedures:

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project owner nor the site personnel have any control over it. The records will be cross-checked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board out in-line with the Nation standard which recommends at least once in 5-year calibration or whenever abnormal difference/inconsistency is observed between main meter and check meter.

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

The project activity has started GHG emission reduction from 31/03/2022 (which is the commissioning date of the first Solar PV). Hence, 31/03/2022 has been considered as start date of project activity.

C.2. Expected operational lifetime of the Project Activity

25 years

C.3. Crediting period of the Project Activity

C.3.1. Start and end date of the crediting period

Start Date – 31/03/2022(Start date of Project Activity)

End Date – 30/03/2032

C.3.2. Duration of crediting period

10 years.

Section D. Environmental impacts

D.1. Analysis of environmental impacts

The project activity does not involve any major construction activity. It primarily requires the installation of the solar PV panels, inverters, and interface of the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013 clearly mentioned that deployment of solar PV project does not result in air pollution and noise pollution. Thus, there is no any significant impact due to implementation of project activity on air, water, soil quality and ambience envisaged due to the project activity.

The positive environmental impacts arising from the project activity are:

- Reduction in carbon dioxide (GHG) emissions that would take place for the same quantity of generation of electricity available from fossil fuel dominated regional electricity grid. The electricity supply from grid is considered as baseline scenario.
- Project activity will help in improving the socio–economic status of the nearby area and will help towards better adaptation of climate change effects. Implementation of project activity will also create improved awareness about environmental upkeep and improve the general housekeeping and hygienic conditions.
- Considering human as one of the environmental elements, the project activity will generate employment of nearby local persons and help in alleviation of property which is existing in this poverty driven low literacy region of host country.

There are no negative environmental impacts that will arise as a result of the project activity.

D.2. Environmental impact assessment and management action plans

The guidelines on Environmental Impact Assessment are published by Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India (GOI) under Environmental Impact Assessment notification 14/09/2006. Further amendments to the notification have been done on 14/07/2018.

As per the notification[37]: "The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

1. All new projects or activities listed in the Schedule to this notification;

2. Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is,

[37] http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf

projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;

3. Any change in product – mix in an existing manufacturing unit included in Schedule beyond the specified range."

As the solar power generation projects are not listed in any of the categories of the schedule, the project is considered environmentally safe and as per regulations in Host party- India and no EIA is required. Also, solar PV based power plants belong to white category as per Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India and are exempted from Environmental Impact Assessment (EIA)[38].

Section E. Environmental and social safeguards

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[38] Environment Ministry releases new categorisation of industries (pib.gov.in)

E.1. Environmental safeguards

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Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards								Project Owner's Conclusion		GCC Project Verifier's Conclusion (To be included in Project Verification Report only)
		Description of Impact *(positive or negative)*	**Legal/ voluntary corporate requirement / regulatory/ voluntary corporate threshold Limits**	**Do-No-Harm Risk Assessment (choose which ever is applicable)**			**Risk Mitigation Action Plans for aspects marked as Harmful**		**Performance indicator for monitoring of impact**	***Ex-ante* scoring of environmental impact**	***Explanation of the Conclusion***	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational Controls**	**Program of Risk Management Actions**	**Monitoring parameter and frequency of monitoring**	**Ex- Ante scoring of the environmental impact (as per scoring matrix Appendix-02)**	**Ex- Ante description and justification/explanation of the scoring of the environmental impact**	**Verification Process**
Environmental Aspects on the identified categories [39] ***indicated below.***	*Indicators for environmental impacts*	*Describe and identify anticipated and actual significant environmental impacts, both positive and negative from all sources (stationary and mobile) during normal and abnormal/emergency conditions, that may result from the construction and operations of the Project Activity, within and outside the project boundary, over which the Project Owner(s) has/have control.*	*Describe the applicable national regulatory 60mission 60n60 /legal limits / voluntary corporate limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If environmental impacts exist but are expected to be in compliance with applicable national regulatory /stricter voluntary corporate requirements and will be within legal/ voluntary corporate limits by way of plant design and*	*If negative environmental impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as '****Harmful*** *at least to a level that is in compliance with applicable legal/regulatory requirements or industry best practice or stricter voluntary corporate requirements*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce or eliminate the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well including the data source.*	*-1* *0* *+1*	*Confirm the score of environmental impact of the project with respect to the aspect and its monitored value in relation to legal /regulatory limits (if any) including basis of conclusion.*	*Describe how the GCC Verifier has assessed that the impact of the Project Activity against the particular aspect and in case of "harmful impacts" how has the project adopted Risk Mitigation Action Plans to mitigate the risks of negative environmental impacts to levels that are unlikely to cause any harm as well as the net positive impacts of the project with respect to the most likely baseline alternative.* .

