

المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL



Project Submission Form

V4.0- 2022

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COVER PAGE- Project Submission Form (PSF)	
<i>Complete this form in accordance with the instructions attached at the end of this form.</i>	
BASIC INFORMATION	
Title of the Project Activity as per LON/LOA	10 MW Solar Project_SNWI
PSF version number	1.1
Date of completion / Updating of this form	29/09/2022
Project Owner(s) as per LON/LOA <small>(Shall be consistent with De-registered CDM Type B Projects)</small>	Manikaran Power Limited
Country where the Project Activity is located	India
GPS coordinates of the project site(s)	24°29'16" N, (24.4877 N) 78°41'45" E, (78.6958 E)
Eligible GCC Project Type as per the Project Standard <small>(Tick applicable project type)</small>	<input checked="" type="checkbox"/> Type A: <input type="checkbox"/> Type A1 <input checked="" type="checkbox"/> Type A2 <input checked="" type="checkbox"/> Sub-Type 1 <input type="checkbox"/> Sub-Type 2 <input type="checkbox"/> Sub-Type 3 <input type="checkbox"/> Sub-Type 4 <input type="checkbox"/> Type A3 <input type="checkbox"/> Type B – De-registered CDM Projects:¹ <input type="checkbox"/> Type B1

¹ Owners of Type B projects shall fill in the form provided in Appendix 7.

	<input type="checkbox"/> Type B2
Minimum compliance requirements	<input checked="" type="checkbox"/> Real and Measurable GHG Reductions <input checked="" type="checkbox"/> National Sustainable Development Criteria (if any) <input checked="" type="checkbox"/> Apply credible baseline and monitoring methodologies <input checked="" type="checkbox"/> Additionality <input checked="" type="checkbox"/> Local Stakeholder Consultation Process <input checked="" type="checkbox"/> Global Stakeholder Consultation Process <input checked="" type="checkbox"/> No GHG Double Counting <input checked="" type="checkbox"/> Contributes to United Nations Sustainable Development Goal 13 (Climate Action)
Choose optional and additional requirements <small>(Tick applicable label categories)</small>	<input checked="" type="checkbox"/> Do-no-net-harm Safeguards to address Environmental Impacts <input checked="" type="checkbox"/> Do-no-net-harm Safeguards to address Social Impacts <input checked="" type="checkbox"/> Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)
Applied methodologies including version No. <small>(Shall be approved by the GCC or the CDM)</small>	AMS-I.D.: "Grid connected renewable electricity generation", v18.0
GHG Sectoral scope(s) linked to the applied methodology(ies)	01 - Energy industries (renewable/non-renewable sources)

Applicable Rules and Requirements for Project Owners	Rules and Requirements	Version	
(Tick applicable Rules and Requirements)	<input type="checkbox"/> ISO 14064-2		
	<input type="checkbox"/> Applicable host country legal requirements /rules		
	<input checked="" type="checkbox"/> GCC Rules and Requirements ²	<input checked="" type="checkbox"/> Project Standard	V3.1
		<input type="checkbox"/> Approved GCC Methodology (XXXXX)	
		<input checked="" type="checkbox"/> Program Definitions	v3.1
		<input checked="" type="checkbox"/> Environment and Social Safeguards Standard	V3.0
		<input checked="" type="checkbox"/> Project Sustainability Standard	V3.0
		<input checked="" type="checkbox"/> Instructions in Project Submission Form (PSF)-template	V4.0
		<input checked="" type="checkbox"/> Clarification No. 01	v1.3
		<input type="checkbox"/> Clarification No. 02	
		<input checked="" type="checkbox"/> Clarification No. 03	v1.0
		<input type="checkbox"/> Clarification No. 04	
		<input type="checkbox"/> Clarification No. 05	
		<input checked="" type="checkbox"/> Standard on avoidance of double counting	v1.0
	<input type="checkbox"/> Add rows if required		
	<input checked="" type="checkbox"/> CDM Rules ³	<input checked="" type="checkbox"/> Approved CDM Methodology (XXXXX)	v18.0
<input type="checkbox"/> TOOL 1- Tool for the demonstration and assessment of additionality			
<input type="checkbox"/> TOOL 02- Combined tool to identify the baseline scenario and demonstrate additionality			

² GCC Program rules and requirements: <http://www.globalcarboncouncil.com/resource-centre/>

³ CDM Program rules: <https://cdm.unfccc.int/Reference/index.html>

	<input checked="" type="checkbox"/> TOOL 07- Tool to calculate the emission factor for an electricity system	v7.0
	<input type="checkbox"/> TOOL 19- Demonstration of additionality of microscale project activities	
	<input checked="" type="checkbox"/> TOOL 21- Demonstration of additionality of small-scale project activities	v13.1
	<input type="checkbox"/> TOOL 23- Additionality of first-of-its-kind project activities	
	<input type="checkbox"/> TOOL 24- Common practice	
	<input checked="" type="checkbox"/> TOOL 27- Investment analysis	v11.0
	<input type="checkbox"/> TOOL 32- Positive lists of technologies	
	<input type="checkbox"/> Guidelines for objective demonstration and assessment of barriers	
	<input type="checkbox"/> Add rows if required	
<p>Choose Third Party Project Verification by approved GCC Verifiers⁴</p> <p>(Tick applicable verification categories)</p>	<input checked="" type="checkbox"/> GHG emission reductions (i.e., Approved Carbon Credits (ACCs)) <input checked="" type="checkbox"/> Environmental No-net-harm Label (E⁺) <input checked="" type="checkbox"/> Social No-net-harm Label (S⁺) <input checked="" type="checkbox"/> United Nations Sustainable Development Goals (SDG⁺) <input type="checkbox"/> Bronze SDG Label <input type="checkbox"/> Silver SDG Label <input type="checkbox"/> Gold SDG Label <input checked="" type="checkbox"/> Platinum SDG Label <input type="checkbox"/> Diamond SDG Label <input checked="" type="checkbox"/> CORSIA requirements (C⁺)	

⁴ **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.

<p>Declaration by the ‘Authorized Project Owner⁵ and focal point’</p> <p>(Tick all applicable statements⁶)</p>	<p><input type="checkbox"/> Host Country Attestation on Double counting</p>
	<p>The Project Owner(s) declares that:</p> <p>Generic Requirements applicable to all Project Types:</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> We confirm that the Project Activity is eligible to be registered under the GCC program.</p> <p>We shall ensure the following for the Project Activity (tick at least one of the two options):</p> <p><input checked="" type="checkbox"/> 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-GHG⁷ program, either for compliance or voluntary purposes, during the entire GCC crediting period; or</p> <p><input checked="" type="checkbox"/> If the project activity has been issued with carbon credits or environmental attributes of compensating nature⁸ 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.</p> <p>Specific requirements applicable to respective Project Types:</p> <p><u>For Project Type A1:</u></p> <p><input type="checkbox"/> 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</p>

⁵ The Project Owner means the legal entity or organization that has overall control and responsibility for the Project Activity

⁶ **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.

⁷ Non-GHG programs could be such as I-REC facilitating reliable energy claims with Renewable Energy Certificate (REC) schemes

⁸ The environmental attributes of compensating nature are those which are used by captive users (e.g., corporates/industries) for offsetting their GHG emissions

	<p>voluntary program and has not issued or will not issue credits under any other program.</p> <p><u>For Project Type A2 (Sub-Type 1):</u></p> <p><input checked="" type="checkbox"/> 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.</p> <p><u>For Project Type A2 (Sub-Type 2 or Sub-Type 3):</u></p> <p>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):</p> <p><input type="checkbox"/> Submit a proof for deregistration from CDM; or</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><u>For Project Type A2 (Sub-Type 4):</u></p> <p>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):</p> <p><input type="checkbox"/> Submit the proof for exclusion of CPA(s) from registered CDM-POA prior to the date of initial submission to the GCC Program; or</p> <p><input type="checkbox"/> 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.</p> <p><u>For Project Type A3:</u></p> <p><input type="checkbox"/> 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.</p> <p><u>For Project Type B1 or B2:</u></p>
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	<p>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):</p> <p><input type="checkbox"/> Submit a proof for deregistration from CDM; or</p> <p><input type="checkbox"/> 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.</p> <p>Requirements to avoid double counting:</p> <p>We intend to submit or have submitted a written attestation⁹ (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 stages¹⁰ (tick at least one of the three options):</p> <p><input type="checkbox"/> The initial submission for GSC; or</p> <p><input type="checkbox"/> Along with the submission for a request for registration (after Project Verification is completed); or</p> <p><input checked="" type="checkbox"/> Along with the submission for a request for the first or subsequent issuance of ACCs.</p> <p>Project specific requirements:</p> <p><u>CORSIA specific requirements:</u></p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> We confirm that the Project Activity meets all the requirement of the CORSIA Eligible Emissions Units¹¹ required for GCC projects and does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes.</p> <p><input checked="" type="checkbox"/> 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).</p> <p><input checked="" type="checkbox"/> We confirm that the Project Activity will be implemented in a country which is UN member state¹².</p>
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⁹ In case of any change of Host Country Letter of Authorisation (HCLOA) the project owner shall inform the GCC operations team immediately

¹⁰ 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.

¹¹ CORSIA Eligible Emissions Units containing approval and conditions for GCC Program: <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Emissions-Units.aspx>

¹² The list of UN member states countries can be found at <https://www.un.org/en/about-us/member-states>

	<p>Provide details (if any) below for the boxes ticked above:</p> <hr/> <p>The Project Owner(s) declares that:</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p>Provide details below for the boxes ticked above</p>
<p>Appendixes 1-9</p>	<p>Details about the Project Activity are provided in Appendixes 1 through 9 to this document.</p>
<p>Name, designation, date and signature of the Focal point (as per LON/LOA)</p>	<div style="border-bottom: 1px solid black; padding-bottom: 10px;">  <p>Name: Neelabhra Paul Designation: President Date: 27/12/2022</p> </div> <div style="padding-top: 10px;">  <p>Name: Piyush Sharma Designation: Asst. General Manager–Business Development Date: 27/12/2022</p> </div>

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

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

>> The proposed project activity has been undertaken to harness the available solar power potential to generate clean power in Uttar Pradesh. The proposed project activity is a 10 MW Solar Photovoltaic based power generation by Sun N Wind Infra Energy Pvt. Ltd. (SWIEPL). The project activity is hosted at Lalitpur district of Uttar Pradesh state of India. The proposed project activity will use Polycrystalline Solar PV modules manufactured by Canadian solar. The power generated by the project will be supplied to the Indian grid in accordance with a Power Purchase Agreement (PPA).

