المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

Project Submission Form

V4.0- 2022

CONTENTS

COVER PAGE- Project Submission Form (PSF)	
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the Project Activity as per LON/LOA	**90 MW Bundled Solar Project in Assam**
PSF version number	03
Date of completion / Updating of this form	23/01/2023
Project Owner(s) as per LON/LOA (Shall be consistent with De-registered CDM Type B Projects)	Azure Power Forty Private Limited Azure Power India Private Limited (Focal point)
Country where the Project Activity is located	India
GPS coordinates of the project site(s)	Kindly refer A.2 for coordinates of all projects.
Eligible GCC Project Type as per the Project Standard (Tick applicable project type)	☒ **Type A:** ☐ Type A1 ☒ Type A2 ☒ Sub-Type 1 ☐ Sub-Type 2 ☐ Sub-Type 3 ☐ Sub-Type 4 ☐ Type A3

	☐ **Type B – De-registered CDM Projects:**[1] ☐ Type B1 ☐ Type B2
Minimum compliance requirements	☒ Real and Measurable GHG Reductions ☒ National Sustainable Development Criteria (if any) ☒ Apply credible baseline and monitoring methodologies ☒ Additionality ☒ Local Stakeholder Consultation Process ☒ Global Stakeholder Consultation Process ☒ No GHG Double Counting ☒ Contributes to United Nations Sustainable Development Goal 13 (Climate Action)
Choose optional and additional requirements (Tick applicable label categories)	☒ Do-no-net-harm Safeguards to address Environmental Impacts ☒ Do-no-net-harm Safeguards to address Social Impacts ☒ Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)
Applied methodologies including version No. (Shall be approved by the GCC or the CDM)	AMS I.D Grid-connected renewable electricity generation, Version 18.0 ACM0002 Grid-connected electricity generation from renewable sources, version 21.0
GHG Sectoral scope(s) linked to the applied methodology(ies)	GHG Sectoral Scope 1- Energy Industries (Renewable/Non-renewable sources)

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

Applicable Rules and Requirements for Project Owners

(Tick applicable Rules and Requirements)

Rules and Requirements		Version
☒ ISO 14064-2		
☒ Applicable host country legal requirements /rules		
☒ GCC Rules and Requirements[2]	☒ Project Standard	V3.1
	☐ Approved GCC Methodology (XXXXX)	
	☒ Program Definitions	V3.1
	☒ Environment and Social Safeguards Standard	V3.0
	☒ Project Sustainability Standard	V3.0
	☒ Instructions in Project Submission Form (PSF)-template	V4.0
	☒ Clarification No. 01	V1.3
	☐ Clarification No. 02	
	☐ Clarification No. 03	
	☐ Clarification No. 04	
	☐ Clarification No. 05	
	☒ Standard on avoidance of double counting	V1.0
	☐ Add rows if required	
☒ CDM Rules[3]	☒ Approved CDM Methodology (ACM0002 Grid-connected electricity generation from renewable sources) (AMS I.D Grid-connected renewable electricity generation)	V21.0 V18.0
	☒ TOOL 1- Tool for the demonstration and assessment of additionality	V7.0.0

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

[3] CDM Program rules: https://cdm.unfccc.int/Reference/index.html

		☐ TOOL 02- Combined tool to identify the baseline scenario and demonstrate additionality	
		☒ TOOL 07- Tool to calculate the emission factor for an electricity system	V7.0
		☐ TOOL 19- Demonstration of additionality of microscale project activities	
		☒ TOOL 21- Demonstration of additionality of small-scale project activities	13.1
		☐ TOOL 23- Additionality of first-of-its-kind project activities	
		☒ TOOL 24- Common practice	V3.1
		☒ TOOL 27- Investment analysis	V12.0
		☐ TOOL 32- Positive lists of technologies	
		☐ Guidelines for objective demonstration and assessment of barriers	
		☐ Add rows if required	
Choose Third Party Project Verification by approved GCC Verifiers[4] (Tick applicable verification categories)	☒ GHG emission reductions (i.e., Approved Carbon Credits **(ACCs)**) ☒ Environmental No-net-harm Label (**E+**) ☒ Social No-net-harm Label (**S+**) ☒ United Nations Sustainable Development Goals (**SDG+**) ☐ Bronze SDG Label ☐ Silver SDG Label ☒ Gold SDG Label		

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

	☐ Platinum SDG Label ☐ Diamond SDG Label ☒ CORSIA requirements (**C$^+$**) ☒ Host Country Attestation on Double counting
Declaration by the 'Authorized Project Owner[5] and focal point' (Tick all applicable statements[6])	The Project Owner(s) declares that: **Generic Requirements applicable to all Project Types:** ☒ We confirm that the Project Activity complies with the eligibility of the applicable project type (A1, A2, A3, B1 or B2) as stipulated by the Project Standard and relevant clarifications. ☒ We confirm that the Project Activity shall start or have started operations, and shall start or have started generating emission reductions, on or after 1 January 2016. ☒ We confirm that the Project Activity is eligible to be registered under the GCC program. We shall ensure the following for the Project Activity (tick at least one of the two options): ☒ No outcomes (e.g., emission reductions, environmental attributes) generated by the Project Activity under GCC will be claimed as carbon credits or environmental attributes under any other GHG/non-GHG[7] program, either for compliance or voluntary purposes, during the entire GCC crediting period; or ☐ If the project activity has been issued with carbon credits or environmental attributes of compensating nature[8] by any other GHG/ non-GHG program, either for compliance or voluntary purposes, the ACCs will be claimed only for the remaining crediting period (subject to a maximum of 10 years of crediting period including the periods under other programs and GCC program) for which carbon credits/ environmental attributes of compensating nature have not been issued by any other GHG/ non-GHG program. **Specific requirements applicable to respective Project Types:**

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

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

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

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

For Project Type A1:

☐ For Project Type A1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

For Project Type A2 (Sub-Type 1):

☒ For Project Type A2 Sub-Type 1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

For Project Type A2 (Sub-Type 2 or Sub-Type 3):

For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options):

☐ Submit a proof for deregistration from CDM; or

☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program.

☐ For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that the Project Activity is NOT included as a component Project Activity (CPA) in any registered GHG Programme of Activities (PoA) or any other functionally equivalent grouped/aggregated activities under any GHG program (such as the CDM or any other voluntary program).

For Project Type A2 (Sub-Type 4):

For Project Type A2 Sub-Type 4, we confirm that the Project Activity has been included in a registered CDM-POA and we shall (tick at least one of the two options):

☐ Submit the proof for exclusion of CPA(s) from registered CDM-POA prior to the date of initial submission to the GCC Program; or

☐ Submit the proof of exclusion of CPA(s) from the registered CDM-PoA after the request for registration has been submitted to GCC Program but before the final decision is made by the GCC Steering Committee.

For Project Type A3:

☐ For Project Type A3, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

	For Project Type B1 or B2: For Project Type B1 or Project Type B2, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options): ☐ Submit a proof for deregistration from CDM; or ☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program. **Requirements to avoid double counting:** We intend to submit or have submitted a written attestation[9] (Host Country Letter of Authorization - HCLOA) from the host country's national focal point or focal point designee for CORSIA eligible units generated beyond 31 December 2020 at the following stages[10] (tick at least one of the three options): ☐ The initial submission for GSC; or ☐ Along with the submission for a request for registration (after Project Verification is completed); or ☒ Along with the submission for a request for the first or subsequent issuance of ACCs. **Project specific requirements:** ***CORSIA specific requirements:*** ☒ We confirm that bundled projects or grouped projects shall have registered crediting period starting on or after 1 Jan 2016 for the grouped/aggregated project as a whole. ☒ We confirm that the Project Activity meets all the requirement of the CORSIA Eligible Emissions Units[11] required for GCC projects and does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes. ☒ We confirm that the Project Activity aims to achieve at least Silver or higher SDG+ label (i.e., positively impact at least 3 or more United Nations Sustainability Development Goals).

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

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

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

	☒ We confirm that the Project Activity will be implemented in a country which is UN member state[12]. Provide details (if any) below for the boxes ticked above:
	The Project Owner(s) declares that: ☒ All the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct. ☒ They understand that a failure by them to provide accurate information or data, or concealing facts and information, can be considered as negligence, fraud or willful misconduct. Therefore, they are aware that they are fully responsible for any liability that arises as a result of such actions. Provide details below for the boxes ticked above
Appendixes 1-9	Details about the Project Activity are provided in Appendixes 1 through 9 to this document.
Name, designation, date and signature of the Focal point (as per LON/LOA)	 **Sunil Hansu** **Assistant General Manager** **23/01/2023**

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

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

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

The Purpose of this bundled project activity is to generate electricity by harnessing the solar energy by using of solar photovoltaic technology and there by feed the generated electricity to the Indian national grid.

Bundled project activity involves installation of four Solar photovoltaic power generation projects in Assam at four locations with installed capacities of 25 MW, 25 MW, 15 MW and 25 MW each with total project capacity of 90 MW. The projects are installed in Udalguri, Kamrup, Nagaon & Cachar district, Assam state in India. The Project activity has installed the Solar Photovoltaic based Panels to convert the available solar radiation into the DC power and there by installed the Inverters to convert the DC power to the AC Power.

The project is implemented by Azure Power Forty Private Limited a subsidiary of Azure power India private limited. All the four projects are commissioned and are currently operational. All the four projects have been connected to State electricity grid Assam Electricity Grid Corporation Limited (AEGCL) through 132/33 kV. The generated power from the project activity is supplying to the third-party consumers through the wheeling agreement with the DISCOM. Project Owners have signed a Power Purchase agreement with the consumer organizations to supply the generated solar power at a fixed price.

Sr. No	Project Activity	Capacity AC (MW)	Capacity DC (MWp)	COD	Substation	District and State
01	PA - 1	25	37.53	12/09/2020	ROWTA (GSS) Substation (AEGCL)	Village: Sarbaheura District: Udalguri, Assam
02	PA - 2	25	37.53	30/12/2021	Balukghata (GSS) Substation (AEGCL)	Village: Makeli, Tehsil: Samaria, District: Kamrup, State: Assam
03	PA - 3	15	22.52	27/01/2022	AEGCL	Village Mikir, Bamuni District: Nagaon State: Assam
04	PA - 4	25	37.53	31/03/2022	Pailapool Substation (AEGCL)	Village: Polairband District: Cachar State: Assam

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 108,734 tCO_2e per year, thereon displacing estimated average of 183,241 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel-based power plant. Project activity will mitigate the total GHG emission reductions of 1,087,342 tCO_2e over the entire crediting period.

Baseline Scenario

The scenario existing prior to the implementation of the project activity, is electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the **"Tool to calculate the emission factor for an electricity system version".** This is a green field project activity. There was no activity at the site of the project participant prior to the implementation of this project activity. Hence pre-project scenario and baseline scenario is the same.

Sustainable Development Indicators

In addition to contribution to the sustainable environment by reducing the GHG emissions and reducing the dependency on fossil fuels, this project activity also contributing to the sustainable development though supporting the local community and local economy.

Social well-being: The project activity provided / provides job opportunity to local people during erection, commissioning, and maintenance of the Solar project. This will result in the improvement of living standards of the local community. The installation of the renewable energy project will also lead to the development of basic infrastructure like roads and communication with the nearby cities, which will also improve the living standards of the local population.

Environmental well-being: Solar power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. The impact on land, water, air and soil is negligible. Thus, the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment.

