

المجلس العالمي للبصمة الكربونية  
GLOBAL CARBON COUNCIL



# Project Submission Form

V3.2 - 2020

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<b>COVER PAGE- Project Submission Form (PSF)</b>	
<b>BASIC INFORMATION</b>	
<b>Title of the Project Activity</b>	300 MW Solar Power Project in Rajasthan by Ayana Renewable.
<b>PSF version number</b>	01.1
<b>Date of completion of this form</b>	28/09/2022
<b>Project Owner(s)</b> <small>(Shall be consistent with De-registered CDM Type B Projects)</small>	Ayana Renewable Power Private Limited <sup>1</sup>
<b>Country where the Project Activity is located</b>	India
<b>GPS coordinates of the project site(s)</b>	See section A.2
<b>Eligible GCC Project Type as per the Project Standard</b> <small>(Tick applicable project type)</small>	<input checked="" type="checkbox"/> <b>Type A:</b> <input type="checkbox"/> Type A1 <input checked="" type="checkbox"/> Type A2 <sup>2</sup>  <input type="checkbox"/> <b>Type B – De-registered CDM Projects:<sup>3</sup></b> <input type="checkbox"/> Type B1 <input type="checkbox"/> Type B2

<sup>1</sup> To act as project owner

<sup>2</sup> The project falls under Sub-Type 4 of type A2 category as per GCC clarification 01, Ver 1.2

<sup>3</sup> Owners of Type B projects shall fill in the form provided in Appendix 7.

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<p><b>Minimum compliance requirements</b></p>	<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)																																			
<p><b>Choose optional and additional requirements</b> (Tick applicable label categories)</p>	<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)																																			
<p><b>Applied methodologies</b> (Shall be approved by the GCC or the CDM)</p>	ACM0002- Grid-connected electricity generation from renewable sources (version 20)																																			
<p><b>GHG Sectoral scope(s) linked to the applied methodology(ies)</b></p>	GHG-SS: Scope 1 Energy (renewable/non-renewable sources)																																			
<p><b>Applicable Rules and Requirements for Project Owners</b> (Tick applicable Rules and Requirements)</p>	<table border="1"> <thead> <tr> <th data-bbox="521 1226 1159 1276">Rules and Requirements</th> <th data-bbox="1159 1226 1328 1276">Reference</th> <th data-bbox="1328 1226 1456 1276">Version</th> </tr> </thead> <tbody> <tr> <td data-bbox="521 1276 1159 1327"><input checked="" type="checkbox"/> ISO 14064-2</td> <td data-bbox="1159 1276 1328 1327"></td> <td data-bbox="1328 1276 1456 1327"></td> </tr> <tr> <td data-bbox="521 1327 1159 1411"><input checked="" type="checkbox"/> Applicable host country legal requirements /rules</td> <td data-bbox="1159 1327 1328 1411"></td> <td data-bbox="1328 1327 1456 1411"></td> </tr> <tr> <td data-bbox="521 1411 805 1465"></td> <td data-bbox="805 1411 1159 1465"><input checked="" type="checkbox"/> Project Standard</td> <td data-bbox="1159 1411 1328 1465">31/12/2020</td> <td data-bbox="1328 1411 1456 1465">03.1</td> </tr> <tr> <td data-bbox="521 1465 805 1549"></td> <td data-bbox="805 1465 1159 1549"><input type="checkbox"/> Approved GCC Methodology (XXXXX)</td> <td data-bbox="1159 1465 1328 1549"></td> <td data-bbox="1328 1465 1456 1549"></td> </tr> <tr> <td data-bbox="521 1549 805 1604"></td> <td data-bbox="805 1549 1159 1604"><input checked="" type="checkbox"/> Program Definitions</td> <td data-bbox="1159 1549 1328 1604">31/12/2020</td> <td data-bbox="1328 1549 1456 1604">03.1</td> </tr> <tr> <td data-bbox="521 1604 805 1688"></td> <td data-bbox="805 1604 1159 1688"><input checked="" type="checkbox"/> Environment and Social Safeguards Standard</td> <td data-bbox="1159 1604 1328 1688">06/09/2022</td> <td data-bbox="1328 1604 1456 1688">3.0</td> </tr> <tr> <td data-bbox="521 1688 805 1772"></td> <td data-bbox="805 1688 1159 1772"><input checked="" type="checkbox"/> Project Sustainability Standard</td> <td data-bbox="1159 1688 1328 1772">06/09/2022</td> <td data-bbox="1328 1688 1456 1772">3.0</td> </tr> <tr> <td data-bbox="521 1772 805 1883"></td> <td data-bbox="805 1772 1159 1883"><input checked="" type="checkbox"/> Instructions in Project Submission Form (PSF)-template</td> <td data-bbox="1159 1772 1328 1883"></td> <td data-bbox="1328 1772 1456 1883">03.2</td> </tr> </tbody> </table>			Rules and Requirements	Reference	Version	<input checked="" type="checkbox"/> ISO 14064-2			<input checked="" type="checkbox"/> Applicable host country legal requirements /rules				<input checked="" type="checkbox"/> Project Standard	31/12/2020	03.1		<input type="checkbox"/> Approved GCC Methodology (XXXXX)				<input checked="" type="checkbox"/> Program Definitions	31/12/2020	03.1		<input checked="" type="checkbox"/> Environment and Social Safeguards Standard	06/09/2022	3.0		<input checked="" type="checkbox"/> Project Sustainability Standard	06/09/2022	3.0		<input checked="" type="checkbox"/> Instructions in Project Submission Form (PSF)-template		03.2
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	<input checked="" type="checkbox"/> GCC Rules and Requirements <sup>4</sup>	<input type="checkbox"/> GCC Clarification, no. 1		1.2
	<input checked="" type="checkbox"/> CDM Rules <sup>5</sup>	<input checked="" type="checkbox"/> Approved CDM Methodology (Grid-connected electricity generation from renewable sources )	ACM0002	20.0
		<input checked="" type="checkbox"/> Tool for the demonstration and assessment of additionality	TOOL 01	7.0
		<input type="checkbox"/> Combined tool to identify the baseline scenario and demonstrate additionality	TOOL 02	
		<input checked="" type="checkbox"/> Tool to calculate the emission factor for an electricity system	TOOL 07	7.0
		<input type="checkbox"/> Demonstration of additionality of microscale project activities	TOOL 19	
		<input checked="" type="checkbox"/> Demonstration of additionality of small-scale project activities	TOOL 21	13.1
		<input type="checkbox"/> Additionality of first-of-its-kind project activities	TOOL 23	
		<input checked="" type="checkbox"/> Common practice	TOOL 24	3.1
		<input checked="" type="checkbox"/> Investment analysis	TOOL 27	11.0
		<input type="checkbox"/> Positive lists of technologies	TOOL 32	
		<input type="checkbox"/> Guidelines for objective demonstration and assessment of barriers		
		<input type="checkbox"/> Add rows if required		
		<b>Choose Third Party External Project Verification by</b>	<input checked="" type="checkbox"/> GHG emission reductions (i.e., Approved Carbon Credits <b>(ACCs)</b> ) <input checked="" type="checkbox"/> Environmental No-net-harm Label <b>(E<sup>+</sup>)</b> <input checked="" type="checkbox"/> Social No-net-harm Label <b>(S<sup>+</sup>)</b>	

<sup>4</sup> GCC Program rules and requirements: <https://www.globalcarboncouncil.com/resource-centre.html>

<sup>5</sup> CDM Program rules: <https://cdm.unfccc.int/Reference/index.html>

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<p><b>approved GCC Verifiers<sup>6</sup></b> (Tick applicable verification categories)</p>	<p><input checked="" type="checkbox"/> United Nations Sustainable Development Goals (<b>SDG<sup>+</sup></b>)</p> <p><input type="checkbox"/> Bronze SDG Label</p> <p><input type="checkbox"/> Silver SDG Label</p> <p><input type="checkbox"/> Gold SDG Label</p> <p><input type="checkbox"/> Platinum SDG Label</p> <p><input checked="" type="checkbox"/> Diamond SDG Label</p> <p><input checked="" type="checkbox"/> CORSIA requirements (<b>C<sup>+</sup></b>)</p> <p><input checked="" type="checkbox"/> Host Country Attestation on Double counting</p>
<p><b>Declaration to be made by the Project Owner(s)<sup>7</sup></b> (Tick all applicable statements)</p>	<p>The Project Owner(s) declares that:</p> <p><input checked="" type="checkbox"/> The Project Activity complies with the eligibility of the applicable project type (A1, A2, B1 or B2) as stipulated by the Project Standard.</p> <p><input checked="" type="checkbox"/> The Project Activity shall start operations, and start generating emission reductions, on or after 1 January 2016.</p> <p><input checked="" type="checkbox"/> The Project Activity is eligible to be registered under the GCC program.</p> <p><input checked="" type="checkbox"/> No carbon credits generated by the proposed Project Activity will be claimed as carbon credits in any other GHG program anywhere in the world, either for compliance or voluntary purposes, for the entire 10-year GCC crediting period.</p> <p><input checked="" type="checkbox"/> The proposed Project Activity, if Type A, is NOT registered as a GHG Project Activity in any other GHG program or any other voluntary program anywhere in the world.</p> <p><input type="checkbox"/> The proposed Project Activity is NOT included as a component Project Activity (CPA) in a registered GHG Programme of Activities (PoA) under any GHG program (such as the CDM or any other voluntary program) anywhere in the world.</p> <p><input checked="" type="checkbox"/> The proposed Project Activity is NOT a CPA that has been excluded from a registered PoA under any GHG program (such as the CDM or any other voluntary program) anywhere in the world.<sup>8</sup></p> <p>Provide details (if any) below for the boxes ticked above.</p>

<sup>6</sup> **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.

<sup>7</sup> The "Project Owner" means the legal entity or organization that has overall control and responsibility for the Project Activity.

<sup>8</sup> The project is a CPA included project which is under process of exclusion.

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	<p><input type="checkbox"/> If a GCC project chooses to apply to use ACCs under CORSIA, the Project Owner(s) is required to declare that they are aware that they must obtain and provide to the GCC and its Registry (operated by IHS Markit) a written attestation from the host country's national focal point (e.g., Ministry of Environment or Civil Aviation Authority) or focal point's designee, as required by CORSIA Emissions Unit Eligibility Criteria, which:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Confirms the avoidance of double counting as required by CORSIA;</li> <li><input checked="" type="checkbox"/> Shall be made publicly available prior to the use of units from the host country under CORSIA; and</li> <li><input checked="" type="checkbox"/> Places all responsibility on the Project Owner(s) to replace any and all doubly claimed or counted ACCs by the host country, in the GCC registry operated by IHS Markit.</li> </ul> <p>Provide details below for the boxes ticked above</p>
	<p>The Project Owner(s) declares that:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> All of 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;</li> <li><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.</li> </ul> <p>Provide details below for the boxes ticked above</p>
<p><b>Appendixes 1-7</b></p>	<p>Details about the Project Activity are provided in Appendixes 1 through 7 to this document.</p>
<p><b>Name, designation, date and signature of the Project Owner(s)</b></p>	<p>Arulkumar Shanmugasundaram Executive Director Ayana Renewable Power Private Limited</p> <div style="text-align: center;">  <p>Signature</p> </div> <p>Date: 28/09/2022</p>



## 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 is the installation of a new grid-connected 300 MW solar power plant/unit in the state of Rajasthan at the sites where no renewable power plant was operating prior to the implementation of the project activity (green-field plant). The electricity generated from project activity is exported to the Indian grid in India there by displacing the consumption of electricity from the regional grid electricity distribution system.

The electricity generated by the project activity will replaces the equivalent amount of electricity generated by the operation of existing/ grid connected power plants (mostly fossil fuel-based power plants) and by addition of new generation sources into the grid. The project activity therefore reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from the existing grid connected power plants (mostly fossil fuel) and by addition of new generation sources into the grid.

The project is implemented by Ayana Renewable Power One Private Limited whose parent company is Ayana Renewable Power Private Limited.

Project Company	Locations	Capacity	Date of commissioning
Ayana Renewable Power One Private Limited	Bikaner, Rajasthan, India	300 MW	22/12/2021

The annual estimated emission reductions from project activity is 609,720 tCO<sub>2</sub>e/annum. Total estimated emission reduction from the project activity during the entire crediting period of 10 years is 6,097,201 tCO<sub>2</sub>e.

The project contributions to the sustainable development of the local area as well as the host country are as follows: Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India, has stipulated the following indicators for sustainable development in the interim approval guidelines for CDM projects.

1. Social well-being;
2. Economic well-being;
3. Environmental well-being;
4. Technological well-being

#### 1. Social well-being

The Project Activity will result in creating job opportunities for the local population on temporary and permanent basis. Manpower is required both during erection and operation of the renewable energy projects. This would result in the improvement in living standards of the local community. The

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installation of the renewable energy projects also led to development of basic infrastructure like roads, communication with the nearby cities etc. which also improved in living standards of the local population.