It is estimated that the project activity will generate 16,030 MWh of electricity per annum, which will be sold to the state electricity board, i.e., Uttar Pradesh Power Corporation Ltd. The spatial extent of project boundary is the Indian grid. The project activity will supply electricity to the Indian grid through transmission lines connected through sub-station. The project activity will help in greenhouse gas (GHG) emission reduction by using renewable resources (Solar energy) for generating power which otherwise would have been generated using grid mix power plants, which is dominated by fossil fuel based thermal power plants. The project activity is a green field project aimed at harnessing solar energy to produce power.

The estimated annual average and the total CO₂e emission reduction by the project activity over the crediting period of 10 years are expected to be 14,995 tCO₂e and 149,950 tCO₂e respectively.

The project is expected to contribute 5 SDGs which are SDG 7, 8, 9, 11 and 13.

SDG 7 Energy: The project contributes SDG Target 7.2 “By 2030, increase substantially the share of renewable energy in the global energy mix” by the utilization of solar power as a renewable energy source.

SDG 8 Economic Growth: The project creates direct and indirect employment opportunities during construction and operation phases, so it contributes to SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.

SDG 9 Infrastructure, Industrialization: SDG Target 9.4 requires “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities”. The project helps the Target 9.4 by implementing a clean, reliable and environmental-friendly infrastructure for clean energy production / up-to-date industrialization.

SDG 11 Sustainable Cities and Communities: The project helps to achieve SDG Target 11.6 “By 2030, reduce the adverse per capita environmental impacts of cities, including by paying special attention to air quality and municipal and other waste management.” by decreasing particulate matter caused by fossil fuel emissions in the cities.

SDG 13 Climate Change: The project produces clean renewable energy by diminishing CO2 emissions. Therefore, it contributes SDG Target 13.2 “Integrate climate change measures into national policies, strategies and planning”.

A.2. Location of the Project Activity

>>

The project activity is located in Lalitpur district. The project site is located 52 km away from Lalitpur Junction railway station and is well connected by district roads to the nearest town.

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	Latitude	Longitude
Patha – Village, Mehrauni – Tehsil, Lalitpur – District, Uttar Pradesh, India	24° 29’ 16” N (24.4877° N)	78° 41’ 45” E (78.6958° E)

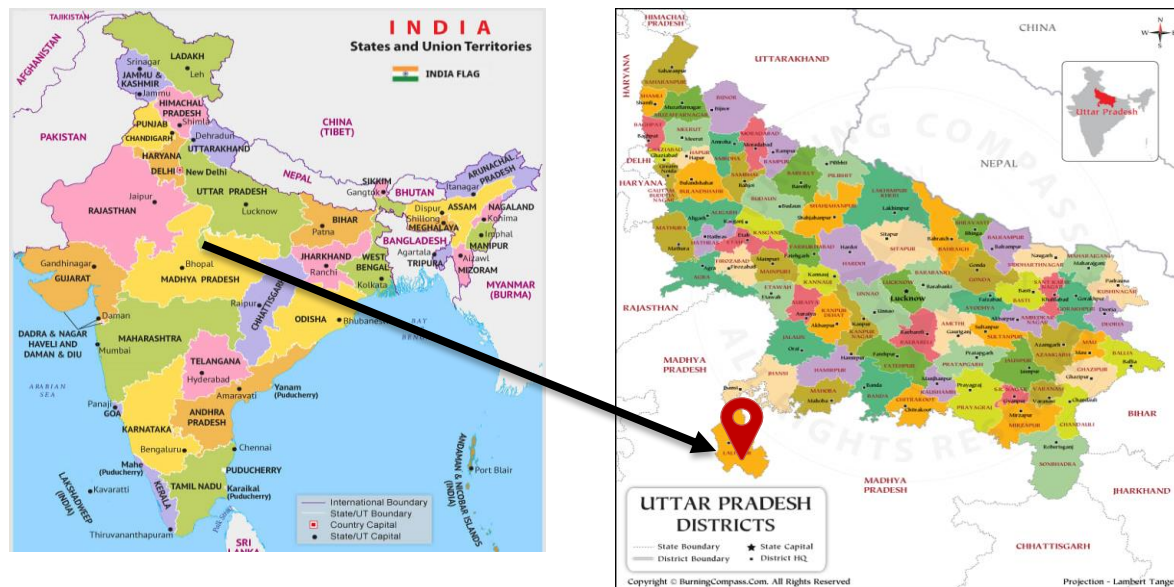


Fig. Project Site.

A.3. Technologies/measures

>>

The proposed 10 MW solar power project is located in Lalitpur district of Uttar Pradesh, India. The major components of the solar projects are the solar modules, module mounting structures, inverter and transformer. The solar modules are mounted on the module mounting structures. The solar module is a packaged, connected assembly of solar cells which uses the incident photons from the

sun light and converts it into electricity. The solar module generates DC power, which is converted to AC power with the help of inverters. The proposed project activity will generate electricity by utilizing solar energy which otherwise would have been generated using grid mix power plants, which is dominated by fossil fuel based thermal power plants. The instant project encompasses the following:

Particulars	Details
Nominal capacity of the PV plant	10 MW AC
Number of modules	36,120 Modules.
Module make	Canadian Solar
Module type	CS6X-320P ¹³
STC Rating	1000w/m ²
Panel efficiency	16.16%
Installed capacity DC	11.5 MWp DC
Open Circuit Voltage	45.1V / 45.3V
Short Circuit Current	9.18A / 9.26A
Mounting	Fixed Structure
Tilt angle (slope) of module	20°
Inverter	SMA SC-1000CP-10-BS-1000KW – 10 Nos.
Inverter Make	SMA

The average lifetime of the solar modules under the project activity is around 25 years. The plant load factor of the project assessed by third party is 18.3%. In absence of the project activity the equivalent amount of electricity would have been generated by the Indian grid, which is predominantly based on fossil fuels¹⁴, hence baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

The solar project converts the incident sunlight into electricity and is a GHG emission free form of energy generation. The technology and the project do not pose any adverse threat to the environment and contribute positively in reducing GHG emissions by displacing energy generation from fossil fuel powered projects. The proposed project activity is environmentally safe to implement and operate. The Solar PV modules are manufactured by Canadian solar. The solar technology used is well established in India and project does not lead to technology transfer to host country.

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable ¹⁵ , indicate if the host country has provided approval (Yes/No)
India	Manikaran Power Limited	No

¹³ <https://www.solarelectricsupply.com/canadian-solar-max-power-cs6x-320p-solar-panel-wholesale-price>

¹⁴ http://www.cea.nic.in/executive_summary.html

¹⁵ 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).

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		
20/02/2017	19/02/2027	Manikaran Power Limited	Sale

The project owner confirms that the ACC's generated from the project will not be double counted in any other mechanism.

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

>>

Following approved baseline & monitoring methodology is applied Methodology:

AMS-I.D, "Grid connected renewable electricity generation", v18.0

<https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

The tools referenced in this methodology used for the proposed project includes:

Tool 7: "Tool to calculate the emission factor for an electricity system", v7.0

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

Tool 21: "Demonstration of additionality of small-scale project activities", v13.1

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf>

Tool 27: "Investment analysis", v11.0

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v11.0.pdf>

Guidelines

"General guidelines for SSC CDM methodologies", v23.1

https://cdm.unfccc.int/filestorage/e/x/t/extfile-20210211212225503-MethSSC_Guid25ver23.1.pdf/MethSSC_Guid25ver23.1?t=QVF8cmRrbHRtfDA0NNyZ70i4jVtWega btTIN

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

>>

As per the Para 12 of Simplified M & P for small-scale project activities (FCCC/CP/2002/7/Add.3, Page 21) – to use simplified modalities and procedures for small-scale project activities, a proposed project activity shall meet eligibility criteria for a small-scale project activity¹⁶.AMS-I.D., v18.0 has been used and justifications for the eligibility conditions are provided below.

Applicability Conditions	Position of the project activity vis-à-vis applicability conditions
<p>1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass</p> <p>a) Supplying electricity to a national or a regional grid</p> <p>b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p>	<p>The project activity involves 10 MW solar photovoltaic based power generation project. The net electricity generated will be supplied to Indian grid.</p> <p>Thus, this applicability criterion is met.</p>
<p>2. Illustration of respective situations under which each of the methodology (i.e. “AMS-I.D.: Grid connected renewable electricity generation”, “AMS-I.F.: Renewable electricity generation for captive use and mini-grid” and “AMS-I.A.: Electricity generation by the user) applies is included in the appendix.</p>	<p>As per Table No 1 of Appendix of AMS – I. D., v18.0, the AMS I.D. is applicable to the project activity. The same is demonstrated in the next table below.</p> <p>Thus, this applicability criterion is fulfilled.</p>
<p>3. This methodology is applicable to project activities that (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).</p>	<p>The project activity is installation of new Solar PV project. PPs doesn't have any power generation projects at the proposed project site prior to the implementation of the project activity.</p> <p>Thus, this applicability criterion is fulfilled</p>
<p>4. Hydro power plants with reservoirs¹⁷ that satisfy at least one of the following conditions</p>	<p>The project activity is a solar based power plant.</p>

¹⁶ <http://cdm.unfccc.int/Reference/Documents/AnnexII/English/annexII.pdf>

¹⁷ A reservoir is a water body created in valleys to store water generally made by the construction of a dam.

Applicability Conditions	Position of the project activity vis-à-vis applicability conditions
<p>are eligible to apply this methodology:</p> <ul style="list-style-type: none"> • a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • b) The project activity is implemented in an existing reservoir¹⁸, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; • c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m². 	<p>Applicability criterion is therefore not relevant.</p>
<p>5. If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small-scale project activity applies only to the renewable component. If the new unit co fires fossil fuel¹⁹, the capacity of the entire unit shall not exceed the limit of 15MW.</p>	<p>The project activity is only 10 MW Solar based renewable electricity generation project. It does not include any non-renewable unit or co-firing system.</p> <p>Applicability criterion is therefore not relevant.</p>
<p>6. Combined heat and power (co-generation) systems are not eligible under this category.</p>	<p>The project activity does not involve combined heat and power generation system as it involves solar PV based power project.</p>
<p>7. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct²⁰ from the existing units.</p>	<p>The project is a Greenfield project and not the extension of an existing renewable energy facility.</p> <p>Applicability criterion is therefore not relevant.</p>

¹⁸ A reservoir is to be considered as an existing reservoir, if it has been in operation for at least three years before the implementation of the project activity.

¹⁹ Co-fired system uses both fossil and renewable fuels.

²⁰ Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered “physically distinct”.

Applicability Conditions	Position of the project activity vis-à-vis applicability conditions
8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	The project activity is not the retrofitting or replacement of an existing facility for renewable energy generation. Applicability criterion is therefore not relevant.
9. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	The proposed project activity is a solar based power project. Applicability criterion is therefore not relevant
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	The proposed project activity is a solar based power project. Applicability criterion is therefore not relevant.