[39] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

					operating principles, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as ***Harmless*** */If the project has a positive impact on the environment mark it as "harmless" as well.*	*(may be un-safe) and shall be indicated as* ***Harmful***						
Reference to 61mission 61 of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 ©*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragrap h 13 (d) (iii)*	*Paragraph 13 © (i)*	*Paragraph 13 © (ii)*	*Paragraph 12 © and Paragraph 13 (f)*	*Paragraph 22*		*Paragraph 24 and Paragraph 26 (a) (i)*
Environment – *Air*	*SO_x emissions (EA01)*	The solar PV powerproject does not result in emission of Sox in the project scenario. However,in the baseline scenario (grid) some of the fossil fuel power plants may have emitted Sox, on which datais not available and can't be quantified.	The Air (Prevention and Control of Pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable as no emissions occur in the project scenario. Therefore, the project is not expected to do or does not cause any harm.	Not Applicable. No action Required	Not Applicable. No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	NO_x emissions (EA02)	The solar PV power project does result in emission of Nox in the project scenario. However, in the baseline scenario (grid) some of	The Air (Prevention & Control of Pollution) Act 1981 stipulates	Not Applicable as no emissions occur in the project scenario.	Not Applicable. No action Required	Not Applicable. No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A

		the fossil fuel power plants may have emitted Nox, on which data is not available and can't be quantified.	thresholds for both ambient air quality as well as stack emissions.	Therefore, the project is not expected to do or does not cause any harm.								
	CO_2 emissions (EA03)	In absence of the project activity, the stated amount of generated electricity would be generated by the operation of grid – connected power plants. The caused CO_2 emissions by the grid – connected power plants are expressed as grid emission factor, i.e., tCO_2/MWh generated grid electricity, due to fossil fuel-based grid power plants. Therefore, the non -fossil fuel, zero emission – generated electricity by the project activity will substitute the grid electricity and related CO2 emissions, i.e., CO2 emission reduction = generated electricity by the project activity x grid emission factor.	The Air (Prevention & Control of Pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable as no emissions occur in the project scenario. Therefore, the project is not expected to do or does not cause any harm.	Not Applicable. No action Required	Not Applicable. No action required	Not Applicable	Not Applicable	Monitoring parameter: CO_2 emissions Monitoring frequency: As and when ACC issuance is done.	+1	There is no legal requirement in the host country to limit CO_2 emission applicable for the project and/or the project owner. As described, the project reduces equivalent quantity of CO_2 emission which is voluntary. Hence, this parameter shall be scored.	-
	CO emissions (EA04)	The solar PV power project does result in emission of CO in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO, on which data is not available and can't be quantified.	The Air (Prevention & Control of Pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable as no emissions occur in the project scenario. Therefore, the project is not expected to do or does not cause any harm.	Not Applicable. No action Required	Not Applicable. No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A

	Suspended particulate matter (SPM) emissions (EA05)	The solar PV power project does result in emission of SPM in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted SPM, on which data is not available and can't be quantified.	The Air (Prevention & Control of Pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable	Not Applicable. No action Required	Not Applicable. No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Fly ash generation (EA06)	Not Applicable	The Air (Prevention & Control of Pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable	No action Required	No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Non-Methane Volatile Organic Compounds (NMVOCs) (EA07)	Not Applicable	The Air (Prevention & Control of Pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable	No action Required	No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Odor (EA08)	Not Applicable	The Air (Prevention & Control of	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A

			Pollution) Act 1981									
	Noise Pollution (EA09)	Not Applicable	Noise (Regulation and Control) Rules 2000 amended in 2010)	Not Applicable	No action Required	No action Required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Others (EA10)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
Environment – *Land*	*Solid waste Pollution from Plastics (EL-01)*	Negative	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No action Required	No action Required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Solid waste Pollution from Hazardous wastes (EL02)	Damaged solar PV modules at site might have negative environment impacts if not managed well	Hazardous and Other Wastes (Management and Trans bound Movement) Amendment Rules, 2016		Harmless	-	-	The damaged solar PV modules shall be stored and disposed-off as per the national/local law.	Monitoring parameter (Section B.7.2): PV Modules Waste	+1	-	-
	Solid waste Pollution from Bio-medical wastes (EL03)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Solid waste Pollution from E-wastes (EL04)	No e-waste pollution is anticipated through the operation of the project.	E-waste (Management and Handling) Rules		Harmless	-	Records all electrical & electronics waste of projects sites and filling of return	Project owner is responsible to maintain records and filling of records as per	Monitoring parameter: E – Waste Frequency: Continues	+1	The E-waste generated from the project is expected to be disposed as per the Ewaste (Management) Rules, 2016.	-

								applicable law				
	Solid waste Pollution from Batteries (EL05)	The project does not deploy batteries for storage. No solid waste pollution from batteries is anticipated	Batteries (Management and Handling) Rules	Not Applicable	Not Applicable	No Action required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Solid waste Pollution from end-of-life products/ equipment (EL06)	Damaged/ disposed Solar PV modules at site might have negative environmental impacts if not managed well after their end of-life	Solid Waste Management Rules, 2016	-	Harmless	-	Solid waste from the project activity must be disposed as applicable law	Project Owner is responsible to maintain records and dispose all products after ending lifecycle as per applicable law	Monitoring parameter "End of life products/ equipment" is included in section B.7.2 to monitor this parameter.	+1	Project Owner is responsible to maintain records and dispose all products after ending lifecycle as per applicable law.	-
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury) (EL07)	Not Applicable	In India, there are no comprehensive soil quality 65mission 65n and standards to ascertain the seriousness of contamination	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	land use change (change from cropland /forest land to project land) (EL08)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
	Others (EL09)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A

Environment – *Water*	*Reliability/ accessibility of water supply (EW01)*	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Water Consumption from ground and other sources (EW02)	Not Applicable	Permission for abstraction of Ground water under Environmental (Protection) Act 1986	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Generation of wastewater (EW03)	Solar power project does not result ingeneration of waste water.	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Wastewater discharge without/with insufficient treatment (EW04)	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Pollution of Surface, Ground and/or Bodies of water (EW05)	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A