### **2. Economic well-being**

The Project Activity will create direct and indirect job opportunities to the local community during installation and operation of the renewable energy projects.

The investment for the Project Activity would lead to the improvement in the economic activity in the local area.

### **3. Environmental well-being**

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

### **4. Technological well-being:**

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

The project is expected to contribute 6 SDGs which are SDG 1, 5, 7, 8, 9 and 13.

SDG 1 No Poverty: The project contributes the SDG 1 target by providing employment to at least 5 persons belonging to below poverty line category.

SDG 5 Gender equality: The project has planned to contribute to the SDG by ensuring there is no disparity among men and women with respect to remuneration for comparable role and responsibility. It is ensured that there is at least xx number of women hired during operational phase of the project.

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 Industry, Innovation and Infrastructure: The project provides clean and resilient energy generation facility by efficient use of the infertile drought land and provides employment opportunity to local residents in the region which is highly backward.

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**SDG 13 Climate Change:** The project produces clean renewable energy by diminishing CO<sub>2</sub> emissions. Therefore, it contributes SDG Target 13.3 “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning”.

### A.2. Location of the Project Activity

>>

The 300 MW solar power plant is developed on approx. 1500 acres of private unirrigated agricultural land in Khichiya village in Bikaner tehsil of Bikaner district. Nearest villages are Dholera, Khichiya and Jalalsar at an approximate distance of 0.5 km southwest, 2km south, 3 - 5 km Southeast from the Project site; respectively. Bikaner is the nearest town at a distance of ~ 30 km from the Project Site nearest railway station is at Jamsar at a distance of ~ 10 km. The boundary for the project site is tentatively established but yet to mark on ground. The coordinates for which are 28°16'18.56" N (28.27182° N), 73°22'5.97" E (73.03499° E)



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<b>Address and geodetic coordinates of the physical site of the Project Activity</b>				
<b>Physical address</b>	<b>Latitude (N)</b>		<b>Longitude (E)</b>	
	<b>Deg/Min/Sec</b>	<b>Deg decimal</b>	<b>Deg/Min/Sec</b>	<b>Deg decimal</b>
Khichiya village, Bikaner tehsil, Bikaner district	28°16'18.56"	28.27182°	73°22'5.97"	73.03499°

### A.3. Technologies/measures

>>

The project activity involves the installation of Solar PV project. The total installed capacity of the project is 300 MW of Solar PV plant located in Rajasthan, India. The project is promoted by Ayana Renewable Power one Private Limited.

This project is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. This project activity will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The estimated lifetime of the project activity is considered as 25 years for solar technology. This may increase depending on the operation & maintenance of the plant. In the Pre- project scenario the entire 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.

### Technical Specification

Technology	c-Si – Poly	c-Si – Mono	c-Si – Mono
Model	ZXP6-72 Series	SPR-P3-485-UPP	JAM72S20-460/MR
Max. output, Pmax, at STC (W)	330	485	460
Maximum power voltage, Vmpp (Volts)	37.5	44.8	42.13
Maximum power current, Impp (A)	8.8	10.83	10.92
Open-circuit voltage, Voc (V)	46.8	54.0	50.01
Short-circuit current, Isc (A)	9.16	11.52	11.45
Temperature co-efficient of Power (%/oC)	-0.4	-0.34%	-0.35
Length (mm)	1960	2066	2112
Width (mm)	992	1160	1052
Thickness (mm)	35	35	35
Weight (kg)	21.5	25	24.5

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**A.4. Project Owner(s)**

Location/ Country	Project Owner(s)	Where applicable <sup>9</sup> , indicate if the host country has provided approval (Yes/No)
India (host Party)	Ayana Renewable Power Private Limited	No

**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		Purpose and Quantity of ACCs to be supplied
From	To	
22/12/2021	21/12/2031	609,720/annum

**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)**

---

<sup>9</sup> 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).

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>>

Title: ACM0002 Grid-connected electricity generation from renewable sources --- Version 20.0

Reference: ACM0002 Version 20

- TOOL01: Methodological Tool: Tool for the demonstration and assessment of additionality- Version 07.0.0, EB 70, Annex 8<sup>10</sup>
- TOOL 07: Tool to calculate the emission factor for an electricity system - Version 7.0<sup>11</sup>
- TOOL 24, “Common Practice” - Version 03.1<sup>12</sup>
- TOOL27: Investment analysis – Version 11.0<sup>13</sup>

<b>Applicability</b>	<b>Project activity vis-à-vis applicability Conditions</b>
<p>This methodology is applicable to grid-connected renewable power generation project activities that:</p> <ul style="list-style-type: none"> <li>• install a Greenfield power plant;</li> <li>• involve a capacity addition to (an) existing plant(s);</li> <li>• involve a retrofit of (an) existing operating plants/units;</li> <li>• involve a rehabilitation of (an) existing operating plants/units;</li> <li>• involve a replacement of (an) existing operating plants/units;</li> </ul>	<p>The project activity is installation of a new grid connected renewable energy power plant (solar PV) at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.</p>
<p>The methodology is applicable under the following conditions:</p> <ol style="list-style-type: none"> <li>a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</li> <li>b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal</li> </ol>	<p>The project activity includes an installation of a new grid connected renewable energy power plant (solar PV) and hence this first condition is met.</p> <p>The project activity does not involve any capacity additions, retrofits or replacements and therefore this second condition is not applicable.</p>

<sup>10</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

<sup>11</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

<sup>12</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-24-v1.pdf>

<sup>13</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-27-v11.0.pdf>

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<p>power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;</p>	
<p>In case of hydro power plants, one of the following conditions shall apply:</p> <ul style="list-style-type: none"> <li>a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</li> <li>b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m<sup>2</sup>; or</li> <li>c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m<sup>2</sup>.</li> <li>d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m<sup>2</sup>, all of the following conditions shall apply: <ul style="list-style-type: none"> <li>I. The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m<sup>2</sup>;</li> <li>II. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</li> <li>III. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m<sup>2</sup> shall be; <ul style="list-style-type: none"> <li>a) Lower than or equal to 15 MW; and</li> <li>b) Less than 10 per cent of the total installed capacity of integrated hydro power project.</li> </ul> </li> </ul> </li> </ul>	<p>The project activity is a grid connected renewable energy project (solar PV). This condition is applicable only for hydro power plants and not applicable for solar projects. Hence this criterion is not applicable.</p>

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<p>In the case of integrated hydro power projects, project proponent shall:</p> <ul style="list-style-type: none"> <li>• Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</li> <li>• Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.</li> </ul>	<p>The project activity is a grid connected renewable energy project (solar PV). This condition is applicable only for hydro power plants and not applicable for solar projects. Hence this criterion is not applicable.</p>
<p>Methodology is not applicable to the following</p> <ul style="list-style-type: none"> <li>• Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site</li> <li>• Biomass fired power plants/units</li> </ul>	<p>The project activity will be installation of a new grid connected renewable energy project (Solar PV) and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant. This project activity does not involve any biomass-based power plants and hence this criterion is not applicable to the project activity</p>
<p>In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”</p>	<p>The project activity will be a new grid connected renewable energy plant (Solar PV) and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.</p>



**B.2. Applicability of methodology(ies)**

<b>Applicability</b>	<b>Project activity vis-à-vis applicability Conditions</b>
<p>This methodology is applicable to grid-connected renewable power generation project activities that:</p> <ul style="list-style-type: none"> <li>• install a Greenfield power plant;</li> <li>• involve a capacity addition to (an) existing plant(s);</li> <li>• involve a retrofit of (an) existing operating plants/units;</li> <li>• involve a rehabilitation of (an) existing operating plants/units;</li> <li>• involve a replacement of (an) existing operating plants/units;</li> </ul>	<p>The project activity is installation of a new grid connected renewable energy power plant (solar PV) at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.</p>
<p>The methodology is applicable under the following conditions:</p> <p>c) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</p> <p>d) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;</p>	<p>The project activity includes an installation of a new grid connected renewable energy power plant (solar PV) and hence this first condition is met.</p> <p>The project activity does not involve any capacity additions, retrofits or replacements and therefore this second condition is not applicable.</p>
<p>In case of hydro power plants, one of the following conditions shall apply:</p> <p>e) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</p>	<p>The project activity is a grid connected renewable energy project (solar PV). This condition is applicable only for hydro power plants and not applicable for solar projects. Hence this criterion is not applicable.</p>

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<p>f) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m<sup>2</sup>; or</p> <p>g) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m<sup>2</sup>.</p> <p>h) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m<sup>2</sup>, all of the following conditions shall apply:</p> <p>IV. The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m<sup>2</sup>;</p> <p>V. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p> <p>VI. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m<sup>2</sup> shall be;</p> <p>c) Lower than or equal to 15 MW; and</p> <p>d) b) Less than 10 per cent of the total installed capacity of integrated hydro power project.</p>	
<p>In the case of integrated hydro power projects, project proponent shall:</p> <ul style="list-style-type: none"> <li>• Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</li> <li>• Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to</li> </ul>	<p>The project activity is a grid connected renewable energy project (solar PV). This condition is applicable only for hydro power plants and not applicable for solar projects. Hence this criterion is not applicable.</p>

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<p>be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.</p>	
<p>Methodology is not applicable to the following</p> <ul style="list-style-type: none"> <li>• Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site</li> <li>• Biomass fired power plants/units</li> </ul>	<p>The project activity will be installation of a new grid connected renewable energy project (Solar PV) and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant. This project activity does not involve any biomass-based power plants and hence this criterion is not applicable to the project activity</p>
<p>In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”</p>	<p>The project activity will be a new grid connected renewable energy plant (Solar PV) and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.</p>

Applicability conditions of “Tool to calculate the emission factor for an electricity system”, version 7.0:

<b>Sr. No.</b>	<b>Particulars</b>	<b>Comments</b>
1	<p>This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).</p>	<p>This condition is applicable. OM, BM and CM are estimated using the tool under section B.6.1 for calculating baseline emissions.</p>
2	<p>Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in “Appendix 2:</p>	<p>Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.</p>

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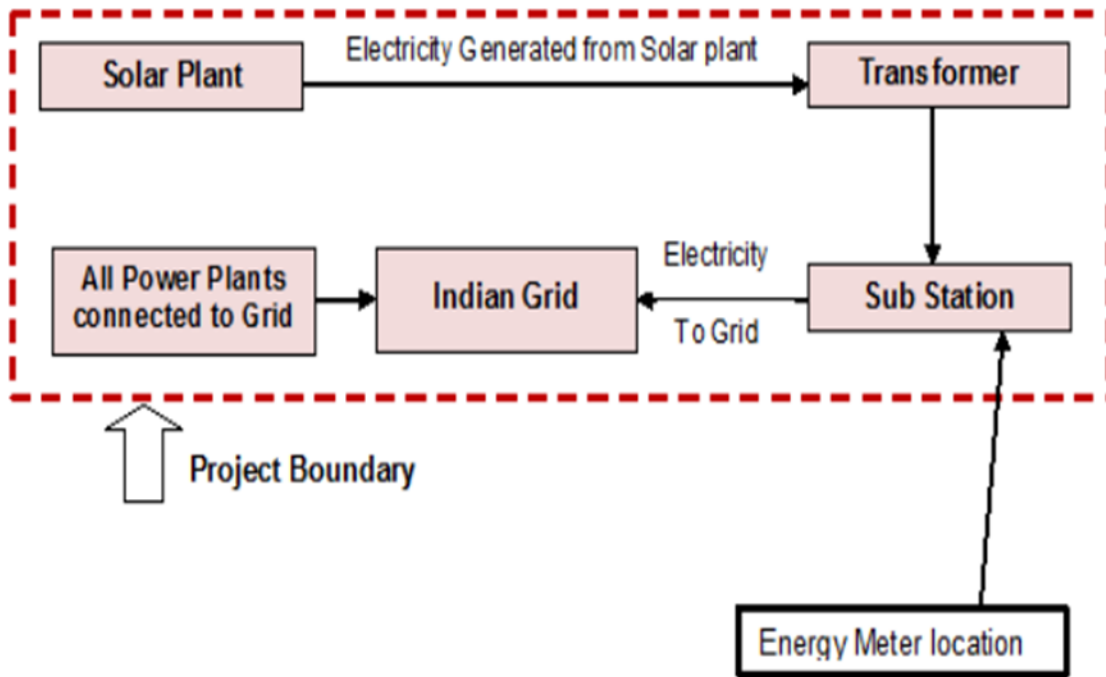
	Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	
3	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.
4	Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	The project activity is a grid connected renewable energy [solar PV] project and does not use biofuels. Therefore, this criterion is not applicable for the project activity.