Table: Applicability of AMS-I.D, AMS-I.F and AMS-I.A based on project types

	Project type	AMS-I.D.	AMS-I.F.	AMS-I.A.
1	Project supplies electricity to a national/regional grid		✓	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			✓
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		✓	
4	Project supplies electricity to a mini grid ²¹ system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			✓
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	✓		

The project activity is installation of 10 MW of solar based power generation and there would not be any change in the capacity of the project during its crediting period. Since the project will supply the

²¹ The sum of installed capacities of all generators connected to the mini-grid is equal to or less than 15 MW.

generated renewable electricity to Indian grid and the capacity of the project activity is well below the qualifying limit of 15 MW. Hence the choice of project Type I and category is justified.

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

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As per Para 18 of applied baseline and monitoring methodology AMS-I.D., v18.0, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the GCC project power plant is connected to. Thus, the project boundary of the project activity is the Indian grid. All the power plants connected to the Indian grid have been considered under the project boundary.

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	Grid Connected Electricity Generation	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
Project Activity	Greenfield Solar PV project activity	CO ₂	No	No CO ₂ emissions are emitted from the project
		CH ₄	No	No CO ₂ emissions are emitted from the project
		N ₂ O	No	No CO ₂ emissions are emitted from the project

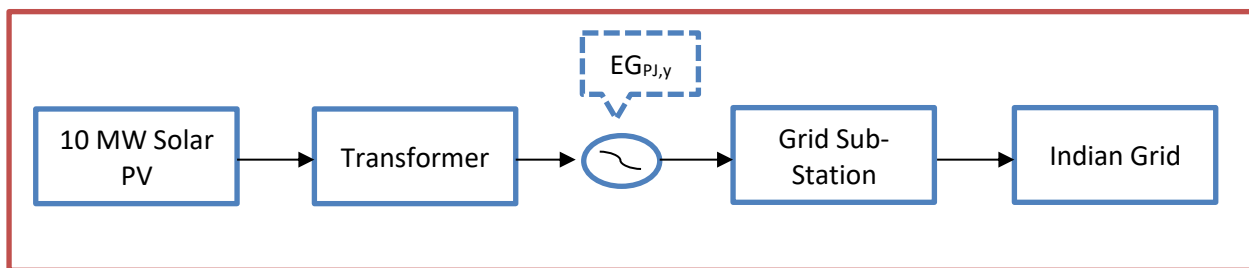


Fig.: Project boundary

B.4. Establishment and description of the baseline scenario

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The project activity involves installation of 10 MW solar PV based power generation project. The generated power will be sold to Indian grid, which otherwise would have been generated by the grid, which possesses a mix of generation types with fossil fuel fired power plants.

As per para 19 of AMS-I.D., v18.0 “The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. Project activity supplies electricity to Indian grid. In the absence of the project activity same amount electricity would have been generated from the Indian grid, in which the electricity is generated by the fossil fuel intensive power plant (Coal based). Thus, baseline is in line with para 19 of AMS-I.D., v18.0.

Para 22 of AMS-I.D., v18.0 calculates baseline emissions as:

$$BE_y = EG_{PJ,y} \times EF_{grid,y} \quad \dots(1)$$

Where,

BE_y	Baseline emissions in year y (tCO ₂)
$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the GCC project activity in year y (MWh)
$EF_{grid,y}$	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO ₂ /MWh)

Accordingly, the emission factor of the grid will be used to estimate emission reductions. As per para 23 of AMS-I.D., v18.0, PP has chosen option (a) and used the combined margin (CM) approach to calculate emission factor, as official data is available for operating margin (OM) and build margin (BM) values, whereas no such data exists in the public domain to support choice of option (b). Hence,

$$EF_{grid,y} = EF_{grid,CM,y} \quad \dots(2)$$

DATA USED

Parameters	Description	Source
EF _{grid,OM,y}	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as per “Tool to calculate the emission factor for an electricity system v7.0” using data from Central Electricity Authority of India’s (CEA) “Baseline Carbon Dioxide Emission Database v17.0” ²²
EF _{grid,BM,y}	Build margin CO ₂ emission factor for the project electricity system in year y	
EF _{grid,CM,y}	Combined margin CO ₂ emission factor for the project electricity system in year y	
EG _{PJ,y}	Quantity of net electricity supplied by the candidate project activity to the grid in year y	Estimated generation based on rated capacity of the project activity and the applicable PLF. During the crediting period, records of actual net electricity supply to the grid will be used.
PLF _{Solar}	18.3%	As per DPR

This data is published by Central Electricity Authority (CEA) (a statutory body constituted under Electricity Act and having its office attached to Ministry of Power, Government of India) on their website (www.cea.nic.in). “Baseline Carbon Dioxide Emission Database, v17.0” is the latest available data and is, therefore, being used in calculation of the baseline emissions.

B.5. Demonstration of additionality

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In accordance with Tool 21, “Demonstration of additionality of small-scale project activities v13.1” Project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- a) **Investment barrier:** A financially more viable alternative to the project activity would have led to higher emissions;
- b) **Technological barrier:** A less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- c) **Barrier due to prevailing practice:** Prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- d) **Other barriers:** Without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

²² <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

The project proponent identified “**investment barrier**” as the most relevant barrier faced by the project activity. The investment barrier faced by the project activity consists of barrier due to high capital cost and consequent impact on return.

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 GCC project activity. The investment analysis was conducted in accordance with investment analysis tool.

As per Paragraph 17 of the tool ‘Investment analysis (v11.0)’, “*In the cases of projects which could be developed by an entity other than the project participant the benchmark should be based on parameters that are standard in the market.*”

The benchmark approach is therefore suited to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest.

In the proposed project activity, the baseline scenario is the generation of equivalent amount of electricity from the grid-connected power plants, owing to which, it is outside the direct control of the project proponent. Hence, the benchmark analysis approach has been adopted.

The project proponent proposes to use benchmark analysis approach to prove additionality. IRR is the most suitable and commonly used financial indicator. Hence, PP has used post tax-equity IRR as financial indicator.

Selection of financial indicator:

In order to analyse the financial viability of the project activity, the prime financial indicator that has been used is the equity IRR of the project activity. The equity IRR is one of the most commonly used tools to assess the feasibility and viability of the projects. Since the project developer is demonstrating the financial unattractiveness of the project, equity IRR is appropriate as it is often used by the project developers to make a decision on investing in the project. Hence, post tax-equity IRR is considered the financial indicator for demonstrating the additionality of the project.

Selection of benchmark:

As per paragraph 19 of the tool ‘Investment analysis (v11.0)’, “If the benchmark is based on parameters that are standard in the market, the cost of equity should be determined either by: (a) selecting the values provided in the Appendix; or by (b) calculating the cost of equity using CAPM.”

PP has considered the value of 10.55% provided as the default Return on Equity (ROE) value in Appendix-Default values for cost of equity (return on equity) of the Investment Analysis tool.

Further as per tool PP has chosen option a) selecting the values provided in Appendix; Default values for cost of equity (return on equity), Project participant has considered the benchmark based on equity indices. Cost of equity has been estimated based on the values provided in Appendix-Default values for cost of equity (return on equity). As per the values, Cost of Equity can be estimated as below –

$$\text{Return on equity}_{\text{Nominal}} = (1 + \text{Return on equity}_{\text{Real}}) \times (1 + \text{Inflation rate}_{\text{Host country}}) - 1$$

Apart from the default values of ROE provided in the Appendix, the para 16 of tool is also used to finally arrive at the value of the benchmark. As per the same, *"In situations where an investment analysis is carried out in nominal terms and the available IRR benchmarks are in real terms, project participants shall convert the real term values of benchmarks to nominal values by adding the inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used"*.

The Reserve bank of India (RBI) provides the quarterly forecast (for the next five years and 10 years) for the inflation. RBI forecasted values for the next ten years for WPI inflation has been used to adjust the default value of ROE, which is given in real terms as per below.

Long term WPI for 10 years forecast applicable to the proposed project activity is as below as the same was available to PP at that time of investment decision.

Investment Decision Date	WPI Value (10 years forecast)	Benchmark	Source
25/01/2015	5.10%	16.19%	Results of the Survey of Professional Forecasters on Macroeconomic Indicators – (rbi.org.in)

Therefore,

$$\text{Return on Equity}_{\text{Nominal}} = (1+10.55\%) \times (1+5.10) - 1 = 16.19\%$$

Hence, the return on equity 16.19% has been considered as benchmark value.

Post Tax Equity IRR Calculation:

As per para 6 of the tool Investment Analysis, v7.0, *"The period of assessment should not be limited to the proposed crediting period of the GCC project activity. Both project IRR and equity IRR calculations should reflect the period of expected operation of the underlying project activity (technical lifetime and if a shorter period than the technical lifetime is chosen, the investment analysis shall be conducted for at least 10 years and include the fair value of the project activity assets at the end of the assessment period. The IRR calculation may include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment"*.

The period considered for Post Tax Equity IRR calculations is for 25 years, which corresponds to the operational lifetime of the project activity.

Depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, is added back to net profits for the purpose of calculating the financial indicator.

The following table illustrates the assumptions used for the calculation of the financial indicator i.e., Post Tax Equity IRR for the given project activity. The use of these parameters indicating if they are

assumed or based on actual figures is explained in the table. All the relevant costs and revenues for the project activity have been considered for calculation of Post Tax Equity IRR.

Key Assumption for Financial Analysis In line with investment analysis tool of EB, the assumptions used for the determination of post-tax Equity IRR for the proposed project activity at the time of project decision are given below

10 MW Solar Project		
Assumptions	Value	Source
Project Capacity in MW	10	As per DPR
Project Cost (INR. In Millions)	835.00	As per DPR
Plant Load Factor Base Case	18.3%	As per DPR
Net Electricity Generation per year (MWh)	16,030	Based on the PLF and the installed capacity and the operating hours in a year
Operation & Maintenance Cost (INR Million)	10.20	As per DPR
% escalation per annum on O & M Charges from 2 nd year	5.72	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
Unit Cost of Electricity (INR/kWh)	8.50	DPR
Equity (INR. In Millions)	250.50	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
Loan (INR. In Millions)	584.50	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
Interest Rate	14.39%	Calculated as average of BPLR of five major bank
Loan tenure (years) including 1 year moratorium period	13.5%	As per DPR
Rate of Depreciation (As per Books) on Plant and Machinery	4%	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
Book depreciation	90%	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
Residual Value (%)	10%	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
Accelerated Depreciation as per IT act	80%	As per CERC order dated 06/02/2012 https://cercind.gov.in/2016/regulation/4.pdf
MAT Rate	20.01%	http://www.arthapedia.in/index.php?title=Minimum_Alternate_Tax_(MAT)
Corporate Tax	32.45%	https://taxguru.in/income-tax/income-tax-rate-chart-assessment-year-201516-financial-year-201415.html

Post Tax Equity IRR for the proposed project activity is 9.19% against its benchmark which is 16.19%.