	Others (EW07)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	N/A	N/A	N/A	N/A
Environment – *Natural Resources*	*Conserving mineral resources (ENR01)*	Not Applicable	In India, there are no conserving mineral resources 67mission 67n and standards to ascertain the said condition.	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Protecting/ enhancing plant life (ENR02)	Not Applicable	In India, there are no comprehensive 67mission 67n and standards to ascertain for protecting plant life	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Protecting/ enhancing species diversity (ENR03)	Not Applicable	Not Applicable	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Protecting/ enhancing forests (ENR04)	Not Applicable	The Forest (Conservation on) Act 1980 & 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Protecting/ enhancing other depletable natural resources (ENR05)	Not Applicable	National Forest Policy (Revised) 1988	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

	Conserving energy (ENR06)	Not Applicable	Energy Conservation Act 2001	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Replacing fossil fuels with renewable sources of energy (ENR07)	The project activity involves generation of power using solar energy resources which would have been otherwise generated from the fossil fuel dominant grid connected power plants in the absence of the project activity.	Energy Conservation Act 2001	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	Parameter: Replacing fossil fuels with renewable sources of energy Frequency: Continuous measurement	+1	As described, the project reduces equivalent quantity of CO_2 emission which is voluntary. Hence, this parameter shall be scored.	-
	Replacing ODS with non-ODS refrigerants (ENR08)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Others (ENR09)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Net Score:			**+5**									
Project Owner's Conclusion in PSF:			The Project Owner confirms that the Project Activity will not cause any net harm to Environment.									
GCC Project Verifier's Opinion:			The GCC Verifier certifies that the Project Activity [is not likely to cause any] or [is likely to cause] net harm to the environment...									

E.2. Social Safeguards

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Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards							Project Owner's Conclusion		GCC project Verifier's Conclusion (To be included in Project Verification Report only)
		Description of Impact (*positive or negative*)	**Legal requirement /Limit, Corporate policies / Industry best practice**	**Do-No-Harm Risk Assessment** **(Choose which ever is applicable)**			**Risk Mitigation Action Plans (for aspects marked as Harmful)**	**Performance indicator for monitoring of impact.**	**Ex-ante scoring of environmental impact**	**Explanation of the Conclusion**	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational / Management Controls**	**Monitoring parameter and frequency of monitoring (as per scoring matrix Appendix-02)**	**Ex- Ante scoring of social impact of the project**	**Ex- Ante description and justification/explanation of the scoring of social impact of the project**	**Verification Process** **Will the Project Activity cause any harm?**
Social Aspects on the identified	*Indicators for social impacts*	*Describe and identify actual and anticipated impacts on society and stakeholders, both positive or negative, from all sources during normal and abnormal/emergency conditions that may result from constructing and operating of the Project Activity within or outside the project boundary, over which the project Owner(s) has/have control*	*Describe the applicable national regulatory requirements / legal limits or organizational policies or industry best practices related to the identified risks of social impacts*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If social impacts exist but are expected to be in compliance with applicable national regulatory requirements/ stricter voluntary corporate limits by way of plant design and operating principles then the Project Activity is unlikely*	*If negative social impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause*	*Describe the operational or management controls that can be implemented as well as best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in nature along with the data source*	*-1* *0* *+1*	*Confirm the score of the social impacts of the project with respect to the aspect and its monitored value in relation to legal/regulatory limits (if any) including*	*Describe how the GCC Verifier has assessed that the impact of Project Activity on social aspects (based on monitored parameters, quantitative or qualitative) and in case of "harmful aspects how has the project owner adopted Risk Mitigation Action / management actions*

categories[40] indicated below.					*to cause any harm (is safe) and shall be indicated as **Harmless**), project having positive impact on society. To the BAU / baseline scenario must also mark their aspect as **"harmless"***	*harm and shall be indicated as **Harmful***				*basis of conclusion*	*plans and policies to mitigate the risks of negative social impacts to levels that are unlikely to cause any harm.* *Also describe the positive impacts of the project on the society as compared to the baseline alternative or BAU scenario.*
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 ©*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 © (i)*	*Paragraph 12 © and Paragraph 13 (f)*	*Paragraph 23*		*Paragraph 24 and Paragraph 26 (a) (ii)*
Social – *Jobs*	*Long-term jobs (> 10 year) created/ lost (SJ01)*	The project activity leads to the employment generation.	Any employment provided through the project is ensured to meet the criteria and requirement defined in applicable Indian labor laws.	Not Applicable	Not Applicable	Not Applicable	There are no harmful impacts of the project activity as it leads to the employment generation.	Parameter (Sec B.7.1): Long-term jobs (> 1 year) created/ lost Frequency: Continuous	+1	The project has created long term jobs to operate the project successfully throughout its life. Hence, this impact has been scored.	-
	New short-term jobs (< 1 year) created/ lost (SJ02)	The project activity leads to the employment generation.	Any employment provided through the project is ensured to meet the criteria and requirement defined in applicable Indian labor laws.	Not Applicable	Not Applicable	Not Applicable	There are no harmful impacts of the project activity as it leads to the employment generation.	Parameter (Sec B.7.1): Long-term jobs (> 1 year) created/ lost Frequency: Continuous	+1	The project has created short term jobs to operate the project successfully throughout its life. Hence, this impact has been scored.	-