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

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

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

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

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Source		GHG	Included?	Justification/Explanation
Baseline	Grid connected electricity generation.	CO <sub>2</sub>	Yes	Main emission source
		CH <sub>4</sub>	No	Minor emission source
		N <sub>2</sub> O	No	Minor emission source
		Other	No	Project activity does not emit other forms of GHG emissions
Project Activity	Greenfield Solar PV Power Project Activity.	CO <sub>2</sub>	No	No CO <sub>2</sub> emissions are emitted from the project
		CH <sub>4</sub>	No	Project activity does not emit CH <sub>4</sub>
		N <sub>2</sub> O	No	Project activity does not emit N <sub>2</sub> O
		Other	No	Project activity does not emit other forms of GHG emissions

#### B.4. Establishment and description of the baseline scenario

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As per the approved consolidated methodology ACM 0002, Version 20, para 22

If the project activity is the installation of a Greenfield power plant, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

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

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

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

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

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

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9305 tCO <sub>2</sub> /MWh	Combined margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.25) & build margin (0.75) values, sourced from Baseline CO <sub>2</sub> Emission Database, Version 17.0, October - 21 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9522 tCO <sub>2</sub> /MWh	Operating margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 17.0, October -21 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$	0.8653 tCO <sub>2</sub> /MWh	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y	Baseline CO <sub>2</sub> Emission Database, Version 17.0, October -21 published by Central Electricity Authority (CEA), Government of India

### B.5. Demonstration of additionality

>>

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

- (i) A Legal Requirement Test; and
- (ii) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

#### (a) *Legal Requirement Test*

The project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting

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conditions of other legally-binding mandates requiring its implementation. Since voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement, the outcome of the legal requirement test is concluded as positive.

### *(b) Additionality Test*

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

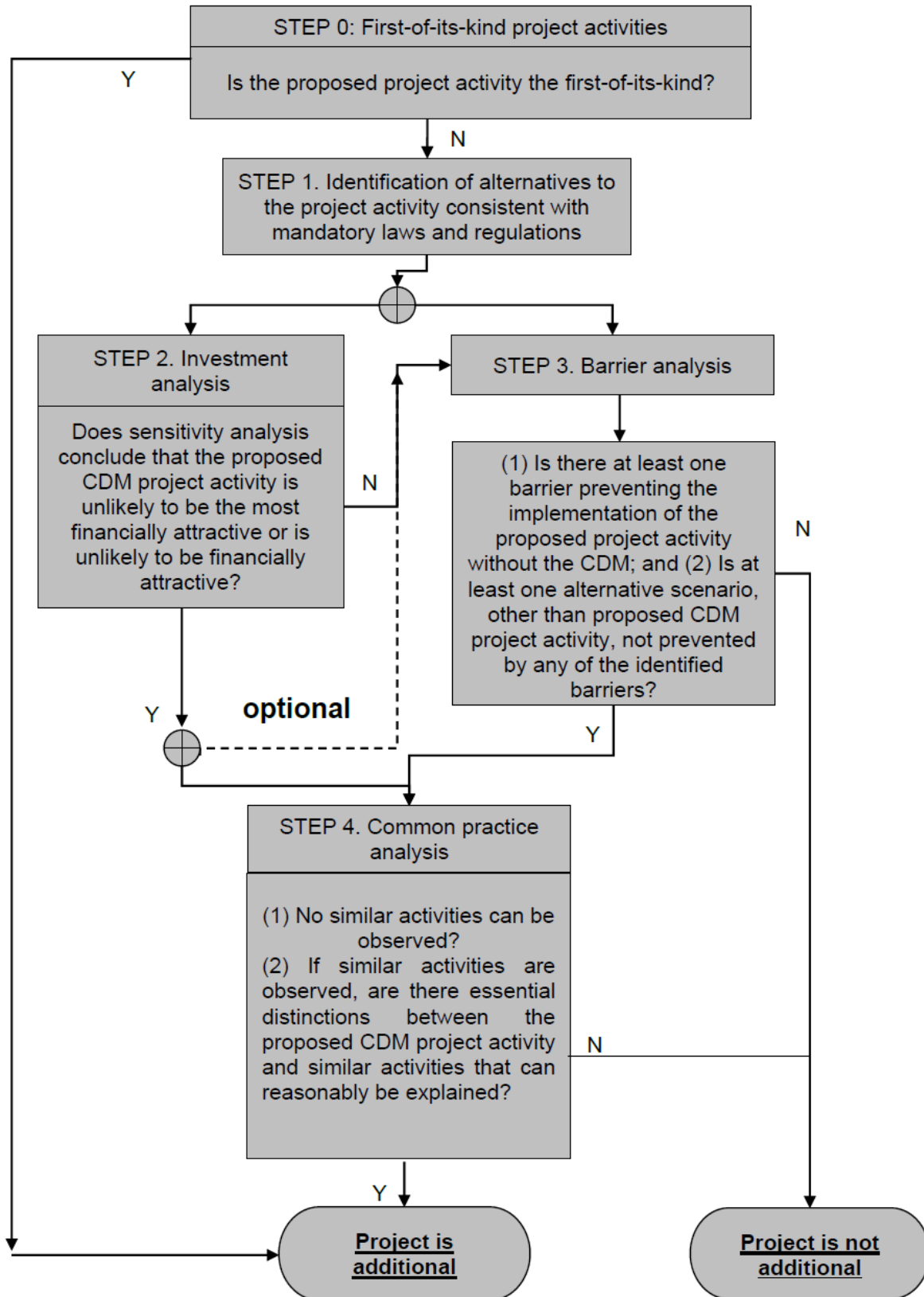
There is a single project unit of 300 MW involved in the project located in the state of Rajasthan, India and also implemented and owned by Ayana Renewable Power One Private Limited. Hence this is considered as single project as per the GCC clarification No. 01,V1.1-2022;

As per the applied methodology, ACM 0002, Ver 20, the additionality demonstration has been carried out as below.

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



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

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

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

As per the applied methodology ACM0002 version 20; Para 22, “If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plant and by the addition of new generation sources”.

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

**Step 2: Investment Analysis**

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

**Sub-step 2a: Determine appropriate analysis method**

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

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

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

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

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

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

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indicator for **Investment Analysis**.

**Default Value Benchmark**

Benchmark Calculations	Value	Sources Link	Document Date
Default Value for India as per UNFCCC guidelines	<b>10.24 %</b>	EB 105 annex 06	28-11-2019
Inflation forecast (WPI Mean) as per RBI for 10yrs	<b>2.90%</b>	<a href="https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=18944">https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=18944</a>	04-04-19
Benchmark (with 10yrs Forecast)	<b>13.44 %</b>	Calculated	
Benchmark	<b>13.44 %</b>	Calculated	

Thus, benchmark of 13.44% has been selected for the project.

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

*Input values used in the investment analysis for the project:*

Details of the project	Parameters	Source
State where the project is situated	Rajasthan, India	As per DPR
Expected Date of Commissioning	31-Jul-21	As per DPR
Life of the plant (Yrs.)	25	As per DPR
Generation of Electricity		
PLF (%)	25.50%	As per DPR
Annual generation (kWh)	670,140,000	Calculated Value
Annual Degradation per year	0.40%	As per DPR
Tariff rate at the decision making (INR/kWh)	2.54	As per PPA
Escalation in tariff rate	-	
Transmission & Wheeling Losses (%)	-	
Operation and maintenance cost and Insurance		
O & M Expenses (INR Mn.)	222.3	RERC Order
O & M free for (Yr.)		
Escalation in the operational expenses (%)	5.85%	RERC Order

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Insurance (INR Mn.)	73.25	CERC Order
Financial parameters		
TOTAL COST (INR Mn.)	14,650.0 0	As per DPR
Loan Amount (INR Mn.)	10,987.5 0	As Per DPR
Equity Investment (INR Mn.)	3,662.50	As Per DPR
Term loan		
Loan Amount (INR Mn.)	10,987.5 0	As per DPR
Interest rate (%)	12.00%	As per DPR
Loan Tenure (Qtr.)	48	As per DPR
Moratorium Period (Qtr.)		Assumption
Repayment Period (Qtr.)	48	Calculated Value
Repayment instalments value (INR Mn.)	228.906	Calculated Value
1st instalment from (Qtr. end)	31-Dec-21	Considered from the next Quarter End
Book Depreciation (SLM Method)		
Land	219	As per cerc order
Gross Depreciable Value (INR Mn.)	14,431.0 0	Calculated Value
Salvage Value (%)	10.00%	
Salvage value (INR Mn.)	1,443.10	Calculated Value
Net Depreciable Value (INR Mn.)	12,987.9 0	Calculated Value
Residual Value (INR Mn.)	1,662.10	Calculated Value
IT Depreciation		
IT Depreciation (%)	80%	IT act
Income Tax		
Financial Year	FY 2019-20	
Income tax rate (%)	30.00%	As Per Income Tax Rule
Corporate Tax (%)	33.00%	As Per IT rule
Service Tax (%)	18.00%	As Per Income Tax Rule
Surcharge (%)	12.00%	As Per Income Tax Rule
Health & Education cess (%)	4.00%	As Per Income Tax Rule
<b>Final Tax rates</b>		
Income tax rate (%)	34.94%	Calculated Value
Corporate Tax (%)	38.44%	Calculated Value
GST (%)	18.72%	Calculated Value

Equity IRR of the project is calculated as below:

Equity IRR	Benchmark (Equity IRR)
4.24%	13.44%

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Sensitivity Analysis	Equity IRR			
	Variation %	-10%	Normal	10%
PLF	1.00%	4.06%	7.51%	23.57%
O&M	4.92%	4.06%	3.18%	-113.50%
Project Cost	6.91%	4.06%	2.04%	-23.20%
Tariff Rate	1.00%	4.06%	7.51%	23.57%

**Outcome of Step 2:**

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

**Step 3: Barrier analysis**

Barrier analysis has not been used.

**Step 4: Common practice analysis**

The project involves generation of electricity from solar energy. The project 2 is located in the Rajasthan in India and the policy applicable for the solar power projects is regulated by State Electricity regulation Commission (SERC) of the respective state. The policies/tariff for each state is regulated by State Electricity Regulatory Commissions. Therefore, Rajasthan is considered as Geographical area for the project activity.

Stepwise approach for common practice analysis has been carried out as per Methodological tool "Common Practice", version 03.1 EB 84, Annex 7:

**Step (1):** Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

Range	Capacity	Unit
+50%	450	MW
Capacity of the proposed project activity	300	MW
-50%	150	MW

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

- The projects are located in the applicable geographical area;
- The projects apply the same measure as the proposed project activity;
- The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
- The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g., clinker) as the proposed project plant;
- The capacity or output of the projects is within the applicable capacity or output range calculated in

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- The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

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

- The project is located in Rajasthan, therefore, projects in the geographical area of Rajasthan have been chosen for analysis. The project activity involves generation of electricity from solar energy. The project activity is located in the Andhra Pradesh in India and the policy applicable for the solar projects is regulated by respective state policy.
- The project activity is a green-field solar power project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, projects applying same measure (b) are candidates for similar projects.
- The energy source used by the project activity is solar. Hence, only solar energy projects have been considered for analysis.
- The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
- The capacity range of the projects is within the applicable capacity range from 20 MW to 60 MW. The three small scale capacity are not a part of CPA analysis as these small-scale solar PV projects are auto-additional.
- The start date of the concerned project activity is 18/11/2019<sup>14</sup>. Therefore projects, which have started commercial operation before 18/11/2019, have been considered for analysis.

Numbers of Similar projects identified, which fulfil above-mentioned conditioned are  $N_{\text{solar}} = 0$ <sup>15</sup>

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

CDM project activities, which have got registered or are under validation have been excluded in this step. The list of the power plants identified is provided to the DOE. After excluding the registered and under validation projects the total number of projects.

$$N_{\text{all}} = 0$$

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

Hence, projects where either of the conditions is satisfied those projects are counted for calculating  $N_{\text{diff}}$  projects. There is no project identified to be different in the above list of projects.

$$N_{\text{diff}} = 0$$

**Step (5):** Calculate factor  $F = 1 - N_{\text{diff}}/N_{\text{all}}$  representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

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<sup>14</sup> As per CDM definition (for demonstration of common practice analysis)

<sup>15</sup> <https://cea.nic.in/wp-content/uploads/2020/04/Plant-wise-details-of-RE-Installed-Capacity-merged.pdf>

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

As per methodological tool “common practice” version 03.1, the proposed project activity is a “common practice” within a sector in the applicable geographical area if the factor F is greater than 0.2 and  $N_{\text{all}} - N_{\text{diff}}$  is greater than 3. Thus, if both conditions are fulfilled, then project activity will be a common practice. Otherwise, the project activity is treated as not a common practice.

Outcome of Common Practice analysis: As,

- i.  $F = 1$ ; which is greater than 0.2
- ii.  $N_{\text{all}} - N_{\text{diff}} = 0$ ; which is not greater than 3

The project activity does not satisfy second condition. Hence, project activity is not a common practice.

Thus, project is concluded not to be a “common practice” within a sector in the applicable geographical area and also not financially attractive, the project is concluded to be additional.