Economic well-being: The project activity generates permanent and temporary employment opportunity within the vicinity of the project. The electricity supply in the nearby area improves which directly and indirectly improves the economy and life style of the area.

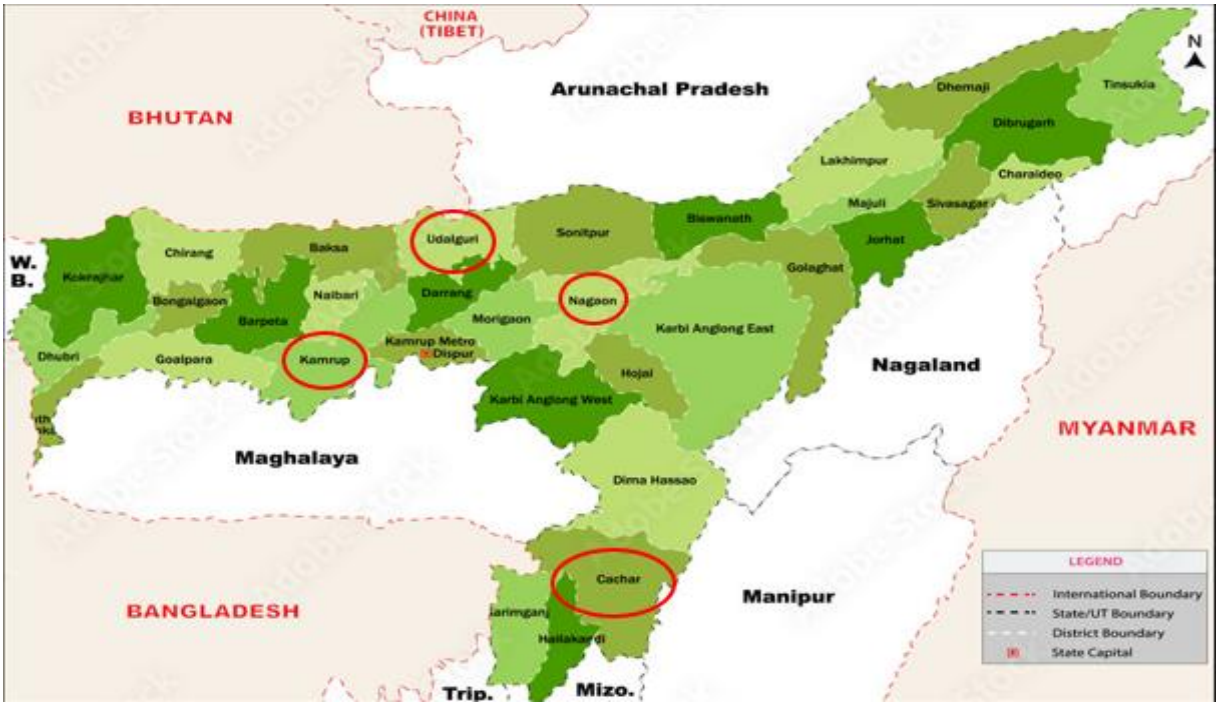
Technological well-being: The project activity is step forward in harnessing the untapped solar potential and further diffusion of the solar technology in the region. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well-being.

A.2. Location of the Project Activity

>> The project is located in Assam State of India.

Geographical coordinates of the projects are given below

Address and Geo-coordinates of the physical site of the Project Activity			
Project Activity	**Physical address**	**Latitude**	**Longitude**
PA - 1	Village: Sarbaheura District: Udalguri, Assam	26°39'26" N (26.6572 N)	92°11'16" E (92.1877 E)
PA - 2	Village: Makeli, Tehsil: Samaria, District: Kamrup, Assam	26°02'04" N (26.0344 N)	91°09'49" E (91.1636 E)
PA - 3	Village Mikir, Bamuni District: Nagaon, Assam	26°16'40.9" N (26.2780 N)	92°48'37.1" E (92.8103 E)
PA - 4	Village: Polairband District: Cachar, Assam	24°49'11.4" N (24.8198 N)	93°02'14.2"E (93.0372 E)



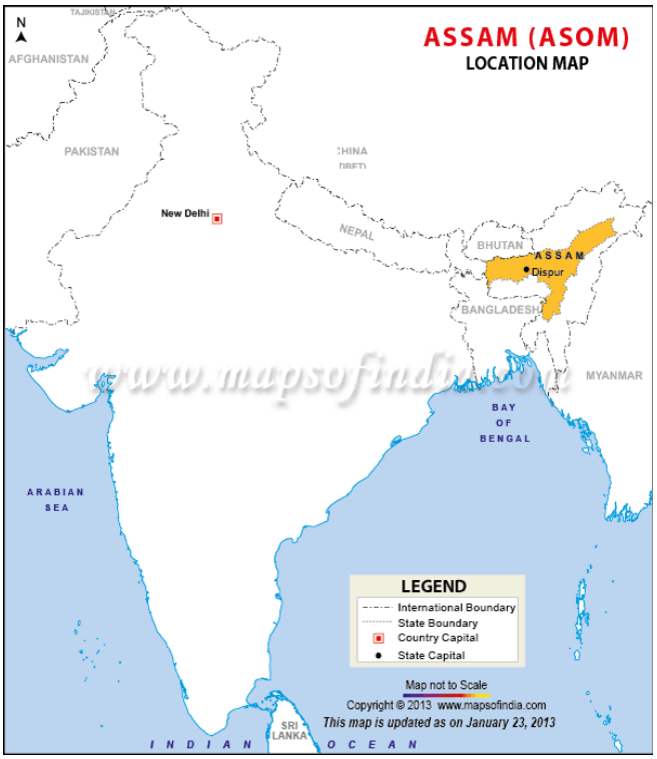


Figure 1: Project Location-Administrative map

A.3. Technologies/measures

>> Project activity used Crystalline Photovoltaic technology to which converts the solar radiation into the electricity. The solar PV plant has the PV modules, off-grid Inverters, and other connecting cables and protection system.

Technical specifications of the components used during the project commissioning are given below. Solar PV Modules were Seasonal Tilt mounted and overall Life of the projects are 25 years.

Parameter	PA - 1	PA - 2	PA - 3	PA - 4
Project Capacity (AC/DC)	25 MW 37.53 MWp	25 MW 37.53 MWp	15 MW 22.52 MWp	25 MW 37.53 MWp
Technology	Poly Crystalline	Poly Crystalline	Poly Crystalline	Poly Crystalline
PV Modules	Make - Waree	Make – Waree, Zinko, Raisen	Make – Waree, Raisen	Make – Waree, Zinko, Raisen
	Total no -	Total no - 97260	Total no - 66664	Total no -

	113040			110400
	Rating – 330/335 Wp	Rating – 330/335/410/415 Wp	Rating – 330/335/415 Wp	Rating – 340 Wp
Central Inverter	Make - Sungrow	Make - Sungrow	Make - Sungrow	Make - Sungrow
	(Inverters Capacity) – 3.125 MW 600VAC 1500VDC	(Inverters Capacity) – 3.125 MW 600VAC 1500VDC	(Inverters Capacity) – 200 KVA 600VAC 1500VDC	(Inverters Capacity) – 3.125 MW 600VAC 1500VDC
	No of Inverters - 08	No of Inverters - 08	No of Inverters - 06	No of Inverters - 08
Mounting Structure	Seasonal Tilt	Seasonal Tilt	Seasonal Tilt	Seasonal Tilt

Solar PV Modules Coverts the available solar radiation into the DC power. Installed Central Inverters will convert the generated DC power into the 400 V AC Power. Total AC power from all the inverter blocks will be pooled into the common switchyard. Total Power will be stepped up to 33 KV in the switchyard by using step-up transformers and transmitted to the nearest AEGCL substation.

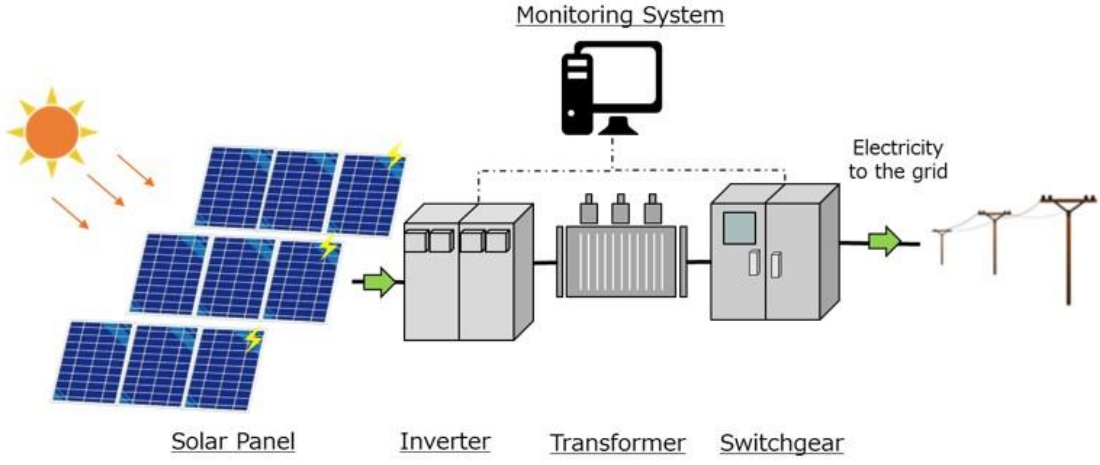


Figure 2: Solar Power plant flow diagram

An intelligent automatic monitoring and alarm system (SCADA) has been already installed in the project control room which will monitor and record the real time data from the plant and alerts the staff in case of any malfunctioning in the equipment operation. However Separate Energy meters have been installed by the DISCOM people to record the import export of electricity from the plant.

Monitoring and metering system is explained in detail in the below section B.7.4
This is a green field project activity generating the electricity from the solar energy and supplying it to the national grid. In the baseline scenario the equivalent of 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".
There is no technology transfer occurred in the proposed project activity.

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[13], indicate if the host country has provided approval (Yes/No)
India	Azure Power Forty Private Limited	No
India	Azure Power India Private Limited (Focal point)	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		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
12/09/2020	11/09/2030	Azure Power Forty Private Limited Azure Power India Private Limited (Focal point)	For offsetting Greenhouse gasses 1,087,342 tCO_2 for 10-year period

Project proponent hereby confirms that the proposed bundled project activity is neither applied nor registered under any other GHG reduction certification mechanism. Hence, the ACCs generated from this project activity will not be double counted under any other mechanism

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

A.6. Additional requirements for CORSIA

>> The proposed project activity is solar energy-based power project, by supplying the clean energy displacing the equivalent amount of electricity in the national grid which is being otherwise supplied by the fossil fuel-based power projects. The project activity is the installation of an environmentally safe and sound technology since there are no GHG emissions associated with the electricity generation. The project activity complies with all relevant environmental and social safeguard standards and does not cause any net harm to the environment and society.

CORSIA pilot phase vintage eligibility criteria require that first crediting period of Project must start on or after 1 January 2016. The GCC Program also started on 1 Jan 2016. The proposed project activity starts operations after 1st January 2016 and thus complies with the requirement.