[40] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

	Sources of income generation increased / reduced (SJ03)	The project increases income by creating job opportunities.	All the income generated from project and payment done for its operation are ensured to be done as per Indian rules and regulations applicable.	Not Applicable	No Action Required	No Action Required	Not Applicable	This parameter is mentioned in section B.7.1. Frequency: Continuous	+1	As job has been created due to this project activity, sources of income generation has been increased.	
	Avoiding discrimination when hiring people from different race, gender, ethnics, religion, marginalized groups, people with disabilities (SJ04) *(Human rights)*	The appointment is done on the basis of nature of job and skill required for the same irrespective of race, gender, ethnic and religion etc. The employees are hired purely on basis of their skill. Education and capability w.r.t the job requirement and it is irrespective of their identity.	There is no local legal compliance applicable for this.	Not Applicable	Not Applicable	Not Applicable	There is no harmful effect as it leads to woman empowerment.	This parameter is mentioned in section B.7.1. Frequency: Continuous	+1	-	-
Social – *Health & Safety*	*Disease prevention (SHS01)*	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Occupational health hazards (SHS02)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Reducing / increasing accidents /Incident	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

	s/fatality (SHS03)										
	Reducing / increasing crime (SHS04)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Reducing / increasing food wastage (SHS05)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Reducing / increasing indoor air pollution (SHS06)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Efficiency of health services (SHS07)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Sanitation and waste management (SHS08)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Other health and safety issues (SHS09)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Social – *Education*	*specialized training / education to local personnel (SE01)*	The project owner has allocated a special fund to develop skill development centers at areas of the project unit.	There is no mandatory requirement prevailed in the host country in this regard.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This parameter is mentioned in section B.7.1. Frequency: Continuous	+1	Project owner will take Initiative towards provisioning of training to employees.	

										Hence, this parameter shall be scored.	
	Educational services improved or not (SE02)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Project-related knowledge dissemination effective or not (SE03)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Other educational issues (SE03)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Social – *Welfare*	*Improving/ deteriorating working conditions (SW01)*	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Community and rural welfare (indigenous people and communities) *(SW02)*	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Poverty alleviation (more	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

	people above poverty level) (SW03)										
	Improving / deteriorating wealth distribution/ generation of income and assets (SW04)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Increased or / deteriorating municipal revenues (SW05)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Women's empowerment (SW06) *(Human rights)*	The project shall contribute to achieve equal rights for men & women. The project owner has an internal policy to protect women's right and safeguard women from harassment at workplace. The project owner ensures there is equal opportunity provided to women in employment. The project owner shall ensure at least 1 woman is employed in its payment for this project activity.	The employment and benefit provided to the employees shall be ensured to be as per all the applicable Indian rules and regulations. As per the Protection of women from Sexual Harassment Act (POSH), of India, every company having more than ten employees to constitute an Internal Complaints Committee (ICC) in the prescribed manner to receive and address the complaints of any sort of sexual	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This parameter is mentioned in section B.7.1. Frequency: Continuous	+1	This is a positive impact.	-

			harassment from women in a time-bound and extremely confidential manner. The project owner has a policy to implement the provision of POSH act at its work place.								
	Reduced / increased traffic congestion (SW07)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Exploitation of Child labour *(Human rights)* *(SW08)*	No child will be provided employment in the project, below the legal age of employment. This shall be checked from the records of the parameter, " Long-term jobs(>1 year) created/lost. Hence, additional monitoring parameter is now included for this.	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Minimum wage protection *(Human rights) (SW09)*	There could be possibility that the workers/employee appointed are provided with less remuneration/wage than the benchmark set by the host country. Hence, this shall be monitored.	The minimum wage as per the local legal requirement shall be ensured to be provided to the employees hired by the project owner in the project.	The project owner shall ensure that minimum wage/remuneration per the standard set of the host country is provided to the employees. Hence, this has been assessed to be harmless.	This is assessed not to be harmful, hence not applicable	-	N/A	Monitoring parameter (B.7.1): Minimum Wage Frequency: Continuous	0	The minimum wage paid to the employees working in the project is expected to be within the local legal requirement. Therefore, this is not scored.	
	Abuse at workplace. (With specific	There could be possibility that any of the employee show dissent to the conduct of	The necessary legal regulation in this regard shall be followed to	The monitoring of the grievance received and	This is expected to be followed as per the local legal	This has been	N/A	Monitoring parameter (B.7.1): Grievance Register	0	The grievance of any of the	

	reference to women and people with special disabilities / challenges) *(Human rights) (SW10)*	workplace and concern in regard to abuse.	avoid this at the workplace.	their resolution procedure with sufficient action plan to avoid any such future incident shall be maintained.	requirement; hence this has been assessed to be harmless.	assessed to be harmless, not applicable		Frequency: Continuous		employee is expected to be received and resolved adequately; therefore, this parameters is not scored.	
	Other social welfare issues (SW11)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Avoidance of human traffickin g and forced labour *(Human rights)* *(SW12)*	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Avoidance of forced eviction and/or partial physical or economic displacement of IPLCs *(Human rights)* *(CW13)*	The hydro power project is run -of river small hydro project and no eviction or economic displacement was done for the project construction; therefore, this is not applicable.	N/A	N/A	-	-	N/A	N/A	N/A	N/A	

	Provisions of resettlement and human settlement displacement *(Human rights)* *(CW14)*	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Net Score:	**+6**
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.
GCC Project Verifier's Opinion:	The GCC Verifier certifies that the Project Activity [is not likely to cause any] or [is likely to cause] net harm to society.