## B.6. Estimation of emission reductions

### B.6.1. Explanation of methodological choices

>>

The project applies the methodology, ACM0002, Version 20.0.0, EB 81, Annex 9

Baseline Emission:

As per para 44 of ACM0002 version 20, Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

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

## Project Submission Form

As per methodology, 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” (t CO2/MWh), Version 7.

CO2 Baseline Database for the Indian Power Sector, Version 17, October 2021<sup>16</sup>, published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

**As per methodology, combined grid emission factor as per the** “Tool to calculate the emission factor for an electricity system” version 7.0 is calculated as below.

STEP 1: Identify the relevant electricity systems.

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

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

STEP 4: Calculate the operating margin emission factor according to the selected method;

STEP 5: Calculate the build margin (BM) emission factor.

STEP 6: Calculate the combined margin (CM) emission factor.

### **STEP 1: Identify the relevant electricity power systems**

The tool defines that “for determining the electricity emission factors, identify the relevant electricity system. Similarly, identify any connected electricity systems”. It also states that “If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used”. Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern.

However, since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e., at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO2 Baseline Database. As of 31 December 2013, the Southern grid has also been synchronized with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala

<sup>16</sup> [https://cea.nic.in/wp-content/uploads/tpe\\_cc/2022/02/User\\_Guide\\_ver\\_17\\_2021.pdf](https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf)



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Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Puducherry
<b>Rajasthan</b>		Goa	Tripura	Lakshadweep
Uttar Pradesh				
Uttarakhand				

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

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

**Option I:** Only grid power plants are included in the calculation.

**Option II:** Both grid power plants and off-grid power plants are included in the calculation.

GCC project owner has chosen only grid power plants in the calculation.

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

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

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

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

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

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

## Project Submission Form

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

The simple OM emission factor is calculated as the generation-weighted average CO<sub>2</sub> emissions per unit net electricity generation (tCO<sub>2</sub>/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

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

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

**OR**

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

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

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

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

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

<b>Net Generation in operating Margin (GWh) (Incl. Imports)</b>			
	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>
Indian Grid	9,95,957	9,65,009	9,58,218

<b>Simple Operating Margin (t CO<sub>2</sub>/MWh) (Incl. Imports)</b>			
	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>

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Indian Grid	0.9603	0.9555	0.9405
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Weighted Generation Operating Margin	
INDIAN Grid	0.9522

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

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

Build Margin (tCO <sub>2</sub> /MWh) (not adjusted for imports)	
	2020-21
Indian Grid	0.8653

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

**Combined Margin** – 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, Version 05.0.0, EB 87, Annex 9, allows to weigh the operating margin and Build margin at 75% and 25%, respectively for wind and solar projects and 50% and 50%, respectively for hydro projects. The baseline emission factor is calculated using the combined margin approach as described in the following steps:

**Calculation of Baseline Emission Factor**

The baseline emission factor  $EF_{grid,CM,y}$  is calculated as the weighted average of the Operating Margin emission factor ( $EF_{OM,y}$ ) and the Build Margin emission factor ( $EF_{BM,y}$ ):

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

Where:

- $EF_{BM,y}$  = calculated as described in steps 5 above (tCO<sub>2</sub>/MWh)
- $EF_{OM,y}$  = calculated as described in steps 3&4 above (tCO<sub>2</sub>/MWh)
- $W_{OM}$  =75% weight for solar PV Projects
- $W_{BM}$  =25% weight for solar projects

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

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

$$\begin{aligned}\text{Therefore, } EF_{\text{grid,CM,y}} &= 0.9522 * 0.75 + 0.8653 * 0.25 \\ &= 0.9305 \text{ tCO}_2/\text{MWh}\end{aligned}$$

### **Baseline emission factor (EF<sub>y</sub>):**

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

$$\text{Therefore, } EF_y = EF_{\text{grid,CM,y}} = 0.9305 \text{ tCO}_2/\text{MWh}.$$

### Project Emission

As per the ACM0002 ver-20.0, Project Emission for most renewable energy power generation project activities,  $PE_y = 0$ . However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

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

Where

- $PE_y$  = Project emissions in year y (tCO<sub>2</sub>e/yr)
- $PE_{FF,y}$  = Project emissions from fossil fuel consumption in year y (tCO<sub>2</sub>/yr)
- $PE_{GP,y}$  = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO<sub>2</sub>e/yr)
- $PE_{HP,y}$  = Project emissions from water reservoirs of hydro power plants in year y (tCO<sub>2</sub>e/yr).

The project activity involves the generation of electricity from the installation of solar projects. Hence, as per ACM0002, Version 20.0, there is no project emission for solar projects. Therefore, project emissions are zero.

### Leakage Emissions

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

Hence,  $LE_y = 0$

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

Thus, as per equation 17 of ACM0002 Version 20

$$ER_y = BE_y - PE_y$$

Where,

$ER_y$  = Emission Reduction in year (tCO<sub>2</sub>e/year)

$BE_y$  = Baseline emissions in year (tCO<sub>2</sub>e/year)

$PE_y$  = Project emissions in year (tCO<sub>2</sub>e/year)

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

Data / Parameter:	$EF_{grid, OM, y}$
Methodology reference	ACM 0002 (Version 20.0)
Data unit	tCO <sub>2</sub> e/MWh
Description	Operating Margin CO <sub>2</sub> emission factor in year $y$
Measured/calculated/default	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO <sub>2</sub> Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value(s) of monitored parameter	0.9522
Measurement/Monitoring equipment (if applicable)	Not Applicable

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

Data / Parameter:	EF <sub>grid, BM, .y</sub>
Methodology reference	ACM 0002 (Version 20.0)
Data unit	tCO <sub>2</sub> e/MWh
Description	Build Margin CO <sub>2</sub> emission factor in year y
Measured/calculated/default	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO <sub>2</sub> Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value(s) of monitored parameter	0.8653
Measurement/Monitoring equipment (if applicable)	Not Applicable
Measuring/reading/recording frequency (if applicable)	Not Applicable
Calculation method (if applicable)	Not Applicable
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For the calculation of the Baseline Emission.
Additional comments	-

Data / Parameter:	EF <sub>grid, CM, .y</sub>
Methodology reference	ACM 0002 (Version 20.0)
Data unit	tCO <sub>2</sub> e/MWh

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Description	Combined Margin CO <sub>2</sub> emission factor in year y
Measured/calculated/default	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
Data source	CO <sub>2</sub> Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value(s) of monitored parameter	0.9305
Measurement/Monitoring equipment (if applicable)	Not Applicable
Measuring/reading/recording frequency (if applicable)	Not Applicable
Calculation method (if applicable)	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO <sub>2</sub> emission factor in year y (tCO <sub>2</sub> /MWh) $EF_{grid,OM,y}$ = Operating margin CO <sub>2</sub> emission factor in year y (tCO <sub>2</sub> /MWh) $W_{OM}$ = Weighting of operating margin emissions factor (%) = 75% $W_{BM}$ = Weighting of build margin emissions factor (%) = 25%
QA/QC procedures	This parameter is fixed ex-ante for the entire crediting period.
Purpose of data	For the calculation of the Baseline Emission.
Additional comments	-

### B.6.3. Ex-ante calculation of emission reductions

>> Formula used to calculate the net emission reduction for the project activity is

$$ER_y = BE_y - PE_y - LE_y$$

Where,

$ER_y$  = Emission Reduction in year y (t CO<sub>2</sub>)

$BE_y$  = Baseline emission year y (t CO<sub>2</sub>)

$PE_y$  = Project emissions year y (t CO<sub>2</sub>)

$LE_y$  = Leakage Emissions year y (t CO<sub>2</sub>)

#### Baseline Emission (BE<sub>y</sub>)

The baseline emissions are the product of electrical energy baseline  $EG_{facility,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

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$$BE_Y = EG_{PJ,y} * EF_{grid,y}$$

Where,

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

As per para 26 of methodology, project activity is the installation of a Greenfield power plant, hence

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

The notation of same parameter  $EG_{PJ,y}$  can be  $EG_{PJ,facility,y}$  as project activity is installation of a greenfield power plant.

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

Capacity (MW)	PLF (%)	Net Generation	Baseline emission factor	Baseline emissions	Emission reduction
		(MWh/year)	(tCO2/MWh)	(tCO2e/year)	(tCO2e/year)
300	25.50%	655,261 <sup>17</sup>	0.9305	609,720	609,720

#### B6.4. Summary of ex ante estimates of emission reductions

>>

Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
Year 1	623,565	0	0	623,565
Year 2	620,447	0	0	620,447
Year 3	617,345	0	0	617,345
Year 4	614,258	0	0	614,258
Year 5	611,187	0	0	611,187
Year 6	608,131	0	0	608,131
Year 7	605,090	0	0	605,090
Year 8	602,065	0	0	602,065
Year 9	599,054	0	0	599,054
Year 10	596,059	0	0	596,059

<sup>17</sup> Annual Average for entire crediting period



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<b>Total</b>	<b>7,798,892</b>	<b>0</b>	<b>0</b>	<b>7,798,892</b>
<b>Total number of crediting years</b>	<b>10</b>			
<b>Annual average over the crediting period</b>	<b>609,720</b>	<b>0</b>	<b>0</b>	<b>609,720</b>

## B.7. Monitoring plan

### B.7.1. Data and parameters to be monitored

<b>Data / Parameter:</b>	<b>EG<sub>PJ,y</sub> or EG<sub>facility,y</sub></b>
Methodology reference	ACM 0002 (Version 20.0)
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)
Measured/calculated/default	
Data source	Credit Report /JMR as per Monthly Generation Report
Value(s) of monitored parameter	655,261 <sup>18</sup> (Estimated)
Measurement/Monitoring equipment	To be provided in the final version of the PSF
Measuring/reading/recording frequency	Continuous measurement & monthly recording
Calculation method (if applicable)	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations
QA/QC procedures	The meters is approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years. <sup>2</sup> The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines will be applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and

<sup>18</sup> Average for entire crediting period

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	the same is considered the monitoring parameter. The billing is raised based on substation meters.
Purpose of data	Calculation of baseline emissions
Additional comments	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of credits for this project activity, whichever occurs later.

<b>Data / Parameter:</b>	<b>CO<sub>2</sub> emissions</b>
Methodology reference	-
Data unit	tCO <sub>2</sub>
Description	-
Measured/calculated/default	Calculated
Data source	The value will be sourced from the monitoring report prepared during the time of issuance.
Value(s) of monitored parameter	Not used for ex-ante calculations
Measurement/Monitoring equipment	Not Applicable
Measuring/reading/recording frequency	As and when ACC issuance is done.
Calculation method (if applicable)	Based on the calculation carried out in the monitoring report.
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

<b>Data / Parameter:</b>	<b>Replacing fossil fuels with renewable sources of energy</b>
Methodology reference	-
Data unit	MWh/ year
Description	-
Measured/calculated/default	Measured
Data source	-
Value(s) of	Not used for ex-ante calculations

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monitored parameter	
Measurement/ Monitoring equipment	-
Measuring/reading/ recording frequency	Continuous measurement
Calculation method (if applicable)	The electricity produced from the project is 100% clean and green which replaces equal quantity of fossil fuel dominated grid electricity. The quantity of electricity produced from the solar project will be monitored for this parameter.
QA/QC procedures	-
Purpose of data	Not used for emission reduction calculation.
Additional comments	-

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

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

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

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

<b>Data / Parameter:</b>	<b>Women empowerment</b>
Methodology reference	-
Data unit	Number of women provided with employment.
Description	The project owner shall ensure at least 1 woman is employed in its payment for this project activity
Measured/calculated /default	-
Data source	Payroll record of the project owner.
Value(s) of monitored parameter	To be provided at the time of issuance.

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

**B.7.2 Monitoring-program of risk management actions**

<b>Data / Parameter:</b>	PV Modules Waste
Objective of the Program of Risk Management Actions	Program of Risk Management Actions for PV Modules Waste (PRMA 01)
Purpose:	To mitigate/reduce an environmental impact identified as Harmful in the risk assessment and to develop a Program of Risk Management Actions plan to address the risk of PRMA 01
Describe the environment /social impact risk that needs to be mitigated.	The defunct / damaged PV modules may be generated and storage/ disposal can lead to contamination of soil.
Describe the actions and targets that will be implemented to ensure that the Project Activity will avoid negative impacts that cause harm.	The damaged/defunct solar PV modules shall be stored and disposed- off as per the guidance of national/local laws.