Additional CORSIA Criteria	**Justification for the project**
Comply with the Environment and Social Safeguards Standard to ensure that the Project Activity does not cause any net harm to the environment or society and provides an opportunity to demonstrate this achievement by obtaining the additional certification labels *E+* and *S+*. Please refer to *Section E* of this document.	Please refer section E of this PSF.
Comply with the Project Sustainability Standard to ensure that the Project Activity demonstrates the level of contribution towards achieving the United Nations Sustainability Development Goals (SDGs) and provides an opportunity to demonstrate this achievement by obtaining the additional *SDG+* label (Bronze, Silver, Gold, Platinum, or Diamond). Please refer to *Section F* of this document.	Please refer section F of this PSF.
Obtain and provide to the GCC and its Registry (operated by IHS Markit), a written attestation from the host country's national focal point or the focal point's designee, as required by *CORSIA Emissions Unit Eligibility Criteria*[14] (paragraph 7 (c) of the *Carbon Offset Credit Integrity Assessment Criteria*) and *Programme Application Form – Appendix A – Supplementary Information Form*[15] (refer to section 3.7.8. with respect to the Host Country Attestation on Double Counting), which shall be made publicly available prior to the use of units from the host country under CORSIA.	Such attestation shall be provided during ER verification when the host country provides such provision.

[14] ICAO document 'CORSIA Emissions Unit Eligibility Criteria': https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2009.pdf

[15] https://www.icao.int/environmental-protection/CORSIA/Pages/TAB.aspx

Section B. Application of selected methodology(ies)

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

>> The UNFCCC approved consolidated baseline methodology applicable to this project is ACM0002 "Grid-connected electricity generation from renewable sources", Version – 21.0[16] &
AMS I.D "small-scale methodology for grid-connected renewable electricity generation", Version – 18.0[17]

Following tools have been referred during the estimation of emission reduction calculations as per the methodology ACM0002/AMS I.D

''Tool to calculate the emission factor for an electricity system'', Version 7.0[18].
"Tool for the demonstration and assessment of additionality", Version 7.0.0[19]
"Tool for the Investment analysis" Version 12.0[20]
"Demonstration of additionality of small-scale project activities – Version 13.1[21]
"Common practice", Version 3.1[22]

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

>> The methodology ACM0002, Version 21.0 & AMS I.D., Version 18.0 is applicable to the project activity under the following conditions:

Applicability Criteria	Applicability status
This methodology is applicable to grid-connected renewable power generation project activities that: (a) install Greenfield power plant; (b) involve a capacity addition to (an) existing plant(s); (c) involve a retrofit of (an) existing plant(s)/unit(s); (d) involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) involve a replacement of (an) existing plant(s)/unit(s)	The proposed project activity is a green field, Indian grid connected renewable power plant. Therefore, it confirms to the said criteria
In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Integrate BESS with a Greenfield power plant;	The project activity is the installation of a new grid connected renewable solar power project and does not involve the integration of a Battery Energy Storage

[16] https://cdm.unfccc.int/UserManagement/FileStorage/ZPFJL01OU2RYC6N3HASIXV7K84QBG9
[17] https://cdm.unfccc.int/filestorage/2/P/7/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC/EB81_repan24_AMS-I.D_ver18.pdf?t=bE58cjF3NjBufDAFn9mFEYXv3NGR7RjLViYw
[18] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[19] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[20] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v12.pdf
[21] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v1.pdf
[22] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf

(b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic or wind power plant(s)/unit(s); (c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s).	System (BESS). This condition is not applicable for the project activity
The methodology is applicable under the following conditions: (a) Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity; (c) In case of Greenfield project activities applicable under paragraph (a) above, the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g. by referring to feasibility studies or investment decision documents); (d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section 5.4.4 below. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g. week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period.	The proposed project activity is the installation of a new solar power plants with no BESS integration. Therefore, the said criterion is not applicable.

In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m^2 ; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m^2 ; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m^2 , all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2 ; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	The proposed project activity is the installation of solar power plants/units. Therefore, the said criteria is not applicable.
In the case of integrated hydro power projects, project participants shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under 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 of five years prior to the	The proposed project activity is the installation of a solar power plants/units. Therefore, the said criteria is not applicable

implementation of the CDM project activity.	
The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site. (b) Biomass fired power plants;	The proposed project activity is the installation of solar power plants/units. Therefore, the said criteria is not applicable
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".	The proposed project activity is the installation of solar power plants/units. Therefore, the said criteria is not applicable
In addition, the above applicability conditions, the applicability conditions of tool referred in the methodology ACM0002, version 21.0 has been referred here under:	
Tool07: Tool to calculate the emission factor for an electricity system Version 7.0	
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).	The project activity is a greenfield solar power generation plant and hence, according to the applied methodology, 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 plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.

In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity
Under this tool, the value applied to the CO_2 emission factor of bio fuels is zero	The project activity is a grid connected solar power project and therefore, this criterion is not applicable for the project activity
Tool 01: Tool for the demonstration and assessment of additionality; Version 7.0.0,	
The use of the "Tool for the demonstration and assessment of additionality" is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	Since the applied technology is not a new methodology project proponent has applied this tool for the demonstration additionality in compliance with the tool. Refer to section B.5 of the PSF for the detailed applicability of this tool and additionality assessment. Hence this tool is applicable
Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	In line with the methodology requirement Project developer has applied this tool for the demonstration of additionality assessment. Hence this tool is applicable
Tool 24: Common Practice version 3.1	
This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality.	Project activity applies "Tool for the demonstration and assessment of additionality". Hence this tool is applicable.
In case the applied approved baseline and monitoring methodology defines approaches for the conduction of the common practice test that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	Applied methodology ACM0002 version 21.0 doesn't specify any approach for the demonstration of common practice analysis. As per the methodology the additionality including common practice analysis has been demonstrated as per the Tool 01: Tool for the demonstration and assessment of additionality" version 7.0.0 and Tool 24: Common Practice Analysis version 3.1. Hence Justified.
Tool27: Investment analysis version 12.0	
This methodological tool is applicable to project activities that apply the methodological tool "Tool for	Project activity applies "Tool for the demonstration and assessment of

the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	additionality". Hence this tool is applicable.
In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	As per the methodology the additionality including investment analysis has been demonstrated as per the Tool 01: Tool for the demonstration and assessment of additionality" version 7.0.0 and Tool 27: Investment Analysis version 12.0 Hence Justified.

Applicability Criteria	**Applicability status**
This methodology is applicable to grid-connected renewable power generation project activities that: (a) install Greenfield power plant; (b) involve a capacity addition to (an) existing plant(s); (c) involve a retrofit of (an) existing plant(s)/unit(s); (d) involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) involve a replacement of (an) existing plant(s)/unit(s)	The proposed project activity is a green field, Indian grid connected renewable power plant. Therefore, it confirms to the said criteria
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; (b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m2 ; (c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m2 .	The proposed project activity is the installation of a new solar power plants/units. Therefore, the said criteria is not applicable
If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-	The project activity is the installation of a new grid connected 15 MW renewable solar power project. Hence this criterion is not applicable

fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW	
Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is the installation of a new grid connected 15 MW renewable solar power project. Hence this criterion is not applicable
In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct[23] from the existing units.	The project activity is the installation of a new grid connected 15 MW renewable solar power project. Hence this criterion is not applicable
In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	The project activity is the installation of a new grid connected 15 MW renewable solar power project. Hence this criterion is not applicable
In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid, then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.	The project activity is the installation of a new grid connected 15 MW renewable solar power project. Hence this criterion is not applicable
In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply	The project activity is the installation of a new grid connected 15 MW renewable solar power project. Hence this criterion is not applicable
In addition, the above applicability conditions, the applicability conditions of tool referred in the methodology AMS I.D, version 18.0 has been referred here under:	
Tool 07: Tool to calculate the emission factor for an electricity system Version 7.0	
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).	The project activity is a greenfield solar power generation plant and hence, according to the applied methodology, 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 plants and by the

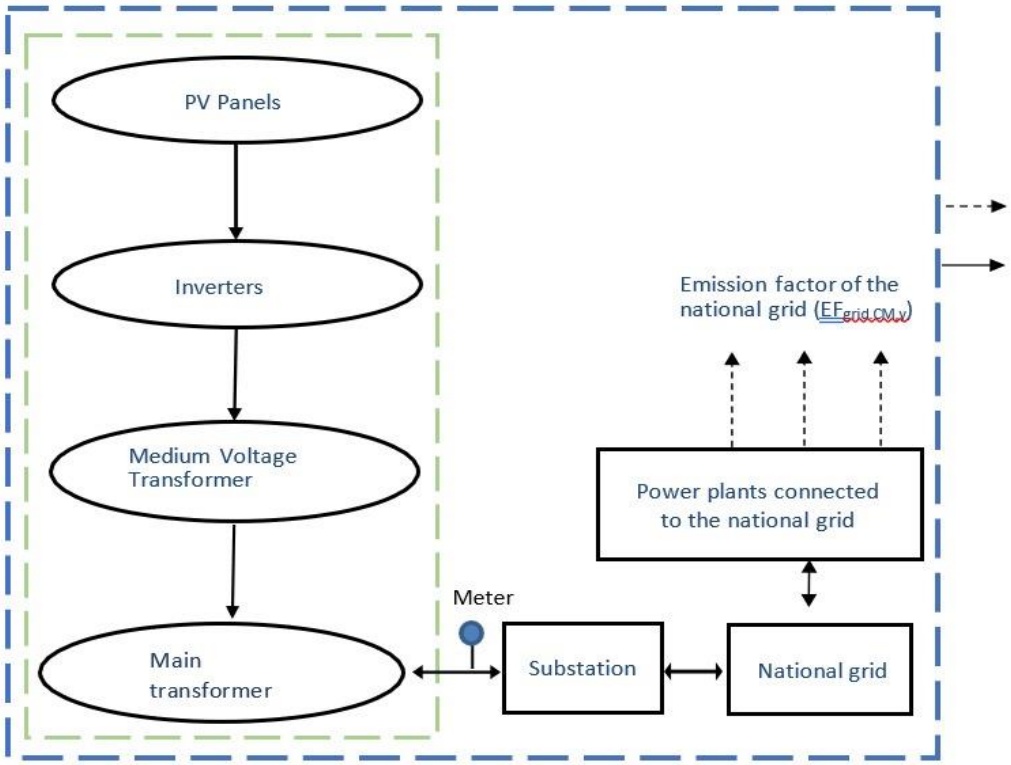
[23] Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion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

	addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity
Under this tool, the value applied to the CO_2 emission factor of bio fuels is zero	The project activity is a grid connected solar power project and therefore, this criterion is not applicable for the project activity
Tool21: Demonstration of additionality of small-scale project activities 13.1	
This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	Project activity applies "Demonstration of additionality of small-scale project activities". Hence this tool is applicable.
In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	As per the methodology the additionality including investment analysis has been demonstrated as per the Tool 21: "Demonstration of additionality of small-scale project activities" version 13.1 and Tool 27: Investment Analysis version

	12.0 Hence Justified.

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

>> The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the Indian grid. Therefore, the entire Indian grid and all connected power plants have been considered in the project boundary for the proposed project activity.



The project does not involve any other emissions sources not foreseen by the methodologies. The greenhouse gases and emission sources included in or excluded from the project boundary are shown in table below.

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

Source		GHG	Included?	Justification/Explanation
Baseline		CO_2	Yes	Main Emission Source

	Grid Connected Electricity Generation	CH_4	No	Minor Emission source
		N_2O	No	Minor Emission source
Project Activity	Greenfield Solar PV Power Project activity	CO_2	No	No CO_2 emissions are emitted from the project
		CH_4	No	Project activity does not emit CH4
		N_2O	No	Project activity does not emit N_2O

B.4. Establishment and description of the baseline scenario

>> An Approved small-scale / large-scale baseline CDM methodology AMS I.D "grid-connected renewable electricity generation", Version 18.0 & ACM0002 "Grid-connected electricity generation from renewable sources", Version 21.0 has been followed along with the "tool to calculate the emission factor for an electricity system, version 7.0" are used to establish the baseline scenario.