Section F. United Nations Sustainable Development Goals (SDG)

>>

UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs				GCC Project Verifier's Conclusion (To be included in Project Verification Report only)	
			Project-level SDGs	**Project-level Targets/Actions**	**Contribution of Project-level Actions to SDG Targets**	**Monitoring**	**Verification Process**	**Are Goal/ Targets Likely to be Achieved?**
Describe UN SDG targets and indicators *See: https://unstats.un.org/sdgs/indicators/indicators-list/*	*Describe the UN-level target(s) and corresponding indicator no(s)*	*Has the host country declared the SDG to be a national priority? Indicate Yes or No*	*Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope or creating a new indicator(s). Refer to previous column for guidance.*	*Define project-level targets/actions in line with nee project level indicators chosen. Define the target date by which the project Activity is expected to achieve the project-level SDG target(s).*	*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG indicator and its corresponding target, frequency of monitoring and data source*	*Describe how the GCC Verifier has verified the claims that the project is likely to achieve the identified Project level SDGs target(s).*	*Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or no)*

Goal 1: End poverty in all its forms everywhere	End poverty in all its forms everywhere.	Yes See also: Voluntary national review of the republic of India on the implementation of the 2030 agenda for sustainable development https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf	Unskilled employment for below poverty line (BPL) category people	At least 2 at the site	No. of Unskilled employment for below poverty line (BPL) employees at site	Providing employment to BPL person helps to reduce poverty	Employee logbook or register at site	Project owner shall ensure the first preference to be given to BPL person for unskilled work.	Yes
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture									
Goal 3. Ensure healthy lives and promote well-being for all at all ages									
Goal 4. Ensure inclusive and equitable quality									

education and promote lifelong learning opportunities for all									
Goal 5. Achieve gender equality and empower all women and girls	Achieve gender equality and empower all women and girls by 2030.	Yes See also: Voluntary national review of the republic of India on the implementation of the 2030 agenda for sustainable development https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf	Equal pay for work of equal value" for both men and women and shall hire at least 1 women employee at the site.	No discrimination against women.	No of women employees at site	Contribute to achieve equal rights for men & women	Employment register, complain register & pay slip	Number of women employed directly due to the project activity. As per company policy of Project implementermen & women have equal rights and no discrimination will be tolerated against women.	Yes
Goal 6. Ensure availability and sustainable management of water and sanitation for all									
Goal 7. Ensure access to affordable, reliable, sustainable, and	SDG target 7.2 "By 2030,	Yes See also: Voluntary national review of	The project activity involves installation of solar based renewable project of a cumulative capacity of 33.125	From the start of operation onwards the project activity	The net generated renewable electricity, which will be	Contribute renewable energy share in total grid	The net electricity supplied to the grid by the project	Project owner operates the	Yes

modern energy for all	Increase substantially the share of renewable energy in the global energy mix" Indicator 7.2.1 Renewable energy share in the total final energy consumption	the republic of India on the implementation of the 2030 agenda for sustainable development https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf	MW_{AC} and will deliver up to 73,226 MWh (ex-ante estimation) zero emission electricity annually.	will deliver 73,226 MWh of renewable energy annually to the grid to increase the share of renewable energy in the national grid.	delivered to the grid over a period y will be used as project level indicator. 7.2.1 Renewable energy share in the total final energy consumption	energy consumption	activity is continuously monitored through energy meter (main and check meter) installed at the sub-station. The meters remain under the custody of state utility.	plant since 31/03/2022 and complies with targeted SDGs so far contributing clean energy in energy mix of grid.	
Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all	SDG Target 8.2 "Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a	Yes, Same as described under goal 7.	Number of local employment generation. The project activity will create both direct or indirect employment during project construction and project operation	The project owner will enhance the capacity of the persons through on job training of direct and indirect employee engaged during operation of the project activity.	The number of permanent created will be used as project-level indicator for mapping productive employment generated.	The solar power plants contributes directly to achieve the SDG target, because the project activity The project activity creates jobs in the renewable energy sector, which diversify and upgrades the commonly used technology in the energy sector of	The total number of persons working in the plant would be calculated based on the daily log available at site.	Number of people employed directly due to the project activity	Yes

	focus on high value added and labor intensive sectors". Indicator 8.2.1: Annual growth rate of real GDP per employee.					India. Creating employment from project activity			
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable	Yes	The solar power project is implemented on the land locations which receive very little rainfall. The region is scarcely populated and most of the residents are poor farmers. By selecting the land where the project is implemented the project owners contributed to inclusive and sustainable industrialisation by efficient use of land and providing employment to the local people in the region.	The project provides one clean and resilient energy generation facility and provides employment opportunity to local residents in the region which is highly backward.	The project provides one clean and resilient energy generation facility and provides employment opportunity to local residents in the region which is highly backward.	The solar power project makes power generation with efficient use of land which is infertile for agriculture as well as for other activities.	Continuous operation of the project shall be monitored.	Project owner operates the plant since 31/03/2022 and complies with targeted SDGs so far.	Yes