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Program of Risk Management Actions to achieve the target(s):	<table border="1"> <thead> <tr> <th>S.No.</th> <th>Action and targets</th> <th>Responsibility</th> <th>Resource Requirement</th> <th>Target to be Achieved by (insert date)</th> <th>Key Performance Indicators (KPI)</th> <th>Targets achieved on (insert date)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>The damaged/defunct solar PV modules shall be stored and disposed-off</td> <td>Project owner</td> <td>01</td> <td>To be provided in final the version of PSF.</td> <td>Quantity of damaged Solar PV modules handled safely.</td> <td>To be monitored</td> </tr> <tr> <td colspan="7">Date of Closing the Program: _____</td> </tr> <tr> <td colspan="7">_____</td> </tr> </tbody> </table>						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	The damaged/defunct solar PV modules shall be stored and disposed-off	Project owner	01	To be provided in final the version of PSF.	Quantity of damaged Solar PV modules handled safely.	To be monitored	Date of Closing the Program: _____							_____						
	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	The damaged/defunct solar PV modules shall be stored and disposed-off	Project owner	01	To be provided in final the version of PSF.	Quantity of damaged Solar PV modules handled safely.	To be monitored																											
	Date of Closing the Program: _____																																	
_____																																		
QA/QC procedures:	The details of damaged and returned solar PV modules will be maintained in records for future verification.																																	
Describe whether the Project Activity has achieved the targets set out in this Program of Risk Management Actions. If yes, describe the outcome(s).	To be monitored.																																	

<b>Data / Parameter:</b>	E- Waste
Objective of the Program of Risk Management Actions	Program of Risk Management Actions for E- Waste (PRMA 02)
Purpose:	To mitigate/reduce an environmental impact identified as Harmful in the risk assessment and to develop a Program of Risk Management Actions plan to address the risk of PRMA 02
Describe the environment /social impact risk that needs to be mitigated.	E waste may be generated and storage/ disposal can lead to contamination of soil.
Describe the actions and targets that will be implemented to ensure that the Project Activity will avoid negative impacts that cause harm.	E- waste shall be stored and disposed-off as per the guidance of national/local laws/regulations.

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Program of Risk Management Actions to achieve the target(s):	<table border="1"> <thead> <tr> <th>S.No.</th> <th>Action and targets</th> <th>Responsibility</th> <th>Resource Requirement</th> <th>Target to be Achieved by (insert date)</th> <th>Key Performance Indicators (KPI)</th> <th>Targets achieved on (insert date)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>E-waste shall be stored and dispose d-off</td> <td>Project owner</td> <td>01</td> <td>To be provided in final the version of PSF..</td> <td>Quantity of Ewaste handled safely</td> <td>To be monitored</td> </tr> <tr> <td colspan="7">Date of Closing the Program:</td> </tr> <tr> <td colspan="7"> </td> </tr> </tbody> </table>						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	E-waste shall be stored and dispose d-off	Project owner	01	To be provided in final the version of PSF..	Quantity of Ewaste handled safely	To be monitored	Date of Closing the Program:													
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	1	E-waste shall be stored and dispose d-off	Project owner	01	To be provided in final the version of PSF..	Quantity of Ewaste handled safely	To be monitored																											
	Date of Closing the Program:																																	
QA/QC procedures:	The details of E-waste will be maintained in records for future verification.																																	
Describe whether the Project Activity has achieved the targets set out in this Program of Risk Management Actions. If yes, describe the outcome(s).	To be monitored.																																	

<b>Data / Parameter:</b>	End of life products/ equipment
<b>Objective of the Program of Risk Management Actions</b>	Program of Risk Management Actions for End-of-life products/ equipment (PRMA 03)
<b>Purpose:</b>	To mitigate/reduce an environmental impact identified as harmful in the risk assessment and to develop a Program of Risk Management Actions plan to address the risk of PRMA 03.
<b>Describe the environment /social impact risk that needs to be mitigated.</b>	Improper disposal of generated End of life products/ equipment may create soil contamination
<b>Describe the actions and targets that will be implemented to ensure that the Project Activity will avoid negative impacts that cause harm.</b>	End of life solar PV modules shall be stored and disposed-off as per the guidance of national/local laws.



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<b>Program of Risk Management Actions to achieve the target(s):</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #e1eef6;">S.No.</th> <th style="background-color: #e1eef6;">Action and targets</th> <th style="background-color: #e1eef6;">Responsibility</th> <th style="background-color: #e1eef6;">Resource Requirement</th> <th style="background-color: #e1eef6;">Target to be Achieved by <i>(insert date)</i></th> <th style="background-color: #e1eef6;">Key Performance Indicators (KPI)</th> <th style="background-color: #e1eef6;">Targets achieved on <i>(insert date)</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>End of life solar PV modules shall be stored and disposed off as per the guidance of national/local laws.</td> <td>Project Owner.</td> <td>01</td> <td>Throughout the project lifetime</td> <td>Quantity of damaged Solar PV modules handled safely</td> <td>To be monitored</td> </tr> <tr> <td colspan="2">Date of Closing the Program:</td> <td colspan="2">Project lifetime.</td> <td colspan="3"></td> </tr> <tr> <td colspan="7"></td> </tr> </tbody> </table>						S.No.	Action and targets	Responsibility	Resource Requirement	Target to be Achieved by <i>(insert date)</i>	Key Performance Indicators (KPI)	Targets achieved on <i>(insert date)</i>	1	End of life solar PV modules shall be stored and disposed off as per the guidance of national/local laws.	Project Owner.	01	Throughout the project lifetime	Quantity of damaged Solar PV modules handled safely	To be monitored	Date of Closing the Program:		Project lifetime.											
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	Date of Closing the Program:		Project lifetime.																															
<b>QA/QC procedures:</b>	Record of end-of-life solar PV module will be maintained and submitted during verification.																																	
<b>Describe whether the Project Activity has achieved the targets set out in this Program of Risk Management Actions. If yes, describe the outcome(s).</b>	To be monitored.																																	

**B.7.3. Sampling plan**

>>

Not Applicable

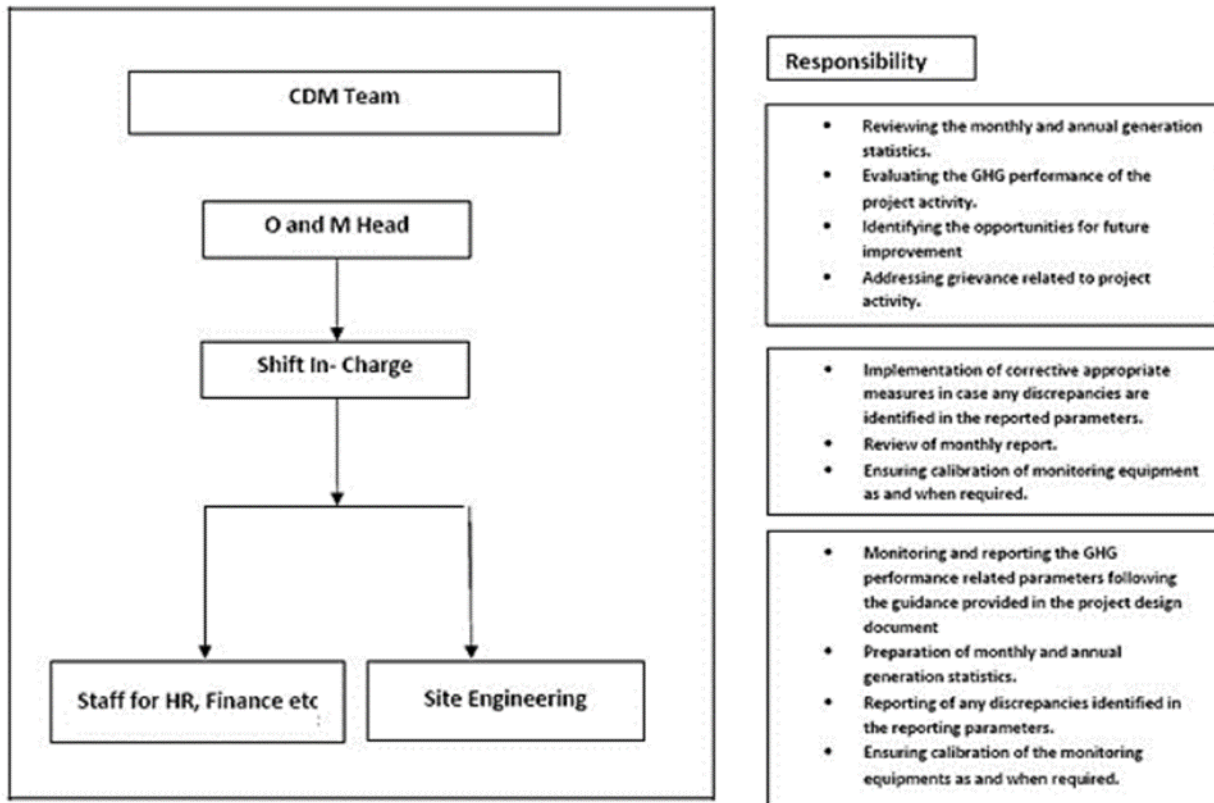
**B.7.4. Other elements of the monitoring plan**

>>

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected solar power project being implemented. The monitoring plan, which will be implemented by the project participant describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving. The authority and responsibility for registration, monitoring,

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measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



### Data Measurement:

The export and import energy will be measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

### Data collection and archiving:

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

### Emergency preparedness:

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized. In the event that the main meter, which is used to record the net electricity exported by the project, is

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found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.

### Personnel training:

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

### QA/QC procedures:

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records will be crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

## Section C. Start date, crediting period type and duration

### C.1. Start date of the Project Activity

>>

22/12/2021

(The first phase of the project i.e. 150 MW out of the total capacity of 300 MW was commissioned on 22/12/2021; therefore, this has been considered as the project start date as per GCC definition)

### C.2. Expected operational lifetime of the Project Activity

>>

25 years

### C.3. Crediting period of the Project Activity

#### C.3.1. Fixed crediting period

>>

Yes

#### C.3.2. Start date of the crediting period

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>>

22/12/2021

### C.3.3. Duration of the crediting period

>>

10 years

## Section D. Environmental impacts

### D.1. Analysis of environmental impacts

>>

The project activity does not involve any major construction activity. It primarily requires the installation of the solar PV panels, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that solar PV project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same. Thus, there is no any significant impact due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

### D.2. Environmental impact assessment

>> The guidelines on Environmental Impact Assessment have been published by Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India (GOI) under Environmental Impact Assessment notification 14/09/2006<sup>4</sup>. Further amendments to the notification have been done on 14/07/2018<sup>5</sup>.

As per the notification:

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

- (1) All new projects or activities listed in the Schedule to this notification;
- (2) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;

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(3) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range.”

As the solar power generation projects are not listed in any of the categories of the schedule, So, the project is considered environmentally safe and as per Host party- India no EIA is required

## **Section E. Environmental and social safeguards**

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E.1. Environmental safeguards

>>

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards										Project Owner's Conclusion	
		Description of Impact (both positive and negative)	Legal requirement / Limit	Do-No-Harm Risk Assessment			Risk Mitigation Action Plans		Do-No-Harm Residual Risk Assessment		Self-Declaration		
				Not Applicable (No actions required)	Harmless (No actions required)	Harmful (Actions required)	Operational Controls	Program of Risk Management Actions	Re-evaluate Risks	Monitoring	Explanation of Conclusion	The Project Activity will not cause any harm	
<b>Environmental impacts on the identified categories<sup>19</sup> indicated below.</b>	Indicators for environmental impacts	Describe anticipated environmental impacts, both positive and negative from all sources (stationary and mobile), that may result from the Project Activity, within and outside the project boundary, over which the Project Owner(s) has control, and beyond what would reasonably be expected to occur in the absence of the Project Activity.	Describe the applicable national regulatory requirements /legal limits related to the identified risks of environmental impacts.	If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as <b>Not Applicable</b> (No actions required)	If environmental impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ below the legal limits, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as <b>Harmless</b> (No actions required)	If environmental impacts are anticipated that will not be in compliance with the applicable national regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be indicated as <b>Harmful</b> (Actions required).	Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as <b>Harmful</b> .	Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce the risk of impacts that have been identified as <b>Harmful</b> .	Re-evaluate risks after Risk Mitigation Action Plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as <b>Harmless</b> (No actions required)	Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and described in the PSF (refer to Table 3).	Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.	Confirm that the Project Activity risks of negative environmental impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for <b>Yes</b> or and -1 for <b>No</b> )	
<b>Environmental Safeguards</b>													
Environment - Air	SO <sub>x</sub> emissions	The solar power project does not cause any SO <sub>x</sub> emissions in the project scenario. However, the in the baseline scenario (grid) some of the	The Air (Prevention & Control of Pollution) Act 1981 stipulates thresholds for both ambient air	Not Applicable as no emissions occur in the project scenario and therefore is not	Not Applicable. No Action Required	Not Applicable. No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ES S(CPA)/2015-16; dated March 07,	NA	

<sup>19</sup> 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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		fossil fuel power plants may have emitted SOx emissions, on which data is not available and can't be quantified.	quality as well as stack emissions.	expected to or does not cause any harm.								2016 (Appendix A) solar project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries.  However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted SOx emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
	<i>NO<sub>x</sub> emissions</i>	Not Applicable	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ES S(CPA)/2015-16; dated	NA	