Sensitivity Analysis

To check the robustness of the project's financial return calculation it has been tested by subjecting critical parameters to reasonable variations as required by Annex 2 EB 112.

The robustness of the conclusion drawn above, namely that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. As required by Annex 2 EB 112, variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. PP has identified the total revenue from the project activity is dependent on the Plant Load Factor and Project Cost, O&M Costs and Interest rate constitute more than 20% of the project costs. These factors have been subjected to a 10% variation on either side and the results of the sensitivity analysis so conducted are given in the following tables.

FACTOR	VARIATION			Breaching value
	-10%	0%	+10%	
Project Cost	11.54%	9.19%	7.18%	-24.23%
O&M Cost	9.53%	9.19%	8.86%	-234.48%
PLF	6.59%	9.19%	11.69%	27.91%
Tariff	6.59%	9.19%	11.69%	27.91%
Interest Rate	10.08%	9.19%	8.25%	-59.32%
Benchmark	16.19%			

An analysis has been done to identify the percentage variation at which the financial indicators will equal/breach the benchmark and the probability of its occurrence. Based on sensitivity analysis it can be concluded that the proposed project activity is additional with reasonable variation in values and is not likely to reach the benchmark value.

An analysis has been done to identify the percentage variation at which the financial indicator will equal/breach the benchmark and the probability of its occurrence. The occurrence of these events is unlikely for the following reasons:

- a) **PLF:** The PLF value considered is based on the detailed project report, i.e., 18.3% and the PLF will breach the benchmark value at an increase in PLF by 27.91%. It is evident from the actual generation data the PLF for the years 2017, 2018, 2019, 2020, 20221 was 18.1%, 18.3%, 17.7%, 18.5%, 18.3%. The actual PLF values fall well within the 10% sensitivity range. As being a solar project it is highly unlikely that subsequent PLF of the plant will increase further than the actual achieved in these initial 5 years. The PLF in the subsequent years surely will not increase. Hence, increase in PLF to breach benchmark value is not a possibility.
- b) The project cost considered for investment analysis for the project activity are sourced from the Detailed project report (DPR). The project will breach the benchmark value on decrease of project cost by 24.23%. Cost of project as per the DPR is INR 835 million and actual cost as per the EPC agreement is INR 650 million which is 22.15% lower than cost considered for investment analysis. However as breaching value is 24.23% and project cost already incurred is not a likely scenario, further reduction in the same is not possible.
- c) **O&M Costs:** The projects does not breach the benchmark value even considering O&M cost as zero, decrease beyond is hypothetical. Hence, decrease in O&M cost to breach the benchmark value is not a likely scenario.

- d) **Tariff:** The Tariff rate of electricity considered investment analysis i.e., INR 8.50/kWh which is sourced from the Detailed project report. The project will breach the benchmark value on increase of tariff rate by 27.91% i.e. INR 10.87/kWh. The actual tariff rate signed for the project as per the PPA is INR 9.27/kWh which is well within the 10% sensitivity range and hence likely hood of increase of tariff beyond the breaching value is not a likely scenario for projects for period of assessment considered as the tariff rate fixed for the project.
- e) **Interest rate:** The interest rate of long-term loan i.e., 14.39% is considered for investment analysis, which is calculated as five major banks average available to PP prior to decision making date. The project will breach the benchmark value on decrease in interest rate value by 59.32%. The loan is already sanctioned for the project activity at an interest rate of 11.50%, which is well within the sensitivity range.

Based on above analysis it can be concluded that project is not financially attractive and equity IRR are well below benchmark value and with all reasonable variation the projects post tax equity IRRs does not breach the benchmark value. The carbon revenue from sale of ACCs will help in reducing viability funding gap.

Hence the project activity is additional.

B.6. Estimation of emission reductions

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As per paragraph 43 AMS-I.D., v18.0, the emission reductions for the project activity is calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER_y	Emission reductions in year y (t CO ₂)
BE_y	Baseline Emissions in year y (t CO ₂)
PE_y	Project emissions in year y (t CO ₂)
LE_y	Leakage emissions in year y (t CO ₂)

B.6.1. Explanation of methodological choices

>

As per para 22 of AMS-I.D., v18.0, baseline emissions are calculated as follows:

$$BE_y = EGP_{J,y} \times EF_{grid,y}$$

Where,

BE_y	Baseline emissions in year y (tCO ₂)
$EGP_{J,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the GCC project activity in year y (MWh)

$EF_{grid,y}$ Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

Calculation of $EG_{PJ,y}$

As proposed project activity is a greenfield project, in accordance with para 26 of applied methodology

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

Where,

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

Calculation of BE_y

Calculation of baseline emissions i.e. BE_y , requires calculation of grid emission factor ($EF_{grid,y}$), which is being presented below.

As per para 23 of the applied methodology, the emission factor can be calculated in a transparent and conservative manner as follows:

- a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the Tool to calculate the Emission Factor for an electricity system, OR;
- b) The weighted average emissions (in tCO₂/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

The PP has chosen option a i.e. combined margin (CM) consisting of combination OM and BM. Tool to calculate the emission factor for an electricity system, v7.0, has been used to determine the CO₂ emission factor for displacement of electricity generated by power plants in an electricity system, by calculating the combined margin emission factor (CM) of that electricity system. As per the tool, PP has applied the following six steps:

Step 1: Identify the relevant electricity systems.

The CEA of the host country has published a delineation of the project electricity system and connected electricity systems. For identification of relevant electric power system of the project activity the data published by the CEA of the host country is used and the project activity falls under Indian grid.

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

Project participants 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.

Project Participant has chosen Option I i.e., only including grid power plants in the calculation of operating margin and build margin emission factor, since data for the same is available from Central Electricity Authority which is an official source. No official data is available publicly for off grid power plants.

Step 3: Select a method to determine the operating margin (OM), $EF_{grid,OM,y}$

The approved methodological tool recommends the use of one of the following for the calculation of the operating margin emission factor ($EF_{grid,OM,y}$):

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

As per the methodology, any of the four methods can be used; however simple OM method can be used only if low-cost/must-run resources constitute less than 50% of total grid generation in:

- 1) Average of the five most recent years
- 2) Based on long-term averages for hydroelectricity production

In India, due to lack of necessary data, option (b) and (c) cannot be applied. Since low-cost/must – run resources constitute less than 50% of the total grid generation and since fuel consumption data is available for each power plant/unit, option (a) is opted for calculation of Operating Margin.

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

	2016-17	2017-118	2018-19	2019-20	2020-21
India	14.6%	14.3%	14.5%	17.0%	16.5%

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. Hence the Simple OM method can be used to calculate the Operating Margin Emission factor.

The project proponents choose an ex-ante option for calculation of the OM with a 3-year generation weighted average, based on the most recent data available at the time of submission of the GCC PSF to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period

Step 4 – Calculate the operating margin emission factor according to the selected method.

- a) Simple OM

However, in India availability of accurate data on grid system dispatch order for each power plant in the system and the amount of power dispatched from all plants in the system during each hour is practically not possible. Also, still the merit order dispatch system has not become applicable and is

not likely to happen during the crediting period. In view of this, it is proposed to apply other alternatives as suggested in the “Tool to calculate the emission factor for an electricity system”. Since the power supplied by low cost- must-run power plants²³ to the Indian grid during 2009-20 is clearly below 50%, it was decided to apply the **Simple OM method**.

In the Simple OM method, the emission factor is calculated as generation weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. Simple OM can be calculated using any of the two available methods. Option B has been selected where the data on fuel consumption and net electricity generation of each power plant/ unit is available. The CEA baseline is derived using the following formulae to calculate simple OM.

$$EF_{grid,OM,simple,y} = \frac{\sum FC_{i,m,y} * NCV_{i,y} * EF_{CO2,i,y}}{EG_{m,y}}$$

Where,

EF _{grid,OM,simple,y}	is simple operating margin CO ₂ emission factor in year y (tCO ₂ /MWh)
FC _{i,m,y}	is amount of fossil fuel type i consumed by power plant / unit m in year y (mass or volume unit)
NCV _{i,y}	is net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
EF _{CO2,i,y}	is CO ₂ emission factor of fossil fuel type i in year y (tCO ₂ /GJ)
EG _{m,y}	is net electricity generated and delivered to the grid by power plant / unit m in year y (MWh)
m	is all power plants / units serving the grid in year y except low-cost / must-run power plants / units
i	is all fossil fuel types combusted in power plant /unit m in year y
y	is either the three most recent years for which data is available at the time of submission of the GCC-PSF to the verifier for validation (ex-ante)

The CO2 emission factor (EF_{EL,m,y}) data for simple OM, available under the CEA database (v17.0) for the last three years is as follows.

Net generation in operating margin GWh including import			
	2018-19	2019-20	2020-22
Indian Grid	995,957	965,009	958,218
Simple operating margin(tCO ₂ /MWh) (including import)			
	2018-19	2019-20	2020-22
Indian Grid	0.9648	0.9618	0.9497

Weighted Avg. Operating Margin Indian Grid is

$$= (995,957 \times 0.9648 + 965,009 \times 0.9618 + 958,218 \times 0.9497) / (995,957 + 965,009 + 958,218)$$

$$= 0.9588 \text{ tCO}_2/\text{MWh}$$

²³ Defined as, geothermal, wind, low cost biomass, nuclear and solar generation plants in the “Tool to calculate the emission factor for an electricity system, v07”

Step 5 – Calculate the build margin emission factor

The build margin emissions factor is the generation of weighted average emission factor (tCO₂/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{Grid,BM,y} = \frac{\sum EG_{m,y} \times FE_{EL,m,y}}{\sum EG_{m,y}}$$

- $EF_{Grid,BM,y}$ - Build margin CO₂ emission factor in year y (tCO₂/MWh)
- $EG_{m,y}$ - Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
- $FE_{EL,m,y}$ - CO₂ emission factor of power unit m in year y (tCO₂/MWh)
- m - Power units included in the build margin
- y - Most recent historical year for which power generation data is available

Build Margin emission factor is determined as below:

Build Margin (BM) 2020-21 tCO ₂ / MWh	= 0.8653
---	-----------------

Source: CEA Carbon Dioxide Baseline Data base, v17.0, October 2021
(<https://cea.nic.in/cdm-co2-baseline-database/?lang=en>)

STEP 6. Calculate the combined margin emissions factor (EF_{grid,y})

The combined margin is the weighted average of the simple operating Margin and the build margin. In particular, for intermittent and non-dispatchable generation types such as wind and solar photovoltaic, the ‘Tool to calculate the emission factor for an electricity system (v7.0)’, allows to weigh the operating margin and Build margin at 75% and 25%, respectively

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

Where,

- $EF_{grid,BM,y}$ Build margin CO₂ emission factor in year y (tCO₂/MWh)
- $EF_{grid,OM,y}$ Operating margin CO₂ emission factor in year y (tCO₂/MWh)
- W_{om} Weighting of operating margin emissions factor (75%)
- W_{BM} Weighting of build margin emissions factor (25%)

Electronic spreadsheet showing calculation of all these parameters is being submitted separately and the final values are presented below:

Default weights for calculation of Combined Margin	tCO ₂ e/MWh
Operating Margin	0.9588
Build Margin	0.8653
Combined Margin (CM)	0.9355

Project emissions

The project activity is a renewable energy solar power project. The project activity will not consume any fossil fuels at site. Thus, according to Para 39,40,41 of the applied methodology, project emission will be zero. $PE_y = 0$.