According to the methodology baseline scenario has been identified as "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 project activity involved setting up of Solar Power generation Plant to harness the power of Solar energy to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied to the electricity grid by the operation of grid-connected power plants (mainly by fossil fuel fired plants) and by the addition of new generation sources, as reflected in the combined margin (CM) calculations.

Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

As per para 22 of the methodology AMS I.D. (Version 18, EB 81, Annex 24), "Baseline emissions include only CO_2 emissions from electricity generation in 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."

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

Where,

BE_y = Baseline emissions in year y (t CO_2/yr)

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

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO_2/MWh)

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available

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

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9310 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO_2 Emission Database, Version 18.0[24] published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9518 tCO_2/MWh	Operating margin CO_2emission factor for the project electricity system in year y	Calculated as the last 3 years (2019-20, 2020-21& 2021-22,) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 18.0, published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$	0.8687 tCO_2/MWh	Build margin CO_2emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 18.0, published by Central Electricity Authority (CEA), Government of India

The baseline case is in compliance with all applicable legal and regulatory requirements references.

B.5. Demonstration of additionality

>> The additionality of the proposed project activity is demonstrated by following the guidance provided in the GCC project Standard V 3.1.

As per the GCC Project Standard additionality can be demonstrated using the following two components

a) A legal requirement test
b) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

[24] https://cea.nic.in/wp-content/uploads/baseline/2023/01/version_18.zip

The project activity does not fulfil the criteria of positive list as provided in CDM Tool 32: "Methodological Tool – Positive List of Technologies" and hence additionality of the project activity is demonstrated through a project specific additionality test.

For the demonstration and assessment of additionality, Tool 21 "demonstration of additionality of small-scale project activities", Version 13.1 has been applied. As per the para 10 of the tool, Project owner shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions.

Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;

Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

The project investor has selected Investment barrier to demonstrate in a conservative and transparent manner that the proposed GCC project activity is financially unattractive.

To conduct the investment analysis, Methodological tool: Investment analysis, version 12.0, EB 116 Annex 2[25] has been referred.

Considering the fact that the alternative to the project is the supply of electricity from the grid & the choice of the developer is to invest or not to invest, benchmark analysis has been considered appropriate for demonstration of additionality, which is in conformity with "Investment Analysis"27 Annex 2 EB 116.

Apply benchmark analysis

As per para 15 of EB 116 Annex 2 states that Required/expected returns on equity are appropriate benchmarks for equity IRR. The project participant has chosen benchmark analysis to demonstrate the additionality of the project. The project is promoted by private limited company and hence the return on equity and the risks associated with the investments for their shareholder is of primary

[25] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v12.pdf

concern. Hence, in order to analyze the financial viability of the project activity, the prime financial indicator that has been used is the post-tax equity IRR of the project activity.

Selection of Appropriate Benchmark

The benchmark has been considered in accordance with Guidance 19 of EB 116 Annex 2, "The values in the table in the Appendix may also be used, as a simple default option".

- As the proposed project activity generates power utilizing solar energy, Group 1 as per para 5a of Appendix of EB 116 Annex 2 has been identified as a suitable category.
- The investment analysis has been carried out in Nominal terms. Accordingly, Default value as given in table under the Appendix, EB 116 Annex 2 has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India).

As per para 19 of investment analysis, the cost of equity is determined by selecting the values provided in the Appendix, i.e. default values for cost of equity (expected return on equity) is presented below:

Default Value Benchmark:

The cost of equity is determined by selecting the values provided in the table of the Appendix, i.e., Default values for cost of equity (expected return on equity) in the 'Methodological tool: Investment analysis version 12.0'.

Benchmark estimation:

The Cost of Equity has been considered using the "Methodological tool: Investment analysis version 12.0" available at the time of decision making as well as the latest available value.

Table under the tool "Investment analysis" version 12.0 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 9.77**%**[26]

The Required return on equity (benchmark) was computed in the following manner:

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

Where:
Default value for Real Benchmark = 9.77% (as per Appendix of EB 116, Annex 2)
Thus, minimum cost of equity considered for calculation of Benchmark = 9.77%

Additionality for small scale in bundled project

Inflation Rate:

In line with investment analysis tool, Project owner has considered the next 5 years and 10 years

[26] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v12.pdf

[27] As per Pg. 320 of Corporate Finance, Second Edition of Aswath Damodaran

average inflation rate published by the central bank of India (RBI)[28] at the time of project start date i.e 24/12/2019. The applicable inflation rate and corresponding benchmark values are provided below for that 15 MW Small Scale project.

Inflation Forecast	Benchmark
5 Years	**5 Years**
4.30%	14.49

Input values considered for computing investment analysis are given in below Table:
Comparison of Financial Indicators:

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

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

Input values considered for the IRR calculation are provided below.

Project Activity 3 (15 MW) Input Parameters

Particulars	Value	Unit	Source/Remarks
DC Capacity of the project	22.52	MWp	DPR
Capacity of the project	15.00	MW	DPR
Plant Load Factor	22.22%	%	DPR
Annual Net generation	29.1971	GWh	Calculated
Project cost	796.50	INR Million	PIM
Debt	70%	%	PIM
Equity	30%	%	
Debt	557.55	INR Million	Calculated
Equity	238.95	INR Million	Calculated
Interest rate	11.00%	%	PIM
Debt Repayment tenure	15	years	PIM
Moratorium	1	year	
Operation and Maintenance	0.75	INR Million/MW	PIM

[28] https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=16731

Escalation in O & M	5%	%	PIM
GST	18.00%	%	As per prevailing tax rate
Insurance & overhead	1.19	INR Million / Yr	Standard practice
Tariff	3.2	Rs/kWh	PIM
Escalation in tariff	0.00%	%	PIM
Depreciation Rate (Book)	5.00%	%	PIM
IT Depreciation Rate	15.00%	%	PIM
Income tax rate	34.61%	%	Calculated
MAT rate	21.34%	%	Calculated
Salvage Value	10%	%	

Tax Rates

Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Indian IT Act for FY 2015-16	https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html
MAT (%)	18.50%	Indian IT Act for FY 2015-16	
Surcharge (%)	12.00%	Indian IT Act for FY 2015-16	
Education cess (%)	3.00%	Indian IT Act for FY 2015-16	

Final Tax rates

Income tax rate (%)	34.61%	%	Calculated
MAT (%)	21.34%	%	Calculated

Post Tax Equity IRR for the project activities against the benchmark values are shown in table below. Thus, it is evident that the project is not financially attractive as the equity IRR is less below the benchmark value.

Project Activity	Post tax Equity IRR	Benchmark Value
PA - 03	6.47%	14.49%

Sensitivity Analysis

The robustness of the conclusion drawn above, namely that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. As required by Annex 2 of EB 116, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. PP has identified the total revenue from the project activity is dependent on the Tariff, Plant Load Factor, Project Cost and O&M Costs constitute more than 20% of the project costs. These factors have been subjected to a 10% variation on either side and the results of the sensitivity analysis indicate that even after applying such variation the EIRR does not cross the benchmark.

Project Activity 3 (15 MW)

Variation %	-10%	Normal	10%	Variation required to reach benchmark	Value required to reach benchmark	
Tariff	4.43%	6.47%	8.53%	38.60%	4.435	INR/kWh
PLF	4.43%	6.47%	8.53%	38.60%	30.80%	%
Project Cost	8.70%	6.47%	4.70%	-28.20%	571.89	INR (Mn)
O&M Cost	6.50%	6.47%	6.44%	NA	NA	

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

a) **Tariff:** The Tariff rate of electricity used for investment analysis i.e. 3.20 INR/kWh is sourced from the TEV estimate applicable at the time of investment decision. Furthermore, the project will breach the benchmark value at a tariff variation of 38.60%. However, the actual tariff based on the PPAs signed is close to the estimated tariff and much below the tariff value required benchmarking value.

b) **PLF:** The PLF value considered is based on TEV which is the Third Party PLF report i.e. 22.22% and the IRR breach the benchmark value at a PLF variation of more than 38.60%. The increase in PLF value to breach the benchmark is highly unlikely as the PLF is estimated with the estimated annual radiation assessment and equity IRR at normative PLF values are less than the benchmark value and given the analysis above it's highly unlikely that PLF will increase above breaching value.

c) **Project Cost:** The project cost considered for investment analysis i.e. 796.50 million INR. The cost is sourced from TEV which is based on the negotiations with Supplier. A variation of -28.2% is required for IRR to breach benchmark which is not possible as the project is already commissioned.

The actual cost incurred in commissioning of the project is higher than the value required to breach the benchmark which is within the sensitivity applied.

d) **O&M Costs:** The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. The O&M contract has been executed at INR 0.75 Mn/MW at which the equity IRR is much below the benchmark value.

Conclusion:
As described above, the project fulfills all necessary requirements of additionality specified in the 'Tool for the demonstration and assessment of additionality' v7.0. Hence, the Project Activity is additional.

Additionality for Large scale in bundled projects

a) Legal requirement test

As per the paragraph no 46 of the project standard V3.1 the project is not implemented by the force of law. This is a voluntary activity undertaken by the project owner in compliance with all the legal requirement in the host country. Hence project complies with the legal requirement test.

b) Additionality Test

As per the GCC Project standard V3.1 this project needs to be demonstrating the additionality test based on the Project specific additionality test.

Additionality has been demonstrated as per the applied methodology ACM0002 (Version 21.0). Methodology requires the project participant to determine the additionality based on "Tool for the demonstration and assessment of additionality", Version 7.0.0.
The stepwise approach to establish additionality of the project activity has been followed, details of which are provided in the following paragraphs:

As per the applied methodology requirement, Additionality of the project activity is demonstrated using the Methodological tool "Tool for the demonstration and assessment of additionality" Version 7.0.0. The tool defines the following steps:
Sub Step 0: Demonstration whether the proposed project activity is the first-of-its-kind.
The proposed project activity is not the first of its kind as implementation of solar power project in the State is not first of its kind.

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

Sub-step 1a: Define alternatives to the project activity

As per the applied ACM0002 version 21.0; Para 24, *if the project activity is the installation of a Greenfield power plant with or without a BESS, 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.*

However, for the assessment of additionality, the following alternatives are identified:

Alternative 1: The proposed project activity undertaken without being registered as a GCC project activity.
Alternative 2: No project activity is undertaken.

Sub-step 1b: Consistency with mandatory laws and regulations:

Alternative	Compliance with laws & regulation
Alternative 1: The proposed project activity undertaken without being registered as a GCC project activity	Government of India does not restrict implementation of Solar power project.
Alternative 2: No project activity is undertaken.	No law or regulation mandate PP to invest in this project.

Hence, all the alternatives identified above comply with mandatory laws and regulations in India. The financial attractiveness of Alternative 1 is demonstrated though investment analysis explained below:

Step 2: Investment Analysis
As per para 29 of "Tool for the demonstration and assessment of additionality" it is determined that the proposed project activity is not an economically attractive or financially feasible option.
To conduct the investment analysis, Methodological tool: Investment analysis, version 12.0, EB 116 Annex 2 has been referred.