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											<p>March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted NOx emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
	CO <sub>2</sub> emissions	In absence of the project activity the stated amount of generated electricity	The Air (Prevention & Control of Pollution) Act 1981 stipulates	Not Applicable as no emissions occur in the project scenario	Not Applicable. No Action Required	Not Applicable. No action required	Not Applicable	Not Applicable	No Action Required	The generated electricity the project activity will be continuousl	With reference to the CPCB modified direction No. B29012/ES	+1



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		<p>would be generated by the operation of grid - connected power plants. The caused CO2 emissions by the grid - connected power plants are expressed as grid emission factor, i.e., t CO2/MWh generated grid electricity, due to fossil fuel-based grid power plants. Therefore, the non -fossil fuel, zero emission - generated electricity by the project activity will substitute the grid electricity and related CO2 emissions, i.e. CO2 emission reduction = generated electricity by the project activity x grid emission factor</p>	<p>thresholds for both ambient air quality as well as stack emissions.</p>	<p>and therefore is not expected to or does not cause any harm.</p>							<p>y measured and the related CO2 emission reductio will be calculated according to the applied methodology ACM0002(v ersion 20.0).  Parameter, "CO2 emissions" is included in section B.7.1 to monitor this parameter.</p>	<p>S(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries.  However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO2 emissions, which has been calculated by the combined margin emission factor as mentioned in the PSF. Therefore, emission reductions are expected to be reduced which will be regularly monitored and verified ex-post and therefore is eligible to be scored.</p>	
	CO emissions	NA	The Air (Prevention & Control of	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB	NA	

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			Pollution) Act 1981								<p>modified direction No. B29012/ES S(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
<i>Suspended particulate matter (SPM) emissions</i>	NA	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No.	NA	

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											<p>B29012/ES S(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted SPM emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
	<i>Fly ash emissions</i>	NA	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ES S(CPA)/2015-16; dated	NA

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											<p>March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted fly ash emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
	<p><i>Non-Methane Volatile Organic Compounds (NMVOCs)</i></p>	<p>NA</p>	<p>The Air (Prevention &amp; Control of Pollution) Act 1981</p>	<p>Not Applicable</p>	<p>No Action Required</p>	<p>No action required</p>	<p>Not Applicable</p>	<p>Not Applicable</p>	<p>No Action Required</p>	<p>Not Applicable</p>	<p>With reference to the CPCB modified direction No. B29012/ES S(CPA)/2015-16; dated March 07, 2016 (Appendix</p>	<p>NA</p>

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											<p>A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted NM/VOCs emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
<i>Odor emissions</i>	NA	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ES S(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls	NA	

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											<p>in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate" for White category of industries</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted Odor emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
	Noise Pollution	NA	Noise (Regulation and Control) Rules 2000 amended in 2010)	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant noise emission is expected from project activity during operational phase as there is no major equipment's in solar project who generate noise.	NA

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<b>Environment - Land</b>	<i>Solid waste Pollution from Plastics</i>	Negative	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant plastic waste is expected from the project activity during operational phase. Hence, this parameter will not be scored.	NA
	<i>Solid waste Pollution from Hazardous wastes</i>	Damaged solar PV modules at site might have negative environmental impacts if not managed well	Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules, 2016		Harmless	-	-	The damaged/defunct solar PV modules shall be stored and disposed-off as per the national/local law.	Harmless	The details of damaged and returned solar PV modules will be maintained in records for future verification. Refer B.7.2	The project owner undertakes to manage solar PV waste in an appropriate manner and in compliance to the prevailing laws and regulations	+1
	<i>Solid waste Pollution from Bio-medical wastes</i>	NA	Bio-medical Waste Management Rules, 2016	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant bio-medical waste will be generated from the project activity. Hence, this parameter will not be scored.	NA
	<i>Solid waste Pollution from E-wastes</i>	No e-waste pollution is anticipated through the operation of the project.	E-waste (Management and Handling) Rules		Harmless	-	Records all electrical & electronics waste of projects sites and filling of return	Project implementer management is responsible to maintain records and filling of returns as per applicable law	Harmless	Records of E-waste will be maintained as per applicable prevailing laws and regulations	Project implementer management is responsible to maintain records and filling of returns as per applicable law and have no	+1

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											significant impact. Hence,, this parameter will not be scored.	
<i>Solid waste Pollution from Batteries</i>	The project does not deploy batteries for storage. No solid waste pollution from batteries is anticipated	Batteries (Management and Handling) Rules	Not Applicable	Not Applicable	No Action required	Not Applicable	Not Applicable	Not Applicable	Not Applicable	No Action required	The project does not deploy batteries for storage. No solid waste pollution from batteries is anticipated.	NA
<i>Solid waste Pollution from end of life products/ equipment</i>	Solar PV modules at site might have negative environmental impacts if not managed well after their end-of-life	Solid Waste Management Rules, 2016	-	Harmless	-	Solid waste from the project activity must be disposed as applicable law	Ayana renewable power private limited management is responsible to maintain records and dispose all products after ending lifecycle as per applicable law	Harmless	The details of damaged and returned solar PV modules will be maintained in records for future verification.  Refer B.7.2.	Ayana renewable power private limited management is responsible to maintain records and dispose all products after ending lifecycle as per applicable law and it will not be applicable for the project activity Hence,, this parameter will not be scored.	+1	
<i>Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury)</i>	NA	In India, there are no comprehensive soil quality regulations and standards to ascertain the seriousness of contamination	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant soil pollution from chemicals during operation phase of the project activity  However, the in the baseline	NA	



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											scenario (grid) some of the fossil fuel power plants may have emitted soil emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
	<i>Soil erosion</i>	NA	In India, there are no comprehensive soil quality regulations and standards to ascertain the seriousness of contamination	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no chance of soil erosion during operation phase of the project activity  However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted soil erosion emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA
	<i>Reliability/ accessibility</i>	Solar power projects use a	The Water (Prevention	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Supply water from	NA

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<p><b>Environment</b> - Water</p>	<p><i>of water supply</i></p>	<p>modest amount of water for cleaning solar collection and reflection surfaces like mirrors, heliostats, and photovoltaic (PV) panels. However, the quantity is water used is very insignificant, particularly when compared with the baseline power plants.</p> <p>The water used in the project activity is supplied from the local water body with necessary approvals.</p>	<p>&amp; Control of Pollution) Act 1974</p>								<p>local body will be used and necessary approval to be obtained.</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted accessibility of water emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>	
	<p><i>Water Consumption from ground and other sources</i></p>	<p>Solar power projects use a modest amount of water for cleaning solar collection and reflection surfaces like mirrors, heliostats, and photovoltaic (PV) panels. However, the quantity is water used is very insignificant, particularly when compared</p>	<p>Permission for abstraction of Ground water under Environmental (Protection) Act 1986</p>	<p>Not Applicable</p>	<p>No Action Required</p>	<p>No action required</p>	<p>Not Applicable</p>	<p>Not Applicable</p>	<p>No Action Required</p>	<p>Not Applicable</p>	<p>No ground water will be consumed in all sites of the project activity &amp; necessary permission to be obtained from concerned local authority in case use ground water in future.</p> <p>However, the in the baseline</p>	<p>NA</p>

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		with the baseline power plants.									scenario (grid) some of the fossil fuel power plants may have emitted water consumption emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
<i>Generation of wastewater</i>	There is no source of waste water generation in a solar power project other than the waste water generated out of toilet and washroom.	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas should be away from natural drainage channels  However, the in the baseline scenario	NA	

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											(grid) some of the fossil fuel power plants may have generation of waste water on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
<i>Wastewater discharge without/with insufficient treatment</i>	NA	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas should be away from natural drainage channels  However, the in the baseline scenario (grid) some of the fossil	NA	

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											fuel power plants may have generation of waste water or its treatment on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
<i>Pollution of Surface, Ground and/or Bodies of water</i>	NA	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas should be away from natural drainage channels  However, the in the baseline scenario (grid) some of the fossil fuel power	NA	

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											plants may have from surface water on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
<b>Environment – Natural Resources</b>	<i>Conserving mineral resources</i>	NA	In India, there are no conserving mineral resources regulations and standards to ascertain	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	This is solar project activity and it is not using any natural minerals therefore this parameter will not be scored.	NA
	<i>Protecting/enhancing plant life</i>	NA	In India, there are no comprehensive regulations and standards to ascertain for protecting plant life	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity.  therefore, this parameter will not be scored.	NA
	<i>Protecting/enhancing species diversity</i>	NA	In India, there are no comprehensive regulations and standards to ascertain	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The project activity has been implemented in barrel land and no trees have been	NA

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			for protecting plant life								removed from the site due to project activity. therefore this parameter will not be scored.	
<i>Protecting/enhancing forests</i>	NA	The Forest (Conservation) Act 1980 & 1981	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No forest land has been used for the project activity. therefore this parameter will not be scored.	NA	
<i>Protecting/enhancing other depletable natural resources</i>	NA	National Forest Policy (Revised) 1988	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity or no other natural resource has been used to operate project activity therefore this parameter will not be scored.	NA	
<i>Conserving energy</i>	NA	Energy Conservation Act 2001	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	All efficient products & instruments has been used in the project activity, hence no significant	NA	

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											impact due to this.	
											therefore, this parameter will not be scored.	
<i>Replacing fossil fuels with renewable sources of energy</i>	The project activity involves generation of power using solar energy resources which would have been otherwise generated from the fossil fuel dominant grid connected power plants in the absence of the project activity.	Energy Conservation Act 2001	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Continuous measurement of electricity generation will be done.  Parameter, "Replacing fossil fuels with renewable sources of energy" is included in section B.7.1 of the PSF.	The project is expected to supply an average of 655,261 MWh per year renewable electricity to grid. The electricity produced from the project is 100% clean and green which replaces equal quantity of fossil fuel dominated grid electricity. The quantity of electricity produced from the solar project will be monitored for this parameter.  Hence, this parameter shall be scored.	+1	
<i>Replacing ODS with non-ODS refrigerants</i>	NA	In India, there are no comprehensive regulations and standards to ODS & non ODS	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No impact	Therefore this parameter will not be scored.	NA



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<b>Note:</b> 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.	
<b>Net Score:</b>	<b>+5</b>
<b>Project Owner's Conclusion in PSF:</b>	The Project Owner confirms that the Project Activity will not cause any net harm to the environment.

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E.2. Social Safeguards

>>

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards										Project Owner's Conclusion	
		Description of Impact (both positive and negative)	Legal requirement /Limit	Do-No-Harm Risk Assessment			Risk Mitigation Action Plans		Do-No-Harm Residual Risk Assessment		Self-Declaration		
				Not Applicable (No actions required)	Harmless (No actions required)	Harmful (Actions required)	Operational Controls	Program of Risk Management Actions	Re-evaluate Risks	Monitoring	Explanation of Conclusion	The Project Activity will not cause any harm	
<b>Social impacts on the identified categories<sup>20</sup> indicated below.</b>	Indicators for social impacts	Describe the impacts on society and stakeholders, both positive and negative, that may result from constructing and operating of the Project Activity.	Describe the applicable national regulatory requirements / legal limits 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 <b>Not Applicable</b> (No actions required)	If social impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ legal limits, then it the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as <b>Harmless</b> (No actions required)	If social impacts are anticipated that will not be in compliance with the applicable national regulatory requirements/ legal limits, then the Project Activity is likely to cause harm (may be unsafe) and shall be indicated as <b>Harmful</b> (Actions required).	Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as <b>Harmful</b> .	Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., construction of crèche for workers) that will be adopted to reduce the risk of impacts that have been identified as <b>Harmful</b> .	Re-evaluate risks after Risk Mitigation Actions plans have been developed (refer to previous two columns) for impacts that have been identified as <b>Harmful</b> . Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as <b>Harmless</b> (No actions required)	Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as <b>Harmful</b> and to be described in the PSF (refer to Table 3).	Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.	Confirm that the Project Activity risks of negative social impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for <b>Yes</b> or and -1 for <b>No</b> )	
<b>Social Safeguards</b>													
<b>Social - Jobs</b>	Long-term jobs (> 1 year) created/ lost	The project activity leads to the employment generation	Any employment provided through the project is ensured to meet the criteria and requirement defined in applicable	Not Applicable	Not Applicable	Not Applicable	There are no harmful impacts of the project activity as it leads to the employment generation.	There have been no additional actions that have been identified as harmful.	There have been no additional actions that have been identified as harmful and hence this section is not applicable.	There are no impacts that have been identified as harmful. Monitoring parameter, Long-term jobs (> 1 year)	No risks have been identified and hence no risk mitigation action is required	+1	