Leakage:

The project activity is renewable energy solar power project. Hence leakage will be zero. $LE_y = 0$

B.6.2 Data and parameters fixed ex ante

>>

Data / Parameter Table 1.

Data / Parameter:	EF_{grid,OM,y}
Methodology reference	AMS-I.D.
Data unit	tCO ₂ /MWh
Description	Operating margin CO ₂ emission factor for the project electricity system in year y
Measured/calculated /default	Calculated
Data source	CEA's "Baseline Carbon Dioxide Emission Database, v17.0"
Value(s) of monitored parameter	0.9588
Measurement/ Monitoring equipment (if applicable)	Not applicable as the value is calculated
Calculation method (if applicable)	Calculated in line with "Tool to calculate the emission factor for an electricity system (v07.0)" using data from Central Electricity Authority of India's (CEA) "Baseline Carbon Dioxide Emission Database v17.0". The value used is calculated ex-ante as generation based weighted average of last three years of the operating margin provided in the CEA database. Weighted average = $\frac{\sum_{i=1 \text{ to } n} (\text{Net generation in operating margin in year } i * \text{Simple operating margin in year } i)}{\sum_{i=1 \text{ to } n} (\text{Net generation in operating margin of year } i)}$
QA/QC procedures	Not applicable
Purpose of data	For calculation of baseline emission
Additional comments	This value is fixed ex-ante

Data / Parameter Table 2.

Data / Parameter:	EF_{grid,BM,y}
Methodology reference	AMS-I.D.
Data unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor for the project electricity system in year y
Measured/calculated /default	Calculated
Data source	CEA's " <i>Baseline Carbon Dioxide Emission Database v17.0</i> "
Value(s) of monitored parameter	0.8653
Measurement/ Monitoring equipment (if applicable)	Not applicable as the value is calculated
Measuring/reading/ recording frequency (if applicable)	Not applicable as the value is calculated
Calculation method (if applicable)	Calculated in line with " <i>Tool to calculate the emission factor for an electricity system (v07.0)</i> " using data from Central Electricity Authority of India's (CEA) " <i>Baseline Carbon Dioxide Emission Database v17.0</i> ". The value is calculated ex-ante as most recent build margin provided by the CEA.
QA/QC procedures	Not applicable
Purpose of data	For calculation of baseline emission
Additional comments	This value is fixed ex-ante

Data / Parameter Table 3.

Data / Parameter:	EF_{grid,CM,y} / EF_{grid,y}
Methodology reference	AMS-I.D.
Data unit	tCO ₂ /MWh
Description	CO ₂ emission factor of the grid electricity in year y
Measured/calculated /default	Calculated
Data source	CEA's " <i>Baseline Carbon Dioxide Emission Database v17.0</i> "
Value(s) of monitored parameter	0.9355

Measurement/ Monitoring equipment (if applicable)	Not applicable as the value is calculated
Measuring/reading/ recording frequency (if applicable)	Not applicable as the value is calculated
Calculation method (if applicable)	This has been calculated based on Operating Margin (OM) and Build Margin (BM) published by Central Electricity Authority (CEA) of India. Please refer section B.6.1 for details
QA/QC procedures	Not applicable
Purpose of data	For calculation of baseline emission
Additional comments	This value is fixed ex-ante

B.6.3. Ex-ante calculation of emission reductions

>>

The proposed project activity generated power utilizing solar energy. The power generated in the solar power plant will be supplied to the Indian grid. This form of energy generation has no associated GHG emissions. So, the emission reductions will be dependent just upon the quantity of electricity being supplied to the grid, which would have been otherwise generated in fossil fuel dominated grids.

Baseline emissions:

As per paragraph 22 of the applied methodology, the baseline emission of the proposed project will be as follows:

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

Also as per paragraph 26 of the applied methodology, $EG_{PJ,y} = EG_{PJ, facility,y}$.

So baseline emission of the proposed project activity will be:

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

$$EG_{PJ, facility,y} = (10MW \times 18.3\% \times 365days \times 24 \text{ hours}) = 16,030 \text{ MWh (Rounded down)}$$

PLF has been taken from the Detailed Project Report of the project activity. ‘

So,

$$BE_y = 16,030 \times 0.9355$$

$$BE_y = 14,995 \text{ tCO}_2\text{e (Rounded down)}$$

Project emissions:

Not applicable as this is a wind energy-based power generation project.

$$PE_y = 0 \text{ tCO}_2\text{e}$$

Leakage emissions:

No leakage emissions occur due to this project activity.

$$LE_y = 0 \text{ tCO}_2\text{e}$$

Emission reductions:

$$ER_y = BE_y - PE_y - LE_y$$

$$ER_y = (14,995 - 0 - 0) \text{ tCO}_2\text{e}$$

$$ER_y = 14,995.00 \text{ tCO}_2\text{e}$$

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

>>

Year	Baseline emissions (t CO ₂ e)	Project emissions (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions (t CO ₂ e)
Year 1	14,995	0	0	14,995
Year 2	14,995	0	0	14,995
Year 3	14,995	0	0	14,995
Year 4	14,995	0	0	14,995
Year 5	14,995	0	0	14,995
Year 6	14,995	0	0	14,995
Year 7	14,995	0	0	14,995
Year 8	14,995	0	0	14,995
Year 9	14,995	0	0	14,995
Year 10	14,995	0	0	14,995
Total	149,950	0	0	149,950
Total number of crediting years	10			
Annual average over the crediting period	14,995	0	0	14,995

B.7. Monitoring plan

>>

Not Applicable

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

Data / Parameter Table 2.

Data / Parameter:	EG _{PJ facility,y}	
Methodology reference	AMS-I.D.	
Data unit	MWh	
Description	Net electricity supplied to the grid by the project activity	
Measured/calculated /default	Measured	
Data source	Electricity meters	
Value(s) of monitored parameter applied with basis	16,030	
Measurement/ Monitoring equipment	Main Meter	
	Type of meter	Tri-vector Energy meter
	Location of meter	Switchyard
	Accuracy of meter	0.2s
	Serial number of meter	UPP60218
	Calibration frequency	Yearly
	Date of Calibration/ validity	-
	Reference No. of Calibration Certificate	-
	Calibration Status	-
	Check Meter	
	Type of meter	Tri-vector Energy meter
	Location of meter	Switchyard
	Accuracy of meter	0.2s
	Serial number of meter	UPP60219
	Calibration frequency	Yearly
	Date of Calibration/ validity	-
	Reference No. of Calibration Certificate	-
	Calibration Status	-
Frequency of Measuring/reading	Continuous monitoring, Monthly recording	
Recording frequency		
Calculation method (if applicable)	This parameter is monitored using bi directional energy meters.	
QA/QC procedures	As per the recommendations with the grid, the energy meters will have periodic calibrations and the measured data can be cross checked through sales record. The energy meter will be calibrated at least once in 5 years.	
Purpose of data	Calculation of baseline emission	

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

Data / Parameter:	CO₂ Emission Reduction									
Purpose:	Reduction in CO ₂ emissions									
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This parameter is in accordance with the SDG 13 which talks about reducing the fossil fuel emissions by taking climate change measures like producing electricity through Wind Energy.									
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #e1eef6;">Parameter to be monitored</td> <td>CO₂ Emission Reduction</td> </tr> <tr> <td style="background-color: #e1eef6;">Frequency of monitoring</td> <td>Continuous reading, monthly recording</td> </tr> <tr> <td style="background-color: #e1eef6;">Legal /regulatory / corporate limits (if any)</td> <td>The Air (Prevention & Control of Pollution) Act</td> </tr> <tr> <td style="background-color: #e1eef6;">QA/QC</td> <td>The metering arrangement, accuracy class of meters, and calibration frequency is under control of state utility, and the Project Owner does not have any control. The calibration of all the meters is planned to be carried out in-line with the National standard, which recommends calibration at least once in five years. Faulty meters will be duly replaced. The meters will be of accuracy class 0.2s.</td> </tr> </table>		Parameter to be monitored	CO ₂ Emission Reduction	Frequency of monitoring	Continuous reading, monthly recording	Legal /regulatory / corporate limits (if any)	The Air (Prevention & Control of Pollution) Act	QA/QC	The metering arrangement, accuracy class of meters, and calibration frequency is under control of state utility, and the Project Owner does not have any control. The calibration of all the meters is planned to be carried out in-line with the National standard, which recommends calibration at least once in five years. Faulty meters will be duly replaced. The meters will be of accuracy class 0.2s.
Parameter to be monitored	CO ₂ Emission Reduction									
Frequency of monitoring	Continuous reading, monthly recording									
Legal /regulatory / corporate limits (if any)	The Air (Prevention & Control of Pollution) Act									
QA/QC	The metering arrangement, accuracy class of meters, and calibration frequency is under control of state utility, and the Project Owner does not have any control. The calibration of all the meters is planned to be carried out in-line with the National standard, which recommends calibration at least once in five years. Faulty meters will be duly replaced. The meters will be of accuracy class 0.2s.									
Remarks	-									

Data / Parameter:	Solid waste Pollution from E-wastes	
Purpose:	To demonstrate the dispose-off the electrical & electronics waste of projects sites and filling of return	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The E-waste produced from the electrical & electronics waste of projects will be sold to third-party recyclers and the project owner will keep record of the same. The used electronic waste has the potential to release hazardous substance and hence they are to be carefully handled.	