Sub-step 2a: Determine appropriate analysis method
As per "Tool for the demonstration and assessment of additionality" (version 7.0.0), 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 in line with para 32 of the Methodological tool: "Tool for the demonstration and assessment of additionality", version 7.0.0. Same applies to the Option II which is applied in case there are alternatives to the project activity as per para 42 of the "Tool for the demonstration and assessment of additionality", version 7.0.0.

Since, identified baseline for the proposed project activity is continuation of current practice (i.e.

equivalent amount of energy would have been generated by grid electricity system through its currently operating power plants and by new capacity addition) and which is outside the direct control of the project participant, hence benchmark analysis (option III), where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country is selected as the most appropriate method.

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

As per para 15 of EB 116 Annex 2 states that Required/expected returns on equity are appropriate benchmarks for equity IRR. The project participant has chosen benchmark analysis to demonstrate the additionality of the project. The project is promoted by private limited company and hence the return on equity and the risks associated with the investments for their shareholder is of primary concern. Hence, in order to analyze the financial viability of the project activity, the prime financial indicator that has been used is the post-tax equity IRR of the project activity.

Selection of Appropriate Benchmark

The benchmark has been considered in accordance with Guidance 19 of EB 116 Annex 2, "The values in the table in the Appendix may also be used, as a simple default option".

Methodology deployed for arriving at a suitable value of Benchmark using Default Value has been described below:

- As the proposed project activity generates power utilizing solar energy, Group 1 as per para 5a of Appendix of EB 116 Annex 2 has been identified as a suitable category.

- The investment analysis has been carried out in Nominal terms. Accordingly, Default value as given in table under the Appendix, EB 116 Annex 2 has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India).

The benchmark has been computed in the following manner:

Default Value Benchmark:

The cost of equity is determined by selecting the values provided in the table of the Appendix, i.e., Default values for cost of equity (expected return on equity) in the 'Methodological tool: Investment analysis.

Benchmark estimation:

The Cost of Equity has been considered using the "Methodological tool: Investment analysis" available at the time of decision making as well as the latest available value. As a conservative approach, the minimum value of benchmark has been considered as calculated using these 2 approaches.

Table under Appendix in EB116, Annex 2 specifies default value of expected return on equity in real

terms for Energy Industries (Group 1) in India = **9.77%**[29]

Thus, minimum cost of equity considered for calculation of Benchmark = 9.77%

The Required return on equity (benchmark) was computed in the following manner:

Nominal Benchmark[30] = {(1+Real Benchmark) * (1+Inflation rate)} -1
Where:
Default value for Real Benchmark = 9.77% (as per Appendix of EB 116, Annex 2)
Inflation Rate forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India) for India.

Inflation Rate:
In line with investment analysis tool, Project owner has considered the next 5 years and 10 years average inflation rate published by the central bank of India (RBI)[31] at the time of project start date 24/12/2019. The applicable inflation rate and corresponding benchmark values are provided below.

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

Input values considered for the IRR calculation are provided below

Project Activity 1 (25 MW) Input Parameters

Particulars	Value	Unit	Source/Remarks
DC Capacity of the project	37.53	MWp	DPR
Capacity of the project	25.00	MW	DPR
Plant Load Factor	22.73%	%	DPR
Annual Net generation	49.7787	GWh	Calculated
Project cost	1327.50	INR Million	PIM
Debt	70%	%	PIM
Equity	30%	%	
Debt	929.25	INR Million	Calculated
Equity	398.25	INR Million	Calculated
Interest rate	11.00%	%	PIM
Debt Repayment tenure	15	years	PIM

[29] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v12.pdf

[30] As per Pg. 320 of Corporate Finance, Second Edition of Aswath Damodaran

[31] https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=16828

Moratorium	1	year	
Operation and Maintenance	0.75	INR Million/MW	PIM
Escalation in O & M	5%	%	PIM
GST	18.00%	%	As per prevailing tax rate
Insurance & overhead	1.99	INR Million / Yr	Standard practice
Tariff	3.7	Rs/kWh	PIM
Escalation in tariff	0.00%	%	PIM
Depreciation Rate (Book)	5.00%	%	PIM
IT Depreciation Rate	15.00%	%	PIM
Income tax rate	34.61%	%	Calculated
MAT rate	21.34%	%	Calculated
Salvage Value	10%	%	

Tax Rates

Financial Year			
Income tax rate (%)	30.00%	Indian IT Act for FY 2015-16	https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html
MAT (%)	18.50%	Indian IT Act for FY 2015-16	
Surcharge (%)	12.00%	Indian IT Act for FY 2015-16	
Education cess (%)	3.00%	Indian IT Act for FY 2015-16	

Final Tax rates

Income tax rate (%)	34.61%	%	Calculated
MAT (%)	21.34%	%	Calculated

Post Tax Equity IRR for the project activity against the benchmark values are shown in table below. Thus, it is evident that the project is not financially attractive as the equity IRR is below the benchmark value.

Project Activity	Post tax Equity IRR	Benchmark Value

PA - 01	10.40%	14.49%

Sensitivity Analysis

The robustness of the conclusion drawn above, namely that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. As required by Annex 2 of EB 116, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. PP has identified the total revenue from the project activity is dependent on the Tariff, Plant Load Factor, Project Cost and O&M Costs constitute more than 20% of the project costs. These factors have been subjected to a 10% variation on either side and the results of the sensitivity analysis indicate that even after applying such variation the EIRR does not cross the benchmark.

Project Activity 1 (25 MW)

Variation %	-10%	Normal	10%	Variation required to reach benchmark	Value required to reach benchmark
Tariff	7.97%	10.40%	12.82%	16.70%	4.318
PLF	7.97%	10.40%	12.82%	16.70%	26.53%
Project Cost	13.06%	10.40%	8.19%	-14.40%	1136.34
O&M Cost	10.41%	10.40%	10.38%	NA	NA

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

a) **Tariff:** The Tariff rate of electricity used for investment analysis i.e. 3.70 INR/kWh is sourced from the DPR applicable at the time of investment decision. Furthermore, the project will breach the benchmark value at a tariff variation of 16.7%. However, the actual tariff based on the PPAs signed is close to the estimated tariff and much below the tariff value required benchmarking value. Hence, increase in tariff is unlikely.

b) **PLF:** The PLF value considered is based on DPR which is the Third Party PLF report i.e. 22.73% and the IRR breach the benchmark value at a PLF variation of more than 16.7%. The increase in PLF value to breach the benchmark is highly unlikely as the PLF is estimated with the estimated

annual radiation assessment and equity IRR at normative PLF values are less than the benchmark value and given the analysis above it's highly unlikely that PLF will increase above breaching value.

c) **Project Cost:** The project cost considered for investment analysis i.e. 1327.50 million INR. The cost is sourced from DPR which is based on the negotiations with Supplier. A variation of -14.4% is required for IRR to breach benchmark which is not possible as the project is already commissioned. The actual cost incurred in commissioning of the project is higher than the value required to breach the benchmark which is within the sensitivity applied.

d) **O&M Costs:** The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. The O&M contract has been executed at INR 0.75 Mn/MW at which the equity IRR is much below the benchmark value.

It is evident that even with the variation of +/- 10% of the major parameters the equity IRR is below the benchmark. Probability of the breaching the benchmark analysis has been provide for each individual project and none of the project case the occurrence of its happening is not possible. Hence in case of total project case also it is deemed applicable

Project Activity 2 (25 MW) Input Parameters

Particulars	Value	Unit	Source/Remarks
DC Capacity of the project	37.53	MWp	DPR
Capacity of the project	25.00	MW	DPR
Plant Load Factor	22.85%	%	DPR
Annual Net generation	50.0415	GWh	Calculated
Project cost	1327.50	INR Million	PIM
Debt	70%	%	PIM
Equity	30%	%	
Debt	929.25	INR Million	Calculated
Equity	398.25	INR Million	Calculated
Interest rate	11.00%	%	PIM
Debt Repayment tenure	15	years	PIM
Moratorium	1	year	
Operation and Maintenance	0.75	INR Million/MW	PIM
Escalation in O & M	5%	%	PIM
GST	18.00%	%	As per prevailing tax rate

Insurance & overhead	1.99	INR Million / Yr	Standard practice
Tariff	3.24	Rs/kWh	PIM
Escalation in tariff	0.00%	%	PIM
Depreciation Rate (Book)	5.00%	%	PIM
IT Depreciation Rate	15.00%	%	PIM
Income tax rate	34.61%	%	Calculated
MAT rate	21.34%	%	Calculated
Salvage Value	10%	%	

Tax Rates

Financial Year			
Income tax rate (%)	30.00%	Indian IT Act for FY 2015-16	https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html
MAT (%)	18.50%	Indian IT Act for FY 2015-16	
Surcharge (%)	12.00%	Indian IT Act for FY 2015-16	
Education cess (%)	3.00%	Indian IT Act for FY 2015-16	

Final Tax rates

Income tax rate (%)	34.61%	%	Calculated
MAT (%)	21.34%	%	Calculated

Post Tax Equity IRR for the project activity against the benchmark values are shown in table below. Thus, it is evident that the project is not financially attractive as the equity IRR is below the benchmark value.

Project Activity	Post tax Equity IRR	Benchmark Value
PA - 02	7.45%	14.49%

Sensitivity Analysis

The robustness of the conclusion drawn above, namely that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. As required by Annex 2

of EB 116, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. PP has identified the total revenue from the project activity is dependent on the Tariff, Plant Load Factor, Project Cost and O&M Costs constitute more than 20% of the project costs. These factors have been subjected to a 10% variation on either side and the results of the sensitivity analysis indicate that even after applying such variation the EIRR does not cross the benchmark.

Project Activity 2 (25 MW)

Variation %	-10%	Normal	10%	Variation required to reach benchmark	Value required to reach benchmark
Tariff	5.32%	7.45%	9.59%	32.60%	4.296
PLF	5.32%	7.45%	9.59%	32.60%	30.30%
Project Cost	9.79%	7.45%	5.61%	-24.70%	999.61
O&M Cost	7.47%	7.45%	7.43%	NA	NA

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

a) **Tariff:** The Tariff rate of electricity used for investment analysis i.e. 3.24 INR/kWh is sourced from the DPR applicable at the time of investment decision. Furthermore, the project will breach the benchmark value at a tariff variation of 32.6%. However, the actual tariff based on the PPAs signed is close to the estimated tariff and much below the tariff value required benchmarking value. Hence, increase in tariff is unlikely.

b) **PLF:** The PLF value considered is based on DPR which is the Third Party PLF report i.e. 22.85% and the IRR breach the benchmark value at a PLF variation of more than 32.6%. The increase in PLF value to breach the benchmark is highly unlikely as the PLF is estimated with the estimated annual radiation assessment and equity IRR at normative PLF values are less than the benchmark value and given the analysis above it's highly unlikely that PLF will increase above breaching value.

c) **Project Cost:** The project cost considered for investment analysis i.e. 1327.50 million INR. The cost is sourced from DPR which is based on the negotiations with Supplier. A variation of -24.7% is required for IRR to breach benchmark which is not possible as the project is already commissioned. The actual cost incurred in commissioning of the project is higher than the value required to breach the benchmark which is within the sensitivity applied.

d) **O&M Costs:** The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the

O&M agreement) and subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. The O&M contract has been executed at INR 0.75 Mn/MW at which the equity IRR is much below the benchmark value.