<sup>20</sup> 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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			Indian labor laws.							created/ lost" is included in section B.7.1 to monitor the parameter.		
	<i>New short-term jobs (&lt; 1 year) created/ lost</i>	The project activity leads to the employment generation	Any employment provided through the project is ensured to meet the criteria and requirement defined in applicable Indian labor laws.	Not Applicable	Not Applicable	Not Applicable	There are no harmful impacts of the project activity as it leads to the employment generation.	There have been no additional actions that have been identified as harmful.	There have been no additional actions that have been identified as harmful and hence this section is not applicable.	There are no impacts that have been identified as harmful. Monitoring parameter, New short-term jobs (< 1 year) created/ lost" is included in section B.7.1 to monitor the parameter.	No risks have been identified and hence no risk mitigation action is required	+1
	<i>Sources of income generation increased / reduced</i>	The project increases income by creating job opportunities.	All the income generated from project and payment done for its operation are ensured to be done as per Indian rules and regulations applicable.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	The revenue generate will be monitored from the annual Audited books of account. Monitoring parameter, Sources of income generation increased / reduced" is included in section B.7.1 to monitor the parameter.	No risks have been identified and hence no risk mitigation action is required	+1
<b>Social - Health &amp; Safety</b>	<i>Disease prevention</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Reducing / increasing accidents</i>	Accidents in a solar power project is very rare as there	Electrical Safety Rules for Industries	Not Applicable	Regular safety procedure is followed e.g. anyone	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	The safety practice and majors at the project	Not Applicable

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		<p>is no mechanical or moveable parts involved, particularly, when compared with the baseline power plants. However, there is still chances of accidents while handling electrical equipment and vehicular movements.</p>	<p>under Indian Electricity Rules 1956/2020<sup>21</sup></p> <p>The Motor Vehicles and (amendment) Act, 2019<sup>22</sup> is applicable for all the vehicles to be used in the project.</p>		<p>working on an electrical power line or device or both must be provided with tools and safety devices such as gloves, rubber shoes, seat belts, ladders, grounding devices, helmets, line testers, hand lamps, etc. to protect it against mechanical or electrical injury.</p> <p>The vehicle used in the project activity and their drivers are ensured to use valid license, insurance policy and pollution under control (PUC) certificates.</p> <p>Therefore, no action assessed to be required.</p>						<p>site are expected to be as per the applicable regulations and standard and industry practice. Hence, this parameter will not be scored.</p>	
	<i>Reducing / increasing crime</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Reducing / increasing food wastage</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

<sup>21</sup>[https://dginasli.gov.in/sites/default/files/inline-files/rlikolkta\\_uncovered\\_pdis201920.pdf](https://dginasli.gov.in/sites/default/files/inline-files/rlikolkta_uncovered_pdis201920.pdf).

<sup>22</sup>[https://morth.nic.in/sites/default/files/notifications\\_document/MV%20Act%20English.pdf](https://morth.nic.in/sites/default/files/notifications_document/MV%20Act%20English.pdf)

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	<i>Reducing / increasing indoor air pollution</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Efficiency of health services</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Sanitation and waste management</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Other health and safety issues</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Add more rows if required</i>											
<b>Social - Education</b>	<i>Job related training imparted or not</i>	Not Applicable	The created permanent jobs will receive specific job training by the project owner as per CSR policy of Project implementer	Not Applicable	No Action Required	No action required	Not Applicable	Not Applicable	No Action Required	Training records/evidence by the project owner	Project implementer should take initiative Promotion of education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects	+1
	<i>Educational services improved or not</i>	Not Applicable	The created permanent jobs will receive specific job training by the project owner as per CSR	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Training records/evidence by the project owner	Since the job-related training and other activities related to promote education in the project	Not applicable

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			policy of Project implementer								region is considered in the above parameter, this parameter is not scored separately.	
	<i>Project-related knowledge dissemination effective or not</i>	Negative	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Other educational issues</i>	Negative	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Social - Welfare</b>	<i>Improving/deteriorating working conditions</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Community and rural welfare</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Poverty alleviation (more people above poverty level)</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Improving / deteriorating wealth distribution/ generation of income and assets</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Increased or / deteriorating municipal revenues</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Women's empowerment</i>	The project shall contribute to achieve equal rights for men & women. The project owner	The employment and benefit provided to the employees shall be	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This can be monitored by the payroll records.	No risks have been identified and hence no risk mitigation

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		<p>has an internal policy to protect women's right and safeguard women from harassment at workplace.</p> <p>The project owner ensures there is equal opportunity provided to women in employment. The project owner shall ensure at least 1 woman is employed in its payment for this project activity.</p>	<p>ensured to be as per all the applicable Indian rules and regulations.</p> <p>As per the Protection of women from Sexual Harassment Act (POSH), of India, every company having more than ten employees to constitute an Internal Complaints Committee (ICC) in the prescribed manner to receive and address the complaints of any sort of sexual harassment from women in a time-bound and extremely confidential manner. The project owner has a policy to implement the provision of POSH act at its work place.</p>								<p>action is required.</p> <p>The women employment it the project owner's payroll shall be monitored from its employment register or any other authentic sources.</p>	
	<i>Reduced / increased traffic congestion</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	<i>Other social welfare issues</i>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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**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 society. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.

<b>Net Score:</b>	+5
<b>Project Owner's Conclusion in PSF:</b>	The Project Owner confirms that the Project Activity will not cause any net harm to society.



## Section F. United Nations Sustainable Development Goals (SDG)

>>

UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs					Project Owner(s)'s Conclusion	
			Project-level SDGs	Project-level Targets/ Actions	Project-level Indicators	Contribution of Project-level Actions to SDG Targets	Monitoring	Explanation of Conclusion	Are Goal/ Targets Likely to be Achieved?
<p><b>Describe UN SDG targets and indicators</b></p> <p>See: <a href="https://unstats.un.org/sdgs/indicators/indicators-list/">https://unstats.un.org/sdgs/indicators/indicators-list/</a></p>	<p>Describe the UN-level target(s) and corresponding indicator no(s)</p>	<p>Has the host country declared the SDG to be a national priority? Indicate Yes or No</p>	<p>Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope.</p> <p><b>For guidance see:</b> Integrating the SDGs into Corporate Reporting- A Practical Guide: <a href="https://www.unglobalcompact.org/docs/publications/Practical_Guide_SDG_Reporting.pdf">https://www.unglobalcompact.org/docs/publications/Practical_Guide_SDG_Reporting.pdf</a></p> <p>Case-study from Coca-Cola and other organizations to develop organization-wide SDGs (page 114): <a href="https://pub.iges.or.jp/pub/realising-transformative-potential-sdgs">https://pub.iges.or.jp/pub/realising-transformative-potential-sdgs</a></p>	<p>Define project-level targets/actions, by suitably modifying and customizing UN/Country-level targets to the project scope. Define the target date by which the Project Activity is expected to achieve the project-level SDG target(s). Refer to the previous column for guidance</p>	<p>Define project-level indicators by suitably modifying and customizing UN/Country-level indicators to the project scope or creating a new indicator(s). Refer to the previous column for guidance</p>	<p>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 and is additional to what would have occurred in the absence of the Project Activity</p>	<p>Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG target and Indicator</p>	<p>Describe how the Project Owner has concluded that the project is likely to achieve the identified Project level SDGs target(s).</p>	<p>Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or No)</p>
<p><b>Goal 1: End poverty in all its forms everywhere</b></p>	<p>End poverty in all its forms everywhere</p>	<p>Yes See also: Voluntary national review of the republic of India on the implementation of the 2030 agenda</p>	<p>Unskilled employment for below poverty line (BPL) category people</p>	<p>At least 5 including all sites</p>	<p>No of Unskilled employment for below poverty line (BPL) employees at site</p>	<p>Providing employment to BPL person helps to reduce poverty</p>	<p>Employee logbook or register at site</p>	<p>Project owner shall ensure the first preference to be given to BPL person for unskilled work as per their CSR policy.</p>	<p>Yes</p>

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		for sustainable development  <a href="https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf">https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf</a>								
<b>Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture</b>										
<b>Goal 3. Ensure healthy lives and promote well-being for all at all ages</b>										
<b>Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</b>										
<b>Goal 5. Achieve gender equality and empower all women and girls</b>	Achieve gender equality and empower all women and girls by 2030	Yes See also: Voluntary national review of the republic of India on the implementation of the 2030	Equal pay for work of equal value” for both men and women as per CSR policy and shall hired at least 1 women employee at site	No discrimination against women.	No of women employees at site	Contribute to achieve equal rights for men & women	Employment register, complain register & pay slip	Number of women employed directly due to the project activity  As per company policy of Project implementer	Yes	

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		<p>agenda for sustainable development</p> <p><a href="https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf">https://sustainabledevelopment.un.org/content/documents/26279VNR_2020_India_Report.pdf</a></p>						men & women have equal rights and no discrimination will be tolerated against women.	
<b>Goal 6. Ensure availability and sustainable management of water and sanitation for all</b>									
<b>Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all</b>	<p>SDG target 7.2 "By 2030, Increase substantially the share of renewable energy in the global energy mix" Indicator 7.2.1 Renewable energy share in the total final energy consumption</p>	<p>Yes See also: Voluntary national review of the republic of India on the implementation of the 2030 agenda for sustainable development</p> <p><a href="https://sustainabledevelopment.un.org/content/">https://sustainabledevelopment.un.org/content/</a></p>	<p>The project activity provides 300 MW installed capacity of renewable energy and will deliver up to 655,261 MWh (Annual average for entire crediting period) zero emission electricity annually. Quantity of net electricity supplied to the grid by project activity in year y</p>	<p>From the start of operation onwards the project activity will deliver renewable energy to the grid to increase the share of renewable energy in the national grid.</p>	<p>The net generated renewable electricity, which will be delivered to the grid over a period y will be used as project level indicator.</p> <p>7.2.1 Renewable energy share in the total final energy consumption</p>	<p>The solar power plant contributes directly to achieve the SDG target, because the project activity delivers renewable energy, which would otherwise generate by fossil fuel dominated grid connect power plants. Contribute renewable energy share in total grid energy consumption</p>	<p>The net electricity supplied to the grid by the project activity is continuously monitored through energy meter (main and check meter) installed at the sub-station. The meters remain under the custody of state utility.</p>	<p>Project owner operates the plant since 22/12/2021 and complies with targeted SDGs so far. Contributing clean energy in energy mix of grid</p>	Yes

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		<a href="#">nt/documents/26279VNR_2020_India_Report.pdf</a>							
<b>Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</b>	SDG Target 8.2 "Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high value added and labour intensive sectors". Indicator 8.2.1: Annual growth rate of real GDP per employee	Yes, Same as described under goal 7.	The project activity will create at least 10 permanent jobs in the renewable power sector. Number of local employment generation	The vacancies of the jobs due to the project will be occupied one year after the operation start of the project activity /at least 2 persons each site	The number of permanent created jobs, will be used as project-level indicator  8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	The solar power plants contributes directly to achieve the SDG target, because the project activity creates jobs in the renewable energy sector, which diversify and upgrades the commonly used technology in the energy sector of India. Creating employment from project activity	The total number of persons working in the plant would be calculated based on the daily log available at site.	Number of people employed directly due to the project activity	Yes
<b>Goal 9. Build resilient infrastructure, promote inclusive and sustainable</b>	9.1: Develop quality, reliable, sustaina	Yes	The solar power project is implemented on the land Rajasthan which receives very little or no rainfall. By selecting the land where the project is implemented the project owners	The project provides one clean and resilient energy generation facility and	The project provides one clean and resilient energy generation	The solar power project makes power generation with efficient use of land	Continuous operation of the project shall be monitored and the	Project owner operates the plant since 22/12/2021 and	Yes

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<p><b>industrialization and foster innovation</b></p>	<p>ble and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.</p>		<p>contributed to inclusive and sustainable industrialisation by efficient use of land and providing employment to the local people in the region.</p>	<p>provides employment opportunity to local residents in the region which is highly backward.</p>	<p>facility and provides employment opportunity to local residents in the region which is highly backward.</p>	<p>which is infertile for agriculture as well as for other activities.</p>	<p>number of local residents belonging to the project region shall be recorded.</p>	<p>complies with targeted SDGs so far.</p>	
<p><b>Goal 10. Reduce inequality within and among countries</b></p>									
<p><b>Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable</b></p>									
<p><b>Goal 12. Ensure sustainable consumption and production patterns</b></p>									
<p><b>Goal 13. Take urgent action to combat climate change and its impacts</b></p>	<p>Integrate climate change measures into national policies, strategies and</p>	<p>Yes</p>	<p>The project is estimated to generate around 655,261 MWh electricity (annual average for entire crediting period) without greenhouse gas emissions. The project activity will avoid around 609,720 tCO<sub>2</sub>e/year (average</p>	<p>From the operation onwards the project activity will deliver electricity without greenhouse gas emissions, i.e.,</p>	<p>The reduced greenhouse gas emissions per year will be used as proper project-level</p>	<p>The solar power plants contributes directly to achieve the SDG target, because the project activity delivers</p>	<p>Electricity produced by the renewable generating unit multiplied by an emission factorThe</p>	<p>Project owner operates the plant since 22/12/2021 and Complies with targeted SDGs so far.</p>	<p>Yes</p>

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	planning. Indicator 13.2.2:  Total greenhouse gas emissions per year.		for entire crediting period) greenhouse gas emissions compared to the current used grid connected power plant technology and used power sources (mainly fossil fuels ).	Ot CO <sub>2</sub> /net generated 609,720 MWh/year	indicator SDG.	renewable energy, which would otherwise generated by fossil fuel dominated grid power plants. Emission reductions achieved per year	net generated electricity supplied to the grid (measured with electricity meters) multiplied with the CO <sub>2</sub> emission factor of the grid (as described by the UNFCCC CDM methodology CDM Methodological tool 07  “Tool to calculate the emission factor for an electricity system” – Version 07.0.) will give the reduced greenhouse gas emissions	Reduction of Greenhouse gases	
<b>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development</b>									
<b>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat</b>									

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desertification, and halt and reverse land degradation and halt biodiversity loss									
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels									
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development									
<b>SUMMARY</b>							<b>Targeted</b>	<b>Likely to be Achieved</b>	
Total Number of SDGs							6	6	
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF							Diamond	Diamond	

## Section G. Local stakeholder consultation

### G.1. Modalities for local stakeholder consultation

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The local stakeholder consultation for the project activity have been carried out. The Local Stakeholder consultation documents have been provided to DOE during validation of project activity.