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Solid waste Pollution from E-wastes
	Frequency of monitoring	Annually
	Legal /regulatory / corporate limits (if any)	E-waste (Management and Handling) Rules
	QA/QC	The waste will be disposed to waste handlers and the firm will comply with all the local laws for monitoring and disposal.
Remarks	-	

Data / Parameter:	Solid waste Pollution from end-of-life products/ equipment	
Purpose:	To demonstrate the dispose-off the equipment, instruments after its use is complete or it can't be used again.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The solid waste produced from the equipment, machineries and instruments after their end-of -life i.e., after they are not used will be collected and disposed-off using proper measures and regulations.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Solid waste Pollution from end-of-life products/ equipment
	Frequency of monitoring	-
	Legal /regulatory / corporate limits (if any)	Solid waste management rules 2016.
	QA/QC	-
Remarks	-	

Data / Parameter:	Replacing fossil fuels with renewable source of energy	
Purpose:	To demonstrate the use of renewable source of energy to generate electricity, thus replacing fossil fuels.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This parameter is in accordance with SDG 7 which talks about affordable, clean source of energy. It talks about increasing the share of renewable energy sources in the total electricity generation.	

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	$EG_{P,J, facility, y}$
	Frequency of monitoring	Monthly
	Legal /regulatory / corporate limits (if any)	1. National conservation Act, 2001 2. National Renewable Energy Act, 2015 (draft)
	QA/QC	-
Remarks	-	

Data / Parameter:	Number of people employed for more than 1 year by the project	
Purpose:	The purpose of this parameter is to monitor the number of people that have been employed by the Project Proponent (PP) for long term job in the Project Activity.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This parameter is in accordance with SDG 8 which talks about providing employment and increasing the job opportunities for people.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Number of people employed for more than 1 year by the project
	Frequency of monitoring	Annually
	Legal /regulatory / corporate limits (if any)	-
	QA/QC	The number of persons employed is mentioned in the plant register, which can be crossed checked with daily attendance register.
Remarks	-	

Data / Parameter:	Number of people employed for less than 1 year by the project	
Purpose:	The purpose of this parameter is to monitor the number of people that have been employed by the Project Proponent (PP) for short term job in the Project Activity.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This parameter is in accordance with SDG 8 which talks about providing employment and increasing the job opportunities for people.	

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Number of people employed for less than 1 year by the project
	Frequency of monitoring	Annually
	Legal /regulatory / corporate limits (if any)	-
	QA/QC	The number of persons employed is mentioned in the plant register, which can be crossed checked with daily attendance register.
Remarks	-	

Data / Parameter:	Reducing/increasing accidents	
Purpose:	The purpose of this parameter is to check whether the implementation of the project activity has changed the occurrence of accidents in the project area.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project proponent has implemented EHS policy to reduce the chance of accidents during the construction and operational phase. Proper medical facilities will be provided in case if any such kind of accident occurs.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Reducing/increasing accidents
	Frequency of monitoring	Annual
	Legal /regulatory / corporate limits (if any)	No regulations
	QA/QC	-
Remarks	-	

Data / Parameter:	Specialized training / education to local personnel	
Purpose:	The purpose of this parameter is to provide knowledge and training to the people so that they can be employed.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project proponent confirms that the training on technology to people will upgrade their skills and knowledge about project. This will enhance the knowledge of the people and help them in their future work as well.	

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Specialized training / education to local personnel
	Frequency of monitoring	Annual
	Legal /regulatory / corporate limits (if any)	No regulations
	QA/QC	-
Remarks	-	

Data / Parameter:	Exploitation of Child labour	
Purpose:	The purpose of this parameter is to make sure that no child below the age of 14 will be employed and make to work in the project activity.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project proponent confirms that the company’s HR policy is strictly practiced at site and confirms no child labour is deployed at the site at any cost.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Exploitation of Child labour
	Frequency of monitoring	Annual
	Legal /regulatory / corporate limits (if any)	-
	QA/QC	-
Remarks	-	

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

>>

Data / Parameter:	-
Purpose:	-
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	-

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG							
	Parameter to be monitored	-					
	Frequency of monitoring	-					
	Legal /regulatory / corporate limits (if any)	-					
	QA/QC	-					
Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)							
	S.No.	Action and targets	Responsibility	Resource Requirement	Target to be Achieved by (insert date)	Key Performance Indicators (KPI)	Targets achieved on (insert date)
	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
Date of Closing the Program:				-	-	-	

B.7.3. Sampling plan

>>

Not applicable as all the parameters are monitored.

B.7.4. Other elements of the monitoring plan

>>

The project activity is operated and managed by the project proponent with the help of site in charge (personal from the project proponent) and site O & M contractor. The project proponent has entered into comprehensive EPC and Operation & Maintenance contract with Sterling and Wilson Pvt. Ltd. (SWPL) for the proposed 10 MW project activity. The project team is delegated with the responsibility of monitor and document the electricity generated and also safe keeping of the recorded data.

There are 2 meters installed at the switchyard, i.e., one main meter and one check meter with accuracy class 0.2s. In case of failure of the main meter, reading from the check meter shall be taken to determine the net electricity exported to the grid. The meters are bi-directional meters and are capable of recording export as well as import of electricity from the project activity. The electricity exported and imported by the solar plant is recorded on a monthly basis by the representatives of the PP and state utility.

The meter reading taken by officials of state electricity board in presence of authorized representative of the PP and monthly generation statement with net electricity supplied is issued to PP. At the

conclusion of each meter reading an appointed representative of the state electricity board and the company signs a document indicating the number of kWh exported to the grid.

QA/QC Procedures

Electricity supplied can be recorded in the energy meters of 0.2s accuracy class installed at the switchyard and the meters will be calibrated once in a year by the state electricity utility. The officials of state electricity board record the readings every month in presence of the authorized representative of PP. The net electricity exported to the grid is calculated and issued by state electricity board. Based on the total net electricity supplied to the grid indicated in Monthly Energy Generation statement, PP will raise an invoice to DISCOM. Net electricity supplied to the grid by the project activity will be crosschecked with invoices submitted to DISCOM.

Data Management and Data Archiving

Copies of the break-up sheet, invoices raised on DISCOM and sales receipts will be retained and archived for the entire crediting period plus two years by the project proponent.

Emergency preparedness plan

Operation and Maintenance team is trained for emergency situations.

Training

Operation and maintenance team will train the staff on operation and maintenance aspects of the plant. The training will ensure preventive maintenance and better operational control for the plant.

Data adjustments/uncertainties

For the accurate execution of the Project activity a project team has been constructed. The project team is delegated with the responsibility of monitor and document the electricity generated and also safe keeping of the recorded data. The project team is also responsible for calculation of actual creditable emission reduction in the most transparent and relevant manner.

- In case Main meter is found to be faulty/ damaged, during the monthly recording then the reading for that month would be taken from the back up meter for the purpose of billing. The defective main meter would be replaced and the subsequent readings would be taken from the new main meter.
- In case Backup meter is found to be faulty/ damaged, the defective backup meter would be replaced.
- During the calibration / accuracy testing of the main and backup meter if an error is observed to be outside the permissible limits of accuracy then both the Main & backup meter will be replaced immediately and the measured error from the recording meter would be applied to all the recorded readings conservatively since the date of last calibration/ accuracy test of that meter.

The monitoring team for the project activity will comprise of the following staff:

<u>Position</u>	<u>Report to:</u>
Operators	Site Engineer
Site Engineer	Site Incharge
Site Incharge	Project Owner

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

>>

20/02/2017¹⁷

C.2. Expected operational lifetime of the Project Activity

>>

25 years

C.3. Crediting period of the Project Activity

C3.1. Start and end date of the crediting period

>>

Start Date: 20/02/2017

End Date: 19/02/2027

C3.2. Duration of crediting period

>>

The crediting period is fixed as 10 years.

Section D. Environmental impacts

D.1. Analysis of environmental impacts

>>

As per the of Ministry of Environment and Forests (MoEF), Government of India, under the Environment Impact Assessment Notification vide S.O. 1533 dated 14/09/2006²⁴ has listed a set of activities in Schedule I of the notification which for setting up new projects or modernization/expansion will require environmental clearance & will have to conduct an Environmental Impact Assessment (EIA) study. As per the notification EIA need not to be conducted for the projects of capacity less than 25 MW. Since the installed capacity of the proposed project activity is less than 25 MW, it doesn't falls under preview to conduct EIA study.

The list in schedule of march 2020 notification also doesn't contain any renewable projects²⁵. Thus, EIA is not required for the project activity as per national regulations of India.

²⁴ http://environmentclearance.nic.in/writereaddata/EIA_Notifications/1_SO1533E_14092006.pdf

²⁵ http://environmentclearance.nic.in/writereaddata/Draft_EIA_2020.pdf

D.2. Environmental impact assessment and management action plans

>>

No EIA required for the project activity.

Section E. Environmental and social safeguards

>>

E.1. Environmental safeguards

>>

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 <i>(positive or negative)</i>	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	3 rd Party Audit
				Not Applicable	Harmless	Harmful	Operational Controls	Program of Risk Management Actions						
Environmental Aspects on the identified categories²⁶ indicated below.	Indicators for environmental impacts	Describe and identify anticipated and actual significant environmental impacts, both positive and negative from all	Describe the applicable national regulatory requirements /legal limits / voluntary corporate limits	If no environmental impacts are anticipated, then the Project Activity is unlikely to	If environmental impacts exist but are expected to be in compliance with	If negative environmental impacts exist that will not be in complianc	Describe the operational controls and best practices, focusing on how to implement and operate the	Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of	Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless or harmful. The	-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)	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		

²⁶ sourced from the CDM SD Tool and the sample reports are available (<https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx>)

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		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.	related to the identified risks of environmental impacts.	cause any harm (is safe) and shall be indicated as Not Applicable	applicable national regulatory /stricter voluntary corporate requirements and will be within legal/voluntary corporate limits by way of plant design and 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.	e with the applicable national legal/regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be unsafe) and shall be indicated as Harmful	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	pollution control equipment) that will be adopted to reduce or eliminate the risk of impacts that have been identified as Harmful .	frequency of monitoring to be specified as well including the data source.		including basis of conclusion.	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.
Environment - Air	SO _x emissions (EA01)	-	-	-	-	-	-	-	-	-	-	-
	NO _x emissions (EA02)	-	-	-	-	-	-	-	-	-	-	-
	CO ₂ emissions (EA03)	Reduction in CO ₂ emission. The Solar power project does not cause any CO ₂ emissions in the project scenario.	The Air (Prevention & Control of pollution) Act 1981 stipulates thresholds for both ambient air quality as well as stack emissions.	-	Harmless	-	-	-	The generated electricity by the project activity will be continuously measured and the related CO ₂ emission reduction will be calculated according to the underlying methodology GCM001 v3.0	+1	GHG emission reduction (Tonnes of CO ₂ e/yr). The parameter will be monitored on monthly basis.	
	CO emissions (EA04)	-	-	-	-	-	-	-	-	-	-	-
	Suspended	-	-	-	-	-	-	-	-	-	-	-