It is evident that even with the variation of +/- 10% of the major parameters the equity IRR is below the benchmark. Probability of the breaching the benchmark analysis has been provide for each individual project and none of the project case the occurrence of its happening is not possible. Hence in case of total project case also it is deemed applicable

Project Activity 4 (25 MW) Input Parameters

Particulars	Value	Unit	Source/Remarks
DC Capacity of the project	37.53	MWp	DPR
Capacity of the project	25.00	MW	DPR
Plant Load Factor	24.76%	%	DPR
Annual Net generation	54.2244	GWh	Calculated
Project cost	1327.50	INR Million	PIM
Debt	70%	%	PIM
Equity	30%	%	
Debt	929.25	INR Million	Calculated
Equity	398.25	INR Million	Calculated
Interest rate	11.00%	%	PIM
Debt Repayment tenure	15	years	PIM
Moratorium	1	year	
Operation and Maintenance	0.75	INR Million/MW	PIM
Escalation in O & M	5%	%	PIM
GST	18.00%	%	As per prevailing tax rate
Insurance & overhead	1.99	INR Million / Yr	Standard practice
Tariff	3.17	Rs/kWh	PIM
Escalation in tariff	0.00%	%	PIM
Depreciation Rate (Book)	5.00%	%	PIM
IT Depreciation Rate	15.00%	%	PIM
Income tax rate	34.61%	%	Calculated

MAT rate	21.34%	%	Calculated
Salvage Value	10%	%	

Tax Rates

Financial Year			
Income tax rate (%)	30.00%	Indian IT Act for FY 2015-16	https://taxguru.in/income-tax/income-tax-slab-financial-year-201516.html
MAT (%)	18.50%	Indian IT Act for FY 2015-16	
Surcharge (%)	12.00%	Indian IT Act for FY 2015-16	
Education cess (%)	3.00%	Indian IT Act for FY 2015-16	

Final Tax rates

Income tax rate (%)	34.61%	%	Calculated
MAT (%)	21.34%	%	Calculated

Post Tax Equity IRR for the project activity against the benchmark values are shown in table below. Thus, it is evident that the project is not financially attractive as the equity IRR is below the benchmark value.

Project Activity	Post tax Equity IRR	Benchmark Value
PA - 04	8.72%	14.49%

Sensitivity Analysis

The robustness of the conclusion drawn above, namely that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. As required by Annex 2 of EB 116, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. PP has identified the total revenue from the project activity is dependent on the Tariff, Plant Load Factor, Project Cost and O&M Costs constitute more than 20% of the project costs. These factors have been subjected to a 10% variation on either side and the results of the sensitivity analysis indicate that even after applying such variation the EIRR does not cross the benchmark.

Project Activity 4 (25 MW)

Variation %	-10%	Normal	10%	Variation required to reach benchmark	Value required to reach benchmark
Tariff	6.47%	8.72%	11.01%	25.00%	3.963
PLF	6.47%	8.72%	11.01%	25.00%	30.95%
Project Cost	11.23%	8.72%	6.76%	-20.20%	1059.35
O&M Cost	8.73%	8.72%	8.70%	NA	NA

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

a) **Tariff:** The Tariff rate of electricity used for investment analysis i.e. 3.17 INR/kWh is sourced from the DPR applicable at the time of investment decision. Furthermore, the project will breach the benchmark value at a tariff variation of 25%. However, the actual tariff based on the PPAs signed is close to the estimated tariff and much below the tariff value required benchmarking value. Hence, increase in tariff is unlikely.

b) **PLF:** The PLF value considered is based on DPR which is the Third Party PLF report i.e. 22.76% and the IRR breach the benchmark value at a PLF variation of more than 25%. The increase in PLF value to breach the benchmark is highly unlikely as the PLF is estimated with the estimated annual radiation assessment and equity IRR at normative PLF values are less than the benchmark value and given the analysis above it's highly unlikely that PLF will increase above breaching value.

c) **Project Cost:** The project cost considered for investment analysis i.e. 1327.50 million INR. The cost is sourced from DPR which is based on the negotiations with Supplier. A variation of -20.2% is required for IRR to breach benchmark which is not possible as the project is already commissioned. The actual cost incurred in commissioning of the project is higher than the value required to breach the benchmark which is within the sensitivity applied.

d) **O&M Costs:** The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. The O&M contract has been executed at INR 0.75 Mn/MW at which the equity IRR is much below the benchmark value.

It is evident that even with the variation of +/- 10% of the major parameters the equity IRR is below the benchmark. Probability of the breaching the benchmark analysis has been provide for each individual project and none of the project case the occurrence of its happening is not possible. Hence in case of total project case also it is deemed applicable.

Step 3: Barrier analysis
Barrier analysis has not been used.
Step 4: Common practice analysis
Stepwise approach for common practice analysis has been carried out as per Methodological tool "Common Practice", version 03.1 EB84, Annex 7:

(a) *The project is located in the applicable geographical area;*
(b) *The project applies the same measure as the proposed project activity;*
(c) *The project use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;*
(d) *The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g., clinker) as the proposed project plant;*
(e) *The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;*
(f) *The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.*

Project Activity 03

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

Since the start dates were common for all the large-scale projects and they all were of same capacity which is of 25 MW, that's why the additionality (common practice) is proven for one of the projects only.

The capacity of the project activity is 15 MW and hence the output range as per the guideline is selected to be 7.5 MW to 22.5 MW.

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

a) The projects are located in Assam state of India. However, each state has different tariff order, thus each state have different investment climate. Therefore, projects located in Karnataka state have been chosen for analysis.
b) The projects applying same measure (i.e, only renewable energy through Solar) are selected as the proposed project activity is solar power project.
Therefore, all projects applying same measure (b) as the proposed project activity are candidates for similar projects.
c) The energy source used by the project activity is Solar. Hence, only solar energy projects have been considered for analysis.

d) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
e) The capacity range of the projects is within the applicable capacity range for the chosen projects (7.5 MW to 22.5 MW).
f) The start date for the project is 24-12-2019 (EPC contract signing date). As Kyoto Protocol was ratified by India on 26/08/2002[32], therefore projects which had started commercial operation between 26/08/2002 to 24-12-2019.

Numbers of Similar projects identified which fulfill above-mentioned conditions are
N_{solar} = 0

The projects considered for analysis are sourced from list of commissioned solar projects published by the Central Electricity Authority, Government of India website[33].

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

CDM/VCS/GS/GCC and EU-ETS project activities, which have got registered, submitted for registration or are under validation, have been excluded in this step. The list of the power plants identified is provided to the verifier. After excluding the registered, submitted for registration and under validation projects the total number of projects.
N_{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_{diff}.*

From the projects identified above, those projects which employ "**different technologies**" have been excluded and the number of such projects has been identified as N_{diff}.
Hence, **N_{diff}** = 0

Step (5): *calculate factor $F=1-N_{diff}/N_{all}$ 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.*

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

As per methodological tool "common practice" version 03.1, the proposed project activity is a

[32] http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

[33] https://cea.nic.in/wp-content/uploads/2020/04/Plant-wise-details-of-RE-Installed-Capacity-merged.pdf

"common practice" within a sector in the applicable geographical area if the factor F is greater than 0.2 and Nall - Ndiff 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 Step 5:

As,

i. F = 0; which is not greater than 0.2
ii. Nall - Ndiff = 0; which is not greater than 3

The project activity does not satisfy both the conditions. Hence, project activity is not a common practice.

Conclusion:

As described above, the project fulfils all necessary requirements of additionality specified in the 'Tool for the demonstration and assessment of additionality' v7.0.0. Hence, the project is additional.

Project Activity 01

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

Since the start dates were common for all the large-scale projects and they all were of same capacity which is of 25 MW, that's why the additionality (common practice) is proven for one of the projects only.

The capacity of the project activity is 25 MW and hence the output range as per the guideline is selected to be 12.5 MW to 37.5 MW.

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

g) The projects are located in Assam state of India. However, each state has different tariff order, thus each state have different investment climate. Therefore, projects located in Karnataka state have been chosen for analysis.
h) The projects applying same measure (i.e, only renewable energy through Solar) are selected as the proposed project activity is solar power project.
   Therefore, all projects applying same measure (b) as the proposed project activity are candidates for similar projects.
i) The energy source used by the project activity is Solar. Hence, only solar energy projects have been considered for analysis.
j) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
k) The capacity range of the projects is within the applicable capacity range for the chosen projects (12.5 MW to 37.5 MW).

l) The start date for the project is 08-02-2021 (EPC contract signing date). As Kyoto Protocol was ratified by India on 26/08/2002[34], therefore projects which had started commercial operation between 26/08/2002 to 24-12-2019.

Numbers of Similar projects identified which fulfill above-mentioned conditions are
N_{solar} = 0

The projects considered for analysis are sourced from list of commissioned solar projects published by the Central Electricity Authority, Government of India website[35].

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

CDM/VCS/GS/GCC and EU-ETS project activities, which have got registered, submitted for registration or are under validation, have been excluded in this step. The list of the power plants identified is provided to the verifier. After excluding the registered, submitted for registration and under validation projects the total number of projects.
N_{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_{diff}.*

From the projects identified above, those projects which employ "**different technologies**" have been excluded and the number of such projects has been identified as N_{diff}.
Hence, **N_{diff}** = 0

Step (5): *calculate factor $F=1-N_{diff}/N_{all}$ 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.*

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

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 Nall - Ndiff 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.

[34] http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

[35] https://cea.nic.in/wp-content/uploads/2020/04/Plant-wise-details-of-RE-Installed-Capacity-merged.pdf

Outcome of Step 5:
As,

iii. F = 0; which is not greater than 0.2
iv. Nall - Ndiff = 0; which is not greater than 3

The project activity does not satisfies both the conditions. Hence, project activity is not a common practice.

Conclusion:
As described above, the project fulfils all necessary requirements of additionality specified in the 'Tool for the demonstration and assessment of additionality' v7.0.0. Hence, the project is additional.

Project Activity 02

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

Since the start dates were common for all the large-scale projects and they all were of same capacity which is of 25 MW, that's why the additionality (common practice) is proven for one of the projects only.

The capacity of the project activity is 25 MW and hence the output range as per the guideline is selected to be 12.5 MW to 37.5 MW.

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

m) The projects are located in Assam state of India. However, each state has different tariff order, thus each state have different investment climate. Therefore, projects located in Karnataka state have been chosen for analysis.
n) The projects applying same measure (i.e, only renewable energy through Solar) are selected as the proposed project activity is solar power project.
Therefore, all projects applying same measure (b) as the proposed project activity are candidates for similar projects.
o) The energy source used by the project activity is Solar. Hence, only solar energy projects have been considered for analysis.
p) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
q) The capacity range of the projects is within the applicable capacity range for the chosen projects (12.5 MW to 37.5 MW).

r) The start date for the project is 04-10-2021 (EPC contract signing date). As Kyoto Protocol was ratified by India on 26/08/2002[36], therefore projects which had started commercial operation between 26/08/2002 to 24-12-2019.

Numbers of Similar projects identified which fulfill above-mentioned conditions are
N_{solar} = 0

The projects considered for analysis are sourced from list of commissioned solar projects published by the Central Electricity Authority, Government of India website[37].

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

CDM/VCS/GS/GCC and EU-ETS project activities, which have got registered, submitted for registration or are under validation, have been excluded in this step. The list of the power plants identified is provided to the verifier. After excluding the registered, submitted for registration and under validation projects the total number of projects.
N_{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_{diff}.*

From the projects identified above, those projects which employ "**different technologies**" have been excluded and the number of such projects has been identified as N_{diff}.
Hence, **N_{diff}** = 0

Step (5): *calculate factor $F=1-N_{diff}/N_{all}$ 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.*

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

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 Nall - Ndiff 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.