SPV Name	Capacity (MW)	LSHM Meeting Date
Ayana Renewable Power One Private Limited	300	20-05-2021

The nearby villagers at the project site, local power distribution company, Solar Energy Corporation of India (SECI), O&M service providers and equipment suppliers were identified as the key stakeholders of the project. Most of the stakeholders were given private phone calls followed by e-mails or official letters where it was possible. Pamphlets were posted at public places including. Regional Distribution Company officials, SECI, equipment suppliers, contractors and O&M service providers involved in the project were invited through invitation letters and/or telephone calls.

Project representatives explained the project benefits and how project would help to fight against climate change and no any negative comments received during the local stakeholder round. The Minutes of meeting with commenting sheet from LSHM, invitation letter receipt copy shall be submitted to the verifier for further check. Few queries raised during local stakeholder consultation are addressed satisfactorily.

Villagers were totally in support for setting up of these kinds of projects in the region. The PP also placed a grievance register onsite in where the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately. Also, regular stakeholder engagement is one the key focus at the site

### G.2. Summary of comments received

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The Meeting started with opening speech by representative of project participant. He introduced all guests on dais. The representative of project participant explained technical aspects of project to stakeholders. He also explained about social, environmental & economic benefits of the project. He also elaborated about carbon mechanism & its requirement for the current project. After the detailed discussions, the session was open for questions from stakeholders. Most of the questions were



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related to employment opportunities, economic development, benefits from project to villagers and other development activities. The question raised by the villagers are summarized below:

**Q: Will there be free supply of power to the local people?**

A: The generated power will be fed in the grid. Project promoter can't supply directly power to the local people. They have to get authorized connection from Govt. body. But due to the project activity the supply of power in the area will increase.

**Q: Will there be employment generation due to the project activity for youth from the adjoining areas?**

A: Responding about the increased possibilities for employment of local youth due to the project activity, it was pointed out that preference would be given for locals in the employment opportunities.

**Q: Will it impact the underground water level in the nearby area?**

A: No, it will not impact the underground water level of the nearby area. Also, the project was listed for global stakeholder commenting and no comments received during the above period

### G.3. Consideration of comments received

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

## Section H. Approval and authorization

>>

## Appendix 1. Contact information of project owners

<b>Organization name</b>	Ayana Renewable power private Limited
<b>Country</b>	India
<b>Address</b>	S 2904,29th Floor, World Trade Centre, Brigade Gateway Campus, #26/1, Dr. Rajkumar Road, Rajajinagar, Bengaluru - 560055
<b>Telephone</b>	+91 95898 99649
<b>Fax</b>	
<b>E-mail</b>	<a href="mailto:carbon@ayanapower.com">carbon@ayanapower.com</a>
<b>Website</b>	<a href="https://www.ayanapower.com/">https://www.ayanapower.com/</a>
<b>Contact person (primary contact)</b>	Arulkumar Shanmugasundaram
<b>Contact person (secondary contact)</b>	
<b>Telephone</b>	
<b>E-mail</b>	

## Appendix 2. Affirmation regarding public funding

>>

## Appendix 3. Applicability of methodology(ies)

>>

## Appendix 4. Further background information on ex ante calculation of emission reductions

>>

## Appendix 5. Further background information on monitoring plan

>>

## Appendix 6. Summary report of comments received from local stakeholders

>>

**Appendix 7. Summary of de-registered CDM project (Type A2 – CPA exclusion)**

>>

<b>CDM Project registration number</b>	PoA- 10375
<b>Date of registration of CDM Project</b>	31/12/2020 (CPA inclusion date)
<b>Title of the Project Activity</b>	Title of the PoA: EnKing International Renewable Energy POA Title of the CPA: Grid Connected Solar PV project (EKIESL-CPA07.Sep-20-07) <sup>23</sup>
<b>CDM Project de-registration reference number</b>	Under process
<b>Date of de-registration of the CDM Project</b>	Under process
<b>Project Participants</b> <small>(authorized by the host / annex 1 country letter of approval)</small>	Ayana Renewable Power Private Limited. (CPA owner)
<b>Country where the project is located</b>	India
<b>Applied CDM methodology(ies)</b>	Title: ACM0002 Grid-connected electricity generation from renewable sources --- Version 17.0 Reference: ACM0002 Version 17

<sup>23</sup> The CPA involves a total bundle capacity of 340 MW whereas this PSF considers a single project with capacity of 300 MW. The remaining 40 MW is under the process of registration at GCC through a separate submission.

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(provide reference and version number(s))																																
<b>Pre-registration changes to the CDM Project Activity</b> (Tick as applicable)	<table border="1"> <thead> <tr> <th>CDM Pre-registration Changes</th> <th>Reference number</th> <th>Approved</th> <th>Provide a summary of pre-registration changes</th> </tr> </thead> <tbody> <tr> <td>Deviations from the CDM methodology</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> <tr> <td>Deviations from the CDM Tool</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> <tr> <td>Deviations from the CDM rules</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> <tr> <td>Other.....</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> </tbody> </table>	CDM Pre-registration Changes	Reference number	Approved	Provide a summary of pre-registration changes	Deviations from the CDM methodology		<input type="checkbox"/>		Deviations from the CDM Tool		<input type="checkbox"/>		Deviations from the CDM rules		<input type="checkbox"/>		Other.....		<input type="checkbox"/>												
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Crediting Period(s)	Crediting period(s)		Period (start & end dates)	ERs as per registered PDD/MR	CERs issued	
	Crediting Period (shall start on or after 1 Jan 2016)	Fixed 10 year				
		Renewable (7 years, with 2 approved renewals)	1 <sup>st</sup>	31/12/2020 – 30/12/2027	729,328	-
			2 <sup>nd</sup>			
			3 <sup>rd</sup>			
	Period for which CERs have been issued			-	-	-
	Period for which CERs have been requested but not issued			-	-	-
	Period for which CERs have never been requested for issuance (no monitoring reports submitted)			No request for issued is submitted till date	-	-
Period for which CERs have never been requested for issuance prior to CDM de-registration			De-registration under process	-	-	
Remaining Crediting period, after CDM de-registration, for which CERs have not been issued by the UNFCCC CDM Executive Board, subject to a ceiling of 10 years as allowed under the GCC Program			De-registration under process	-	-	

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<b>Details of Previous CDM Issuance Requests</b>	<table border="1"> <thead> <tr> <th><b>Issuance Request</b></th> <th><b>Period</b> (start &amp; end dates)</th> <th><b>ERs as per registered PDD</b></th> <th><b>Quantity of CERs requested to be issued</b></th> <th><b>Quantity of CERs issued</b></th> </tr> </thead> <tbody> <tr> <td>1<sup>st</sup></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td><b>Total</b></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	<b>Issuance Request</b>	<b>Period</b> (start & end dates)	<b>ERs as per registered PDD</b>	<b>Quantity of CERs requested to be issued</b>	<b>Quantity of CERs issued</b>	1 <sup>st</sup>	-	-	-	-	<b>Total</b>	-	-	-	-
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	1 <sup>st</sup>	-	-	-	-											
	<b>Total</b>	-	-	-	-											
<b>List any open issues in the Validation and last Verification Report (e.g., FARs, if any) and how they have been addressed</b>	No FAR is there in the validation report. No verification done till date.															
<b>Any other relevant information that has not been reported in the registered CDM documents and that may have adverse impacts on the environmental integrity of the Project Activity</b>	-															
<b>Provide the list of all the</b>	CPA Design Document: <a href="https://cdm.unfccc.int/UserManagement/FileStorage/B6N8WLJCFPGO02K4Y35USDXEvh9Z1I">https://cdm.unfccc.int/UserManagement/FileStorage/B6N8WLJCFPGO02K4Y35USDXEvh9Z1I</a>															

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<p><b>registered documents related to this project, as available on the UNFCCC/CDM website and the corresponding URLs.</b></p>	<p><b>Appendix 1: Financial analysis spread sheet</b> <a href="https://cdm.unfccc.int/UserManagement/FileStorage/G5YKR472A318IPF6TNWQDUEX09VBZO">https://cdm.unfccc.int/UserManagement/FileStorage/G5YKR472A318IPF6TNWQDUEX09VBZO</a></p> <p><b>Financial Analysis spread sheet:</b> <b>Appendix 2:</b> <a href="https://cdm.unfccc.int/UserManagement/FileStorage/B7UEICKSYZTF804M9DPOR312XQNG56">https://cdm.unfccc.int/UserManagement/FileStorage/B7UEICKSYZTF804M9DPOR312XQNG56</a></p> <p><b>Appendix 3:</b> <a href="https://cdm.unfccc.int/UserManagement/FileStorage/Z8OHIU9GXFCYN5PV23JTEKWQ7L6B4D">https://cdm.unfccc.int/UserManagement/FileStorage/Z8OHIU9GXFCYN5PV23JTEKWQ7L6B4D</a></p> <p><b>Appendix 4:</b> <a href="https://cdm.unfccc.int/UserManagement/FileStorage/RUQ6FZXS3NBD1VM94Y87A2IO5PWLG0">https://cdm.unfccc.int/UserManagement/FileStorage/RUQ6FZXS3NBD1VM94Y87A2IO5PWLG0</a></p> <p><b>CPA validation report<sup>24</sup></b></p> <p><b>CPA inclusion form</b> <a href="https://cdm.unfccc.int/UserManagement/FileStorage/L0P9VKG6Y5MO1HT7ZBRNJ2EA3WX4CD">https://cdm.unfccc.int/UserManagement/FileStorage/L0P9VKG6Y5MO1HT7ZBRNJ2EA3WX4CD</a></p>
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<sup>24</sup> <https://cdm.unfccc.int/UserManagement/FileStorage/YHQ9O3W2SF6ABT758MRKCJGZ14UEPX0Dec%2020%2011%3A08%3A13%29.pdf?t=Vzd8cmMzNmwyfDAJHQn3SRmG42iALjDrOUIW>

## DOCUMENT HISTORY

Version	Date	Comment
V 3.2	31/12/2020	<ul style="list-style-type: none"> <li>▪ The name of GCC Program’s emission units has been changed from “Approved Carbon Reductions” or ACRs to “Approved Carbon Credits” or ACCs.</li> </ul>
V 3.1	17/08/2020	<ul style="list-style-type: none"> <li>▪ Editorial revisions made                             <ul style="list-style-type: none"> <li>○ Revised Table in section B.7.2 on Monitoring-program of risk management actions</li> <li>○ Revised Table in section E.1 on Environmental Safeguards</li> <li>○ Revised Table in section E.1 on Social Safeguards</li> <li>○ Revised Table in section F on United Nations Sustainable Development Goals (SDG)</li> </ul> </li> </ul>
V 3.0	05/07/2020	<ul style="list-style-type: none"> <li>▪ Revised version released on approval by Steering Committee as per GCC Program Process;</li> <li>▪ Revised version contains following changes:                             <ul style="list-style-type: none"> <li>○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC);</li> <li>○ Considered and addressed comments raised by Steering Committee:                                     <ul style="list-style-type: none"> <li>➤ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and</li> <li>➤ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020).</li> </ul> </li> <li>○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA<sup>25</sup>;</li> </ul> </li> </ul>
V 2.0	25/06/2019	<ul style="list-style-type: none"> <li>▪ Revised version released for approval by the GCC Steering Committee.</li> <li>▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).</li> </ul>
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

<sup>25</sup>See ICAO recommendation for conditional approval of GCC at [https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt\\_TAB\\_Report\\_Jan\\_2020\\_final.pdf](https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf)



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