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	<i>particulate matter (SPM) emissions (EA05)</i>											
	<i>Fly ash generation (EA06)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Non-Methane Volatile Organic Compounds (NMVOCs) (EA07)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Odor (EA08)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Noise Pollution (EA09)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Others (EA10)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Add more rows if required and corresponding notation with EA as prefix)</i>	-	-	-	-	-	-	-	-	-	-	-
Environment - Land	<i>Solid waste Pollution from Plastics (EL-01)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Solid waste Pollution from Hazardous</i>	Limited quantity of hazardous wastes generated	is	Hazardous and other wastes (Management and Trans	Not Applicable	-	-	-	-	0	PP concludes that hazardous waste generated from project activity will be collected and	

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s wastes (EL02)	during maintenance activities. In the baseline scenario, the solid waste pollution from hazardous wastes is very high.	boundary Movement) Amendment Rules 2016.									disposed-off as per the regulations.	
Solid waste Pollution from Bio-medical wastes (EL03)	-	-	-	-	-	-	-	-	-	-	-	-
Solid waste Pollution from E-wastes (EL04)	E-waste pollution is anticipated through the operation of the project.	E-waste (Management and Handling) Rules	-	Harmless	-	-	-	The details of damaged and returned solar PV modules will be maintained in records for future verification.	+1	Project owner is responsible to maintain records and filling of returns.		
Solid waste Pollution from Batteries (EL05)	-	-	-	-	-	-	-	-	-	-	-	-
Solid waste Pollution from end-of-life products/equipment (EL06)	If solar PV modules and other equipment are not properly managed after their end-of-life, they may cause significant environmental damage.	1. Solid Waste Management Rule, 2016. 2. E-waste management Rule 2016. 3. Batteries (Management and Handling) Rules, 2001.	-	Harmless	-	-	-	All product records will be kept after their useful life have ended.	+1	Project owner is responsible to maintain records and dispose off solar PV and other equipment properly after ending of their lifecycle as per applicable law.		
Soil Pollution from Chemicals (including Pesticides, heavy metals,	-	-	-	-	-	-	-	-	-	-	-	-

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	lead, mercury) (EL07)											
	land use change (change from cropland /forest land to project land) (EL08)	Land use change of the project site may have negative impact if the land was a forestry or agricultural land previously. But it was not a cropland or forest before.	-	Not Applicable	-	-	-	-	-	0	The project does not involve diversion of any forest and hence it is not monitored.	
	Others (EL09)	-	-	-	-	-	-	-	-	-	-	-
	Add more rows if required	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
Environment - Water	Reliability / accessibility of water supply (EW01)	-	-	-	-	-	-	-	-	-	-	-
	Water Consumption from ground and other sources (EW02)	-	-	-	-	-	-	-	-	-	-	-
	Generation of wastewater (EW03)	-	-	-	-	-	-	-	-	-	-	-
	Wastewater discharge	Water will be consumed for cleaning of	The Water (Prevention & Control of	Not Applicable	-	-	-	-	-	0	There is no significant effect as provisions of septic	

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	<i>without/with insufficient treatment (EW04)</i>	modules and domestic use.	Pollution) Act 1974								tank and soak pits will be provided onsite for disposal of sewage.	
	<i>Pollution of Surface, Ground and/or Bodies of water (EW05)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)</i>	The project activity doesn't involve the discharge of harmful chemicals.	Coastal Regulation Zone (CRZ) 2019	Not Applicable	-	-	-	-	-	0	The project is not located in the CRZ boundary defined in the CRZ notification 2019.	
	<i>Others (EW07)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Add more rows if required</i>	-	-	-	-	-	-	-	-	-	-	-
Environment – Natural Resources	<i>Conserving mineral resources (ENR01)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Protecting / enhancing plant life (ENR02)</i>	-	-	-	-	-	-	-	-	-	-	-
	<i>Protecting / enhancing species diversity (ENR03)</i>	-	-	-	-	-	-	-	-	-	-	-

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<i>Protecting / enhancing forests (ENR04)</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>Protecting / enhancing other depletable natural resources (ENR05)</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>Conserving energy (ENR06)</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>Replacing fossil fuels with renewable sources of energy (ENR07)</i>	The project activity generates electricity using solar power, which would otherwise be generated using fossil-fuels in the absence of the project.	1. National conservation Act, 2001 2. National Renewable Energy Act, 2015 (draft)	-	Harmless	-	-	-	-	The electricity generated will be continuously monitored using electricity meters installed at the substation.	+1	The project activity supplies renewable energy to the grid.	-
<i>Replacing ODS with non-ODS refrigerants (ENR08)</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>Others (ENR09)</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>Add more rows if required</i>	-	-	-	-	-	-	-	-	-	-	-	-
<p>Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to Environment. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.</p>												
Net Score:	+4											

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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

>>

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	3 rd Party Audit
				Not Applicable	Harmless	Harmful					
Social Aspects on the identified categories²⁷ indicated below.	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	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 harm and shall be	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 or harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in	-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 basis of conclusion	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

²⁷ sourced from the CDM SD Tool and the sample reports are available (<https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx>)

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					<i>principles then the Project Activity is unlikely 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"</i>	<i>indicated as Harmful</i>		<i>nature along with the data source</i>			<i>actions plans and policies to mitigate the risks of negative social impacts to levels that are unlikely to cause any harm.</i> <i>Also describe the positive impacts of the project on the society as compared to the baseline alternative or BAU scenario.</i>
Social - Jobs	<i>Long-term jobs (> 10 year) created/ lost (SJ01)</i>	The project creates long term job opportunities during operation	There is no legal requirement from local authority to create permanent employment from the project activity.	-	Harmless	-	-	Number of people employed by the project will be monitored through checking payroll records or the social insurance.	+1	There is no mandatory law to generate permanent employment from the project activity, however project owner has planned to provide training to the local people and generated employment for local people.	
	<i>New short-term jobs (< 1 year) created/ lost (SJ02)</i>	The project creates new short term job opportunities during construction	There is no legal requirement from local authority to create permanent employment from the project activity.	-	Harmless	-	-	Local labor will be employed during construction period	+1	There is no mandatory law to generate temporary employment from the project activity, however the project owner has planned to provide opportunity for local people.	
	<i>Sources of income generation increased / reduced (SJ03)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Avoiding discrimination when hiring people from different race,</i>	Project Proponent had ensured that there was no discrimination based on gender, racism,	IFC Performance Standard-2: Labour and Working conditions	Not Applicable	-	-	-	-	0	The project will not make employment decisions based on personal characteristics	

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	<i>gender, ethnics, religion, marginalized groups, people with disabilities (SJ04)</i> <i>(Human rights)</i>	religion etc. during the recruitment process.								unrelated to inherent job requirements. The project will base the employment relationship on the principle of equal opportunity and fair treatment and will not discriminate with respect to any aspects of the employment relationship.	
Social - Health & Safety	<i>Disease prevention (SHS01)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Occupational health hazards (SHS02)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Reducing / increasing accidents/Incidents/fatality (SHS03)</i>	Training will be provided by the project owner to the employee and staffs that will reduce accidents	No regulations	-	Harmless	-	-	Accidents/ incidents rates per year.	+1	PP has strict EHS policy to reduce accidents and ensures employees health and safety	
	<i>Reducing / increasing crime (SHS04)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Reducing / increasing food wastage (SHS05)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Reducing / increasing indoor air pollution (SHS06)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Efficiency of health services (SHS07)</i>	-	-	-	-	-	-	-	-	-	-

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	<i>Sanitation and waste management (SHS08)</i>	The project site amends to proper sanitation and waste management rules.	The Environmental Protection Act, 1986.	Not Applicable	-	-	-	-	0	Project proponent has ensured proper disposal of Waste through actual user, waste collector or operator of the disposal facility, in accordance with the Central Pollution Control Board guidelines.	
	<i>Other health and safety issues (SHS09)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Add more rows if required</i>	-	-	-	-	-	-	-	-	-	-
Social - Education	<i>specialized training / education to local personnel (SE01)</i>	The project owner provides job related training according to the positions	There is no legal requirement from local authority to provide training to local people	-	Harmless	-	-	Training records/ evidence by the project owner	+1	The project Owner will provide regular safety training to their workers about the accident hazards and risk related to specific works and preventive measures for avoiding accidents at site.	
	<i>Educational services improved or not (SE02)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Project-related knowledge dissemination effective or not (SE03)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Other educational issues (SE03)</i>	-	-	-	-	-	-	-	-	-	-
	<i>Add more rows if required (SE04)</i>	-	-	-	-	-	-	-	-	-	-

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Social - Welfare	<i>Improving/deteriorating working conditions (SW01)</i>	The project activity has proper working conditions for the employees.	EHS policy	Not Applicable	-	-	-	-	-	There is no chance of deteriorating working conditions as the project activity will increase the income and will maintain Project Submission Form 85 of 108 conditions (SW01) high working culture for their employee with complying EHS guideline & local regulation Therefore this parameter will not be scored.
	<i>Community and rural welfare (indigenous people and communities) (SW02)</i>	The PP will provide employment to the local people which in turn help the community.	CSR policy	Not Applicable	-	-	-	-	-	The local community should benefit from the project in terms of community development activities and development of infrastructure.
	<i>Poverty alleviation (more people above poverty level) (SW03)</i>	Employment will be provided both on short term and long-term basis and therefore income will also increase.	No local regulation	Not Applicable	-	-	-	-	-	The objective of the company policy is to assist project sites to reduce poverty and enhance economic growth, human well-being, and development effectiveness by addressing the gender disparities and inequalities that are barriers to development, and by assisting member countries in formulating and implementing their gender and development goals.
	<i>Improving / deteriorating wealth distribution/ generation of</i>	PP will provide training and employment to people on the basis on the work that is	No local regulation	Not Applicable	-	-	-	-	-	Local community might choose to work during the construction of access roads and