[36] http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

[37] https://cea.nic.in/wp-content/uploads/2020/04/Plant-wise-details-of-RE-Installed-Capacity-merged.pdf

Outcome of Step 5:
As,

v. F = 0; which is not greater than 0.2
vi. Nall - Ndiff = 0; which is not greater than 3

The project activity does not satisfy both the conditions. Hence, project activity is not a common practice.

Conclusion:
As described above, the project fulfils all necessary requirements of additionality specified in the 'Tool for the demonstration and assessment of additionality' v7.0.0. Hence, the project is additional.

Project Activity 04

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

Since the start dates were common for all the large-scale projects and they all were of same capacity which is of 25 MW, that's why the additionality (common practice) is proven for one of the projects only.

The capacity of the project activity is 25 MW and hence the output range as per the guideline is selected to be 12.5 MW to 37.5 MW.

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

s) The projects are located in Assam state of India. However, each state has different tariff order, thus each state have different investment climate. Therefore, projects located in Karnataka state have been chosen for analysis.
t) The projects applying same measure (i.e, only renewable energy through Solar) are selected as the proposed project activity is solar power project.
Therefore, all projects applying same measure (b) as the proposed project activity are candidates for similar projects.
u) The energy source used by the project activity is Solar. Hence, only solar energy projects have been considered for analysis.
v) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
w) The capacity range of the projects is within the applicable capacity range for the chosen projects (12.5 MW to 37.5 MW).

x) The start date for the project is 04-10-2021 (EPC contract signing date). As Kyoto Protocol was ratified by India on 26/08/2002[38], therefore projects which had started commercial operation between 26/08/2002 to 24-12-2019.

Numbers of Similar projects identified which fulfill above-mentioned conditions are
N_{solar} = 0

The projects considered for analysis are sourced from list of commissioned solar projects published by the Central Electricity Authority, Government of India website[39].

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

CDM/VCS/GS/GCC and EU-ETS project activities, which have got registered, submitted for registration or are under validation, have been excluded in this step. The list of the power plants identified is provided to the verifier. After excluding the registered, submitted for registration and under validation projects the total number of projects.
N_{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_{diff}.*

From the projects identified above, those projects which employ "**different technologies**" have been excluded and the number of such projects has been identified as N_{diff}.
Hence, **N_{diff}** = 0

Step (5): *calculate factor $F=1-N_{diff}/N_{all}$ 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.*

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

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 Nall - Ndiff 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.

[38] http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

[39] https://cea.nic.in/wp-content/uploads/2020/04/Plant-wise-details-of-RE-Installed-Capacity-merged.pdf

Outcome of Step 5:
As,
vii. F = 0; which is not greater than 0.2
viii. Nall - Ndiff = 0; which is not greater than 3

The project activity does not satisfy both the conditions. Hence, project activity is not a common practice.

Conclusion:
As described above, the project fulfils all necessary requirements of additionality specified in the 'Tool for the demonstration and assessment of additionality' v7.0.0. Hence, the project is additional.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

>> As per the paragraph 62 of the methodology ACM0002 Version 21.0 & AMS I.D Version 18.0 emission reductions are calculated as follows.

Emission Reductions
$ER_y = BE_y - PE_y$
Where
ER_y = Emission reductions in year y (t CO_2e/yr)
BE_y =Baseline emissions in year y (t CO_2/yr)
PE_y =Project emissions in year y (t CO_2/yr)

Baseline Emissions
As per the approved consolidated Methodology ACM0002 version 21.0 that Baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid- connected power plants. The baseline emissions are to be calculated as follows:

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

Where,
BE_y = Baseline emissions in year y (t CO_2/yr)
$EG_{PJ,y}$=Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$ = Combined margin 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 CO_2/MWh)

AS per para 49 of ACM0002, version 21.0, when the project activity is installation of Greenfield power plant, then:

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

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

$EG_{facility,\ y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)
The $EG_{facility,y}$ is estimated from the PLF provided as per the third party engineering company report as below:

$EG_{facility,\ y}$ (MWh)
183,241

As per the methodology combined margin grid emission factor has been calculated as per the "Tool to calculate the grid emission factor for an Electricity System" version 7.0

CO_2 Baseline Database for the Indian Power Sector, Version 18, Sept 2022[40] published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per the "Tool to calculate the emission factor for an electricity system" Version 7.0, the following steps have been followed.

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

Step 1: Identify the relevant electricity systems

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

[40] https://cea.nic.in/wp-content/uploads/baseline/2023/01/version_18.zip

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 CO_2 Baseline Database. As of 31 December 2013, the Southern grid has also been synchronized with the NEWNE grid; hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

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

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

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

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

The Project Participant 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, wind, low-cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)						
	2016-17	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
India	14.6%	14.3%	14.5%	17.0%	16.5%	15.8%

Data Source: Central Electricity Authority (CEA) database Version 18, Sept '2022[41]

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

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

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

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

OR

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

PP 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 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 years data vintage:

Net Generation in Operating Margin (GWh) (incl. Imports)			
	2019-20	**2020-21**	**2021-22**
INDIAN Grid	965,009	958,218	1,035,672

Simple Operating Margin (tCO_2/MWh) (incl. Imports)			
	2019-20	**2020-21**	**2021-22**
INDIAN Grid	0.9541	0.9402	0.9605

[41] https://cea.nic.in/wp-content/uploads/baseline/2023/01/version_18.zip

Weighted Generation Operating Margin	
INDIAN Grid	**0.9518**

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

Option 1 as described above is chosen 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 PDD and is fixed for the entire crediting period.

Build Margin (tCO_2/MWh) (not adjusted for imports)	
	2021-22
INDIAN Grid	**0.8687**

STEP 6: Calculate the combined margin (CM) emissions factor

Combined Margin – The combined margin is the weighted average of the simple operating Margin and the build margin. In particular, for intermittent and non-dispatch able generation types such as wind and solar photovoltaic, the Tool to calculate the emission factor for an electricity system, Version 7.0.0, EB 100, Annex 4, 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 and biomass projects.

The baseline emission factor is calculated using the combined margin approach as described in the following steps:

Calculation of Baseline Emission Factor EF_y

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

$$EF_y = w_{OM} * EF_{OM,y} + w_{BM} * EF_{BM,y}$$

Where,

W_{OM} 75% weight for solar energy projects
W_{BM} 25% weight for solar energy projects
$EF_{OM,y}$ calculated as described in Steps 3&4 above (tCO_2/MWh)
$EF_{BM,y}$ calculated as described in Steps 5 above (tCO_2/MWh)

Baseline Emission factor (INDIAN Grid) = 0.75*0.9518 + 0.25*0.8687
= 0.9310 tCO_2/MWh

The baseline emission factor is ex-ante parameter and will remain constant throughout the crediting

period.

$EF_{grid,,}$ =	Combined Margin Grid Emission Factor = 0.9310 **tCO_2/MWh**

Project Emissions:
As per the approved consolidated Methodology ACM0002 (Version 21.0) para 35: "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:

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

PE_y = Project emissions in year y (t CO_2e/yr)
$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO_2/yr)
$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO_2e/yr)
$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO_2e/yr)

As the project activity is the installation of a new grid-connected solar Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

Leakage Emissions:
No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Hence Emission reductions will be calculated as per the below equation

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

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

Data / Parameter Table 1.

Data / Parameter:	**$EF_{grid,OM,y}$**
Methodology reference	ACM0002: Grid-connected electricity generation from renewable sources, Version 21.0 & AMS I.D: Grid connected renewable electricity generation V18.0
Data unit	tCO2/MWh
Description	Operating Margin CO_2 emission factor in year y of Indian Grid.

Measured/calculated /default	Calculated
Data source	Calculated from CEA database, Version 18, September2022
Value(s) of monitored parameter	0.9518
Measurement/ Monitoring equipment (if applicable)	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter</td><td>NA</td></tr><tr><td>Location of meter</td><td>NA</td></tr><tr><td>Accuracy of meter</td><td>NA</td></tr><tr><td>Serial number of meters</td><td>NA</td></tr></table> Calculated in line with “Tool to calculate the emission factor for an electricity system” using data from Central Electricity Authority of India’s (CEA) “Baseline Carbon Dioxide Emission Database Version 18”. The value used is calculated ex-ante as generation based weighted average of last three years of the operating margin provided in the CEA database. Weighted average = ∑i=1 to n (Net generation in operating margin in year i * Simple operating margin in year i)/∑i= 1 to n (Net generation in operating margin of year i)
Calculation method (if applicable)	Calculated in line with “Tool to calculate the emission factor for an electricity system” version 7
QA/QC procedures	NA
Purpose of data	Baseline Emission calculation
Additional comments	The operating margin emission factor is a 3-year generation-weighted average (2019-22). The operating Margin is calculated ex ante and fixed during the crediting period

Data / Parameter:	**$EF_{grid,BM,y}$**
Methodology reference	ACM0002: Grid-connected electricity generation from renewable sources, Version 21.0 & AMS I.D: Grid connected renewable electricity generation V18.0
Data unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y of Indian Grid
Measured/calculated /default	Calculated
Data source	Calculated from CEA database, Version 18, September 2022
Value(s) of monitored parameter	0.8687

Measurement/ Monitoring equipment (if applicable)	<table><tr><td colspan="2">Not Applicable</td></tr><tr><td>Type of meter</td><td>NA</td></tr><tr><td>Location of meter</td><td>NA</td></tr><tr><td>Accuracy of meter</td><td>NA</td></tr><tr><td>Serial number of meter</td><td>NA</td></tr></table> Calculated in line with "*Tool to calculate the emission factor for an electricity system*" using data from Central Electricity Authority of India's (CEA) "*Baseline Carbon Dioxide Emission Database Version 18*". The value is calculated ex-ante as most recent build margin provided by the CEA
Calculation method (if applicable)	Calculated in line with "*Tool to calculate the emission factor for an electricity system*" version 7
QA/QC procedures	NA
Purpose of data	Baseline Emission calculation
Additional comments	The Build Margin would be calculated ex ante and fixed during the crediting period. For ex ante calculation the most recent data (2021-22) available has been used and the build margin is thus calculated.

Data / Parameter:	**$EF_{grid,CM,y}$**
Methodology reference	ACM0002: Grid-connected electricity generation from renewable sources, Version 21.0 & AMS I.D: Grid connected renewable electricity generation V18.0
Data unit	tCO2/MWh
Description	Combined Margin CO_2 emission factor in year y of Indian Grid
Measured/calculated /default	Calculated
Data source	Calculated from CEA database, Version 18, September 2022
Value(s) of monitored parameter	0.9310
Measurement/ Monitoring equipment (if applicable)	<table><tr><td colspan="2">Not Applicable</td></tr><tr><td>Type of meter</td><td></td></tr><tr><td>Location of meter</td><td></td></tr><tr><td>Accuracy of meter</td><td></td></tr><tr><td>Serial number of meter</td><td></td></tr></table> The date has been considered in accordance to the Tool to calculate emission factor of an electricity system. The tool guides to take 75% weightage of EF_{grid}, OM_{simple}, & 25% weightage of $EF_{grid,BM,y}$.