	access for all.								
Goal 10. Reduce inequality within and among countries									
Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable									
Goal 12. Ensure sustainable consumption and production patterns									
Goal 13. Take urgent action to combat climate change and its impacts	Integrate climate change measures into national policies, strategies and planning. Indicator 13.2.2: Total greenhouse gas 83mission per year.	Yes	The project will generate around 73,226 MWh electricity without greenhouse gas emissions in the entire crediting period of 10 years. The project activity will avoid around 68,136 tCO_2 annually compared to the current used grid connected power plant technology and used power sources (mainly fossil fuels).	From the operation onwards the project activity will deliver electricity without greenhouse gas emissions	The reduced greenhouse gas emissions per year will be used as proper project-level indicator SDG.	The solar power plants contributes directly to achieve the SDG target, because the project activity delivers renewable energy, which would otherwise generated by fossil fuel dominated grid power plants. Emission reductions achieved per year	Electricity produced by the renewable generating unit multiplied by an83mission n factor. The net generated electricity supplied to the grid (measured with electricity meters) multiplied with the CO_2 emission factor of the grid (as described by the UNFCCC CDM	Project owner operates the plants since 31/03/2022 and complies with targeted SDGs so far. Reduction of Green house gases.	Yes

							methodology calculation tool 07 "Tool to calculate the emission factor for an electricity system"– Version 07.0.) will give the reduced greenhouse gas emissions		
Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development									
Goal 15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss									
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive									

institutions at all levels									
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development									

SUMMARY	Targeted	Likely to be Achieved
Total Number of SDGs	**6**	**6**
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF	**Diamond**	**Diamond**

Section G. Local stakeholder consultation

G.1. MODALITIES FOR LOCAL STAKEHOLDER CONSULTATION

For 30 Mwac Plant
Date: 22/02/2022

Place: Kasari, Maharashtra

Land used for this plant is either leased or purchased in market price. The local people doesn't have any objection regarding this . Major stakeholder attended in engagement process is people living in surrounding area who are farmer by profession.

AMP representative opened the meeting by welcoming everyone to the Stakeholder Engagement Meeting.

All attendees introduced themselves. Overview of project introduced to attendee and explained the purpose of this project. It was observed that few of attendee were already had good understanding of such type of project and how it is beneficial for the locality, country and for globe at large.

Means of information:

Pamphlet with details related to meeting date, meeting time and meeting venue distributed in the village and were also placed at entry gate of plant**.**

For 3.125 Mwac Plant
Date: 22/02/2022

Place: Dahiwadi, Maharashtra

Land used for this plant was purchased in market price. Hence, local people doesn't have any objection regarding this. Major stakeholder attended in engagement process is people living in surrounding area who are farmer by profession.

AMP representative opened the meeting by welcoming everyone to the Stakeholder Engagement Meeting.

All attendees introduced themselves. Overview of project introduced to attendee and explained the purpose of this project. It was observed that few of attendee were already had good understanding of such type of project and how it is beneficial for the locality, country and for globe at large.

Means of information:

Pamphlet with details related to meeting date, meeting time and meeting venue distributed in the village and were also placed at entry gate of plant**.**

G.2. SUMMARY OF COMMENTS RECEIVED

Summary of Discussion:

Local stakeholder, mainly the land sellers were keen to know about the functioning and benefit of the plant and other aspects related to environmental benefit.

Q&A and Discussion
For 30 MWac Site

1. Why, Employment opportunities to the youths from the adjoining areas? (Asked by Pravin Kanwale)
   Reply: This being a solar ground mounted plant employment opportunities will be limited. Major work force will be required during the construction phase and the requirement for operational phase will be limited to security guards and other plant maintenance activities – grass cutting and module cutting.

2. Will the development of Solar PV impact the local ground water and is there any possibility of contamination of ground water? (Asked by Balu Shirsagar)
   Reply: No. Ground water levels in the adjoining villages will not be impacted and limited amount of water will be required during the module cleaning.

3. How this will help in fighting against climate change? (Asked by Krushna Mali)
   Reply: Since electricity generation through renewable resources like sunlight and wind does not emit any pollutants such as CO_2, which is responsible for global warming, thus switching to clean energy will definitely help in fighting against climate change.

4. Will it pose any additional risk to people working in plant premises? (Asked by Datta Londhe)
   Reply: There is no uncontrolled risk available in operation of solar plant, however, if any risk is identified later will be tackled though robust management system and will ensure no harm to people working in site premises.

For 3.125 MWac Site

1. Why, Employment opportunities to the youths from the adjoining areas? (Asked by Satyendra Prajapati)
   Reply: This being a solar ground mounted plant employment opportunities will be limited. Major work force will be required during the construction phase and the requirement for operational phase will be limited to security guards and other plant maintenance activities – grass cutting and module cutting.

2. Will there be any planned programs under the CSR activity? (Asked by Shahaji Gaikwad)
   Reply: There is planned activity under the CSR activity. However, CSR activities will be planned during the project lifetime and at desired intervals.

3. What will happen after these modules expired and become waste for the earth? (Asked by Ramchandra Ghongde)

Reply: During the decommissioning phase, all waste produced from the plant shall be categorized and disposed as per guidelines stipulated under e-waste/hazardous waste by MoEFCC/CPCB and will be disposed with the authorized agency approved by the state pollution control board.