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<i>income and assets (SW04)</i>	to be done in the project area, therefore wages will be distributed on the type and duration of work and there will be no discrimination.									other project components and as security guards for the plant. There is also a likelihood of reduced dependence on agriculture for income. Therefore this parameter will not be scored.	
<i>Increased or / deteriorating municipal revenues (SW05)</i>	PP employees' people from and around the project site which will help in increasing the municipal revenue.	No local regulation	Not Applicable	-	-	-	-	-	-	Projects does not cause any activities that reduces the municipal revenue, it in fact may increases the revenue of land of surrounding villages and hence same will not be applicable. Therefore, this parameter will not be scored.	
<i>Women's empowerment (SW06)</i> <i>(Human rights)</i>	Equal rights to women in terms of employment and economy.	No local regulation	Not Applicable	-	-	-	-	-	-	The HSR policy is mainly devoted to gender equality and promoting woman empowerment. Therefore this parameter will not be scored.	
<i>Reduced / increased traffic congestion (SW07)</i>	The project activity will not lead to any increase in traffic	No local regulation	Not Applicable	-	-	-	-	-	-	The project activity causes no problem to the road traffic causing no congestion.	
<i>Exploitation of Child labour (Human rights) (SW08)</i>	Positive impact as company has strong HR policy	Corporate regulations: Zero	-	Harmless	-	-	Number of child labour per year.	+1		Project owner confirms that the company's HR policy is strictly practiced at site and confirms no child labour is deployed at the site at any cost.	
<i>Minimum wage protection (Human rights) (SW09)</i>	PP will provide the wages in accordance with the labour Act.	Centralized HR policy based on Indian Labor act	Not Applicable	-	-	-	-	-	-	The project owner ensures indian labour act on wages and salaries will be followed , to ensure that all the	

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										contracted workers are provided with condition of services, rate of wages, holidays, hours of work as stipulated in the rules as per applicability and tenure of service, by the deputed contractor. Therefore this parameter will not be scored.	
<i>Abuse at workplace. (With specific reference to women and people with special disabilities / challenges)</i> <i>(Human rights) (SW10)</i>	PP will make sure that there is no complaints on abuse at workplace.	EHS policy	Not Applicable	-	-	-	-	-	-	The trainings and selfeducation imparted by the project owner to the workers prevent abuse at work and hence not scored	
<i>Other social welfare issues (SW11)</i>	-	-	-	-	-	-	-	-	-	-	-
<i>Avoidance of human trafficking and forced labour</i> <i>(Human rights)</i> <i>(SW12)</i>	PP and HR policy will make sure that there no such illegal activities taking place at the project site.	EHS policy	Not Applicable	-	-	-	-	-	-	The project owner has strict HR policy which strictly prohibits such criminal offence.	
<i>Avoidance of forced eviction and/or partial physical or economic displacement of IPLCs</i> <i>(Human rights)</i> <i>(CW13)</i>	PP has acquired the project area land and there will be no of forced eviction.	Land Acquisition Act 1894 (Amended in 1984) and The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	Not Applicable	-	-	-	-	-	-	Land for the project is being procured on willing seller willing buyer basis.	

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	<i>Provisions of resettlement and human settlement displacement (Human rights) (CW14)</i>	PP has acquired the project area land from genuine buyer and there is no requirement of human settlement displacement.	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	Not Applicable	-	-	-	-	-	Land for the project is being procured on willing seller willing buyer basis.	
<i>Add more rows if required</i>											
Net Score:				+5							
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)

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UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs				GCC Project Verifier's Conclusion <small>(To be included in Project Verification Report only)</small>	
			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?
<p>Describe UN SDG targets and indicators</p> <p>See: https://unstats.un.org/sdgs/indicators/indicators-list/</p>	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 the 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	-	-	-	-	-	-	-	-

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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	-	-	-	-	-	-	-	-	-
Goal 6. Ensure availability and sustainable management of water and sanitation for all	-	-	-	-	-	-	-	-	-
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all	SDG Target 7.2 “By 2030, increase substantially the share of renewable energy in the global energy mix” by the utilization	Yes	Increasing the share of renewable energy sources in the total electricity generation delivered to the national grid.	The project activity will increase the total share of renewable energy percentage of the country.	The project is expected to achieve the targeted goal by the end of crediting period.	The project increases the share of renewable energy in grid energy generation mix by providing clean energy. The plant provides 16,030 MWh of clean energy to the grid annually.	The monitoring will be done with the help of electric meters which will indicate the amount of electricity the will be generated using solar energy.		

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	of hydropower as a renewable energy source. Related indicator: 7.2.1 Renewable energy share in the total final energy consumption.								
Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all	SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”. Related indicator: 8.5.1	Yes	The project activity generates long and short-term employment and therefore resulting in economic growth.	The project generate employment for both operation and construction period and created long-term employment for the people working at the construction site.	The project is expected to achieve the targeted goal by the end of crediting period.	Providing employment opportunities for at least 5 people and in turn giving sustainable economic growth.	The employment record and register will be provided by the Project Proponent.		

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	Average hourly earnings of female and male employees, by occupation, age and persons with disabilities								
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	SDG Target 9.4 “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordan	Yes	The project activity involves the construction of solar plant to produce renewable electricity, therefore promoting resilient and sustainable infrastructure.	The construction of solar plant to produce renewable electricity provides clean energy and reduces the CO ₂ emission.	The project is expected to achieve the targeted goal by the end of crediting period.	The project is a 10 MW resilient energy generation facility providing clean energy by avoiding 14,995 tCO ₂ annually.	The project has produced clean energy by implementing a solar power plant which will produce clean energy that can be monitored with electric meter.		

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	ce with their respective capabilities". Related indicator: 9.4.1 CO ₂ emission per unit of value added								
Goal 10. Reduce inequality within and among countries	-	-	-	-	-	-	-	-	-
Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable	SDG Target 11.6 "By 2030, reduce the adverse per capita environmental impacts of cities, including by paying special attention to air quality and municipal and other waste management." Indicator 11.6.2 Annual mean levels of	No	The project activity will provide clean energy by installing solar panels therefore decrease the amount of PM _{2.5} and PM ₁₀ emissions in the cities making the human settlements resilient and sustainable.	The project activity will provide clean energy by installing solar power plant which will improve the air quality and levels of fine particulate matter like PM _{2.5} and PM ₁₀ .	The project is expected to achieve the targeted goal by the end of crediting period.	Fossil fuel emissions are secondary sources of PM _{2.5} and PM ₁₀ in the cities. Since the project reduces the use of fossil fuels, PM _{2.5} and PM ₁₀ formation will be reduced accordingly. Monitoring will done for the same.	The project has produced clean energy by implementing a solar power plant which will produce clean energy that can be monitored with electric meter.		

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	fine particulate matter (e.g. PM _{2.5} and PM ₁₀) in cities (population weighted)								
Goal 12. Ensure sustainable consumption and production patterns	-	-	-	-	-	-	-	-	-
Goal 13. Take urgent action to combat climate change and its impacts	SDG Target 13.3 "Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning". Related indicator: 13.3.2 Number of countries that have communi	Yes	The project activity will make use of the solar power plant to generate clean energy and thus help in combat climate change by reduction of carbon emission in the atmosphere.	The solar power plant implemented will help in climate change mitigation by reducing the greenhouse gases emission.	The project is expected to achieve the targeted goal by the end of crediting period.	Since hydro energy is used in the project, there is no greenhouse gas emission related to the project activity. Eliminates 14,995 tCO ₂ annually.	The project has produced clean energy by implementing a solar power plant which will produce clean energy that can be monitored with electric meter.		

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	<p>ated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions</p>								
<p>Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development</p>	-	-	-	-	-	-	-	-	-
<p>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</p>	-	-	-	-	-	-	-	-	-

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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						5		5	
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF						Platinum		Platinum	

Section G. Local stakeholder consultation

G.1. MODALITIES FOR LOCAL STAKEHOLDER CONSULTATION

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The local stakeholder consultation (LSC) meeting for the solar project activity was conducted in Lalitpur district in Barchaun village on 13/06/2022. The stakeholders were informed about the LSC by press release published in local newspaper “Sabdsodh” on 05/06/2022. The comments were invited in an open and transparent manner.

The physical meeting took place in two phases. The project owner has identified relevant stakeholder for the project activity as local villagers, employees, NGO and relevant nodal agencies and most of them attended the meeting too. A total of 15 individuals including local people and village leaders attended the meeting. The stakeholders participated actively asked questions and gave comments during the meeting in the presence of other stakeholders, PP also responded well to the queries transparently and explained each and every aspect of the project activity in the meetings.

G.2. SUMMARY OF COMMENTS RECEIVED

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Mr. Lakhan Yadav asked, does the project activity cause any environmental pollution?	No major pollution will be an outcome of the project activity.
Mr. Bharat Yadav asked, Will the project create any employment for local people?	Yes, the project activity will bring new employment opportunities to local people in both set up and operational phase.
Mr. Sunil Yadav asked, The working of this is dependent on sunlight. So how the electricity will be produced when enough sunlight is not present?	Based on several test conducted, we observed that time required for cooking using improved stove is significantly lesser than other traditional stoves. It is advanced by 10 minutes compared to traditional stove.
Mr. Shiv Charan asked, Can local people obtain electricity directly from the solar project?	No, the project is supplying power to the grid through the local substation. It's the grid which supplies power to the village households.
Mr. Saysavath asked, what is the function of the dam in a hydro-electric power station?	The function of dam is to create required water head and store water in catchment area.

<p>Mr. Naren Chaurasiya asked, Are there any other benefits of the project?</p>	<p>The project will provide health benefits like establishing proper health care centres where people from nearby villages can get treatment. Proper roads will be constructed and will elevate the standard of living of the people living in nearby villages.</p>
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G.3. CONSIDERATION OF COMMENTS RECEIVED

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There were no negative comments raised by stakeholders in local stakeholder consultation meetings and due to the associated benefits stakeholders have appreciated the proposed project activity.

Section H. Approval and authorization

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Not required.

APPENDIX 1. CONTACT INFORMATION OF PROJECT OWNERS

Project Owner name (as per LON/LOA)	Manikaran Power Limited
Country	India
Address	301, 3rd Floor, D-21 Corporate Park, Sec-21 Dwarka, New Delhi – 110077, India
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APPENDIX 2. AFFIRMATION REGARDING PUBLIC FUNDING

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The project activity does not involve any public funding from Annex 1 countries.

APPENDIX 3. APPLICABILITY OF METHODOLOGY(IES)

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Refer Section B.2.

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

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Refer Section B.6.3

APPENDIX 5. FURTHER BACKGROUND INFORMATION ON MONITORING PLAN

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Refer Section B.7.4

APPENDIX 6. SUMMARY REPORT OF COMMENTS RECEIVED FROM LOCAL STAKEHOLDERS

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Refer Section G.

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

>>
Not applicable

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

>>
Not applicable

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

>>
Not applicable

DOCUMENT HISTORY

Version	Date	Comment
V 4.0	27/09/2022	<ul style="list-style-type: none"> ▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: <ul style="list-style-type: none"> ○ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Editorial revisions made <ul style="list-style-type: none"> ○ 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	<ul style="list-style-type: none"> ▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: <ul style="list-style-type: none"> ○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC). ○ Considered and addressed comments raised by Steering Committee: <ul style="list-style-type: none"> ➤ 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 ²⁸ ;
V 2.0	25/06/2019	<ul style="list-style-type: none"> ▪ 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

²⁸See ICAO recommendation for conditional approval of GCC at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf

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