4. Will it pose any additional risk to people working in plant premises? (Asked by Tushar Survase)
Reply: There is no uncontrolled risk available in operation of solar plant, however, if any risk is identified later will be tackled though robust management system and will ensure no harm to people working in site premises.

G.3. CONSIDERATION OF COMMENTS RECEIVED

There were no comments raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region.

Section H. Approval and authorization

Not applicable.

APPENDIX 1. CONTACT INFORMATION OF PROJECT OWNERS

Project Owner name (as per LON/LOA)	Amp Energy Markets India Pvt Ltd
Country	India
Address	309, 3rd Floor, Rectangle One, Behind Sheraton Hotel, Saket, New Delhi, 110017 India
Telephone	8860712636
Fax	
E-mail	amalpani@ampenergyindia.com
Website	
Contact person	Aditya Malpani

APPENDIX 2. AFFIRMATION REGARDING PUBLIC FUNDING

The project onwer confirms that there would be no divergence of Official Development Assistance (ODA) in any of the project activity. This would be confirmed through undertaking / declaration from the project owner.

APPENDIX 3. APPLICABILITY OF METHODOLOGY(IES)

Refer to section B.6.1

APPENDIX 4. FURTHER BACKGROUND INFORMATION ON EX ANTE CALCULATION OF EMISSION REDUCTIONS

Refer to section B.6.2.

APPENDIX 5. FURTHER BACKGROUND INFORMATION ON MONITORING PLAN

Refer to section B.7.

APPENDIX 6. SUMMARY REPORT OF COMMENTS RECEIVED FROM LOCAL STAKEHOLDERS

Refer to section G.2.

APPENDIX 7. SUMMARY OF DE-REGISTERED CDM PROJECT OR PROJECTS FROM OTHER GHG / NON-GHG PROGRAMS (TYPE B)

Not applicable as this is a Type A2 project.

Complete this form in accordance with the instructions attached at the end of this form.	
Program Name	
Project registration number	
Date of registration in the program	
Title of the Project Activity	
Project de-registration reference number	
Date of de-registration of the Project	
Project Participants (Authorized by the host / annex 1 country letter of approval)	
Country where the project is located	
Applied methodology(ies) (Provide reference and version number(s))	

Pre-registration changes to the Project Activity

(Tick as applicable)

Pre-registration Changes	Reference number	Approved	Provide a summary of pre-registration changes
Deviations from approved baseline and monitoring methodology		☐	
Deviations from applied Tool & Guidance		☐	
Deviations from the rules		☐	
Other…….		☐	

Post-registration changes to the Project Activity

(Tick as applicable)

Post registration Changes	Reference number	Approved	Provide a summary of post-registration changes
Change in project design		☐	
Request for revision of monitoring plan		☐	
Request for change in start date of crediting period		☐	
Renewal of crediting period		☐	
Temporary deviations		☐	
Other…….		☐	

Crediting Period(s)

Crediting period(s)			Period (start & end dates)	ERs as per registered PDD/MR/Project documents	Credits issued
Crediting Period (Shall start on or after 1 Jan 2016)	Fixed 10 year				
	Renewable (7 years, with 2 approved renewals)	1st			
		2nd			
		3rd			
Period for which Credits have been issued					
Period for which Credits have been requested but not issued					-
Period for which Credits have never been requested for issuance (No monitoring reports submitted)					-
Period for which Credits have never been requested for issuance prior to CDM de-registration					-
Remaining Crediting period, after de-registration, for which Credits have not been issued by the program , subject to a ceiling of 10 years as allowed under the GCC Program					-

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<tr><td>Details of Previous Issuance Requests</td><td>
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</td></tr>
<tr><td>List any open issues in the Validation and last Verification Report (e.g., FARs, if any) and how they have been addressed</td><td></td></tr>
<tr><td>Any other relevant information that has not been reported in the registered documents and that may have adverse impacts on the environmental integrity of the Project Activity</td><td></td></tr>
<tr><td>Provide the list of all the registered documents related to this project, as available on the program’s website and the</td><td></td></tr>
</table>

corresponding URLs.	

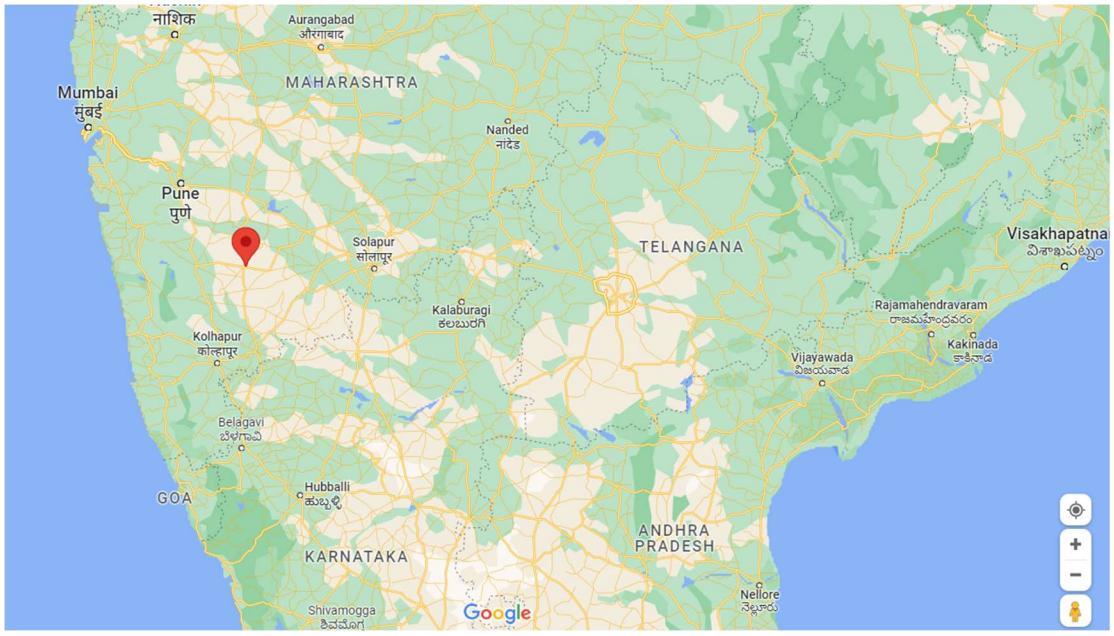
Appendix 8. FURTHER INFORMATION ON DETERMINATION OF BUNDLE IN PROJECT ACTIVITY.

Please refer section B.5.

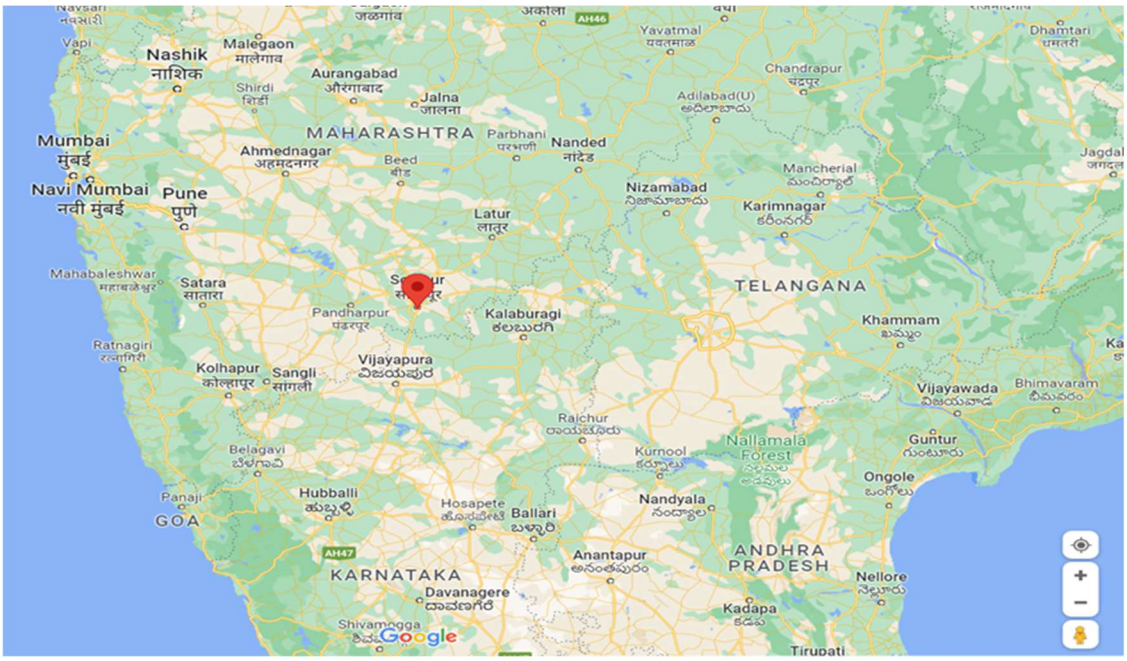
Appendix 9. PUBLIC DECLARATION FOR A2 (Sub Type 2 and 3), B1 & B2 PROJECTS ON NON CONTINUATION FROM CDM/GHG/NON-GHG PROGRAMS.

This is a type A2, sub type 1 project. Hence, this is not applicable.

Annexure 01: Project Location on Map



Dahiwadi Site



Kasari Site

Geo -Location of kasari, Solapur Dist., Maharashtra

Geo Location of Dahiwadi site

DOCUMENT HISTORY		
Version	Date	Comment
V 4.0	27/09/2022	▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: ○ Introduced A3 type projects A2 project sub-types. ○ Included revised Declaration by the 'Authorized Project Owner and focal point' on GCC requirements. ○ Included modified format for E+/S+/ SDG assessment. ○ Revised instructions for filling in the PSF. ○ Editorial changes to the document.
V 3.2	31/12/2020	▪ The name of GCC Program's emission units has been changed from "Approved Carbon Reductions" or ACRs to "Approved Carbon Credits" or ACCs.
V 3.1	17/08/2020	▪ Editorial revisions made ○ Revised Table in section B.7.2 on Monitoring-program of risk management actions ○ Revised Table in section E.1 on Environmental Safeguards ○ Revised Table in section E.1 on Social Safeguards ○ Revised Table in section F on United Nations Sustainable Development Goals (SDG)
V 3.0	05/07/2020	▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: ○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC). ○ Considered and addressed comments raised by Steering Committee: ➢ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and ➢ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020). ○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA[41];

[41]See ICAO recommendation for conditional approval of GCC at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf

V 2.0	25/06/2019	▪ Revised version released for approval by the GCC Steering Committee. ▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

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