Calculation method (if applicable)	Calculated in line with "*Tool to calculate the emission factor for an electricity system*" version 7
QA/QC procedures	NA
Purpose of data	Baseline Emission calculation
Additional comments	The combined margin would be calculated ex-ante and fixed for the entire crediting period and the combined margin thus calculated is 0.9310.

B.6.3. Ex-ante calculation of emission reductions

>> The ex-ante emission reductions (ER_y) for the project activity are calculated as follows

$ER_y = BE_y – PE_y – LE_y$

Where,
ER_y = Emission Reduction in tCO_2/year
BE_y = Baseline emission in tCO_2/year
PE_y = Project emissions in tCO_2/year
LE_y = Leakage Emissions in tCO_2/year

Baseline Emissions (BE_y):

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

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

AS per para 49 of ACM0002, version 21.0, when the project activity is installation of Greenfield power plant, then:

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

Where,
$EG_{facility,y}$ = Total quantity of net electricity delivered to the INDIAN grid in year y (MWh/yr)
$EF_{grid,CM,y}$ = Baseline grid emission factor (t CO_2/MWh)
= 0.9310 t CO_2/MWh

The $EG_{facility,\ y}$ is estimated from the PLF provided as per the third-party engineering company report as below:

$EG_{facility,\ y}$ = 183,241 **MWh**

As per section B.6.1 above, the combined margin grid emission factor ($EF_{grid,CM,y}$) is 0.9310 tCO_2/MWh
Hence the annual baseline emission is calculated as below:

$EG_{facility, y}$ (MWh)	Emission factor (tCO_2/MWh	Baseline emission (tCO_2)
183,241	0.9310	170,598

$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$ = 183,241MWh **x** 0.9310 tCO_2/MWh = 170,598 **tCO_2**

Project Emissions (PE_y):

As explained in the above section B.6.2 Project emissions from the project activity is considered Zero.

PEy = 0

Leakage Emissions (LE_y):

As explained in the above section B.6.2 Project emissions from the project activity is considered Zero.

LEy =0

Emission Reductions (ER_y):

$ER_y = BE_y - PE_y - LE_y$

Since the project and leakage emissions are estimated as zero

$ER_y = BE_y$ = 170,598

Considering the different commissioning date of each project and annual degradation, the emission reduction estimation for the entire crediting period is provided in the below section.

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

>>

Year	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage (tCO_2e)	Emission reductions (tCO_2e)
12-September-2020 to 11-September 2021	46,344	0	0	46,344
12-September-2021 to 11-September 2022	1,18,943	0	0	1,18,943
12-September-2022 to 11-September 2023	1,18,110	0	0	1,18,110
12-September-2023 to 11-September 2024	1,17,284	0	0	1,17,284
12-September-2024 to 11-September 2025	1,16,463	0	0	1,16,463
12-September-2025 to 11-September 2026	1,15,647	0	0	1,15,647
12-September-2026 to 11-September 2027	1,14,838	0	0	1,14,838
12-September-2027 to 11-September 2028	1,14,034	0	0	1,14,034

12-September-2028 to 11-September 2029	1,13,236	0	0	1,13,219
12-September-2029 to 11-September 2030	1,12,443	0	0	1,12,426
Total	**10,87,342**			**10,87,342**
Total number of Crediting years	10			
Annual Average over the crediting period	1,08,734	0	0	1,08,734

B.7. Monitoring plan

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

>>

Data / Parameter Table 2.

Data / Parameter:	**$EG_{facility,y}$**
Methodology reference	ACM0002: Grid-connected electricity generation from renewable sources, Version 21.0 AMS I. D: Grid connected renewable electricity generation. v18.0
Data unit	MWh/Year
Description	Quantity of net electricity generation supplied by the project (Solar) plant/unit to the grid in year y
Measured/calculated /default	Measured & calculated
Data source	Credit note/ JMR/Form B reports/ monthly generation report from state electricity board/DISCOM
Value(s) of monitored parameter applied with basis	183,241
Measurement/ Monitoring equipment	

Project 1	**Main Mater**	**Check Meter**
Type of meter	Trivector Bi-directional meters	
Location of meter	Substation	
Accuracy of meter	0.2s	
Serial number of meters	Q0302380	Q0302379
Calibration frequency	Once in 5 years	
Date of Calibration/ validity	Details to be provided	
	Details to be provided	
	050042456	

	<table><tr><td>Reference No. of Calibration Certificate</td><td colspan="2">050042456</td></tr><tr><td>Calibration Status</td><td>Calibrated</td><td>Calibrated</td></tr></table> Energy meters of accuracy class 0.2s. Main and Check meters are installed at the substation by the electricity utility to measure the net exported electricity from the plant.
Frequency of Measuring/reading	Continuous
Recording frequency	Monthly
Calculation method (if applicable)	The value of net electricity supplied to the grid as per Monthly Joint Meter Reading Report forms the basis for calculation of the emission reductions, which can be cross-checked from the invoice raised to Consumer. The Net electricity is calculated based on Export - import. Monthly meter readings are taken from the main and check meter installed at metering point and certified by the representatives of DISCOM Officials and the representatives of the project participant. The export and import values of the Monthly Joint Meter Reports is cross checked with the export and import values mentioned in invoice.
QA/QC procedures	The meter(s) shall be calibrated and maintained by the DISCOMs as per their own schedule, and this frequency of meter calibration is not within the control of the Project Owner. Calibration of electricity meters is carried out in-line with the National standard which recommends at least once in 5-year calibration or whenever abnormal difference/inconsistency is observed between main meter and check meter.
Purpose of data	Baseline Emission Calculations.
Additional comments	NA

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

Data / Parameter:	**CO_2 emissions**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*

Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	CO_2 emissions reductions per year
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>GHG emission reductions (tCO2/year)</td></tr><tr><td>Frequency of monitoring</td><td>Continuously measured and monthly recorded</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>Monitored data will be stored and archived till the end of the crediting period</td></tr></table>
Remarks	

Data / Parameter:	**Solid waste Pollution from Hazardous wastes**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Hazardous waste generation during the operation of the project activity which is treated and disposed of as per the law.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Hazardous waste generation (tonnes/year)</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>Should be treated as per the Hazardous and waste management rules, 2016</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	

<table>
<tr><td>Data / Parameter:</td><td>Solid waste pollution from E-wastes</td></tr>
<tr><td>Purpose:</td><td>To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.</td></tr>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>E-waste generation during the operation of the project activity, is treated and disposed of as per the law.</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td>E-waste generation (tonnes/year)</td></tr>
<tr><td>Frequency of monitoring</td><td>Annual</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>E-Waste Management Amendment rules, 2018</td></tr>
<tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr>
</table>
</td></tr>
<tr><td>Remarks</td><td></td></tr>
</table>

<table>
<tr><td>Data / Parameter:</td><td>Solid waste pollution from end-of-life products / equipment</td></tr>
<tr><td>Purpose:</td><td>To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.</td></tr>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td>E-waste from the electrical equipment, panels at the end of its life time.</td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td>E-waste generation (tonnes)</td></tr>
<tr><td>Frequency of monitoring</td><td>Annual</td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td>E-Waste Management Amendment rules, 2018</td></tr>
<tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr>
</table>
</td></tr>
<tr><td>Remarks</td><td></td></tr>
</table>

Data / Parameter:	**Replacing fossil fuels with renewable sources of energy**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Net quantity of renewable energy generated from the power plant, which otherwise would have been generated from the combustion of fossil fuels.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: Electricity generation by the project activity (MWh) Frequency of monitoring: Monthly Legal /regulatory / corporate limits (if any): - QA/QC: Energy meters will be calibrated as per schedule. Records will be maintained and archived till the end of the crediting period.
Remarks	

Monitoring of Social Safeguard Parameters:

Data / Parameter:	**Long-term jobs (> 1 year) created**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Long term job opportunities created during the operation of the project activity.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	Parameter to be monitored: Employment records Frequency of monitoring: Annual Legal /regulatory / corporate limits (if any): Employment is in compliance to the Labour Act QA/QC: Records will be maintained and archived till the end of the crediting period

Remarks	

Data / Parameter:	**Sources of income generation increased/reduced**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Additional employment and O&M services in the project region
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	
Remarks	

Parameter to be monitored	Employee records, O&M contracts
Frequency of monitoring	Annual
Legal /regulatory / corporate limits (if any)	Minimum wages in compliance to the Labour Act
QA/QC	Records will be maintained and archived till the end of the crediting period

Data / Parameter:	**Non-Discrimination Practices**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Policy to ensure that there is no discrimination based on gender, racism, religion etc. during the recruitment process

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Company policy</td></tr><tr><td>Frequency of monitoring</td><td>Continuous</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>In compliance to the company policy</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	-

Data / Parameter:	**Occupational health hazards**
Purpose:	*To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Cause of Physical hazards in project sites due to human intervention or technical failure or emergency
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Number of trainings</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>In compliance to the EHS policy</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	

Data / Parameter:	**Reducing / increasing accidents/incidents/fatality**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.

Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Cause of Physical hazards in project sites due to human intervention or technical failure or emergency
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Number of trainings & physical hazards/incidents</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>In compliance to the EHS policy</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	

Data / Parameter:	**Job related training imparted or not**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Technical and Non-Technical trainings provided to employees as per the training needs
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Number of trainings</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	

Data / Parameter:	**Project-related knowledge dissemination effective or not**

Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	O&M Trainings provided to employees
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Training Records and O&M manual</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	

Data / Parameter:	**Community and rural welfare**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Contribution of Project activity to the Economic, Environmental, Economical, and social well-being for the community.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>Community Development Activities</td></tr><tr><td>Frequency of monitoring</td><td>Annual</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>Records will be maintained and archived till the end of the crediting period</td></tr></table>
Remarks	

SDG Parameters Monitoring:

Data / Parameter:	**Amount of renewable energy supplied to grid for consumption**

Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Net quantity of renewable energy supplied by the project activity during the year y
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	

Parameter to be monitored	Quantity of net electricity generation supplied by the plant to the grid in year y
Frequency of monitoring	Continuously measured and monthly recorded
Legal /regulatory / corporate limits (if any)	-
QA/QC	-

Remarks	

Data / Parameter:	**Average earnings of females and male employees engaged in the project and segregated by age and persons with disabilities**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Average hourly earnings of employees, by sex, age, occupation, and persons with disabilities.
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	

Parameter to be monitored	1. No of employment (with bifurcation on number by sex, age group and where applicable, persons with disabilities) 2. Average earnings 3. Policy for Nondiscrimination and equal pay for the work of equal value.
Frequency of monitoring	Annual
Legal /regulatory / corporate limits (if any)	Minimum Wages in compliance to the Labour Act
QA/QC	

Remarks	

Data / Parameter:	**Reductions in Emissions (tCO2e) per unit of product due to project**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	CO_2 emissions reductions per year
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>GHG emission reductions (tCO2/year)</td></tr><tr><td>Frequency of monitoring</td><td>Continuously measured and monthly recorded</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>Monitored data will be stored and archived till the end of the crediting period</td></tr></table>
Remarks	

Data / Parameter:	**Amount of emissions reductions achieved by project under UNFCCCs/ GCC market mechanism**
Purpose:	To demonstrate positive impacts of aspects wrt baseline scenario / BAU / pre-existing scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Quantity of CO_2 emissions reduced

Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td>GHG emission reductions (tCO_2/year)</td></tr><tr><td>Frequency of monitoring</td><td>Continuously measured and monthly recorded</td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td>-</td></tr><tr><td>QA/QC</td><td>Monitored data will be stored and archived till the end of the crediting period</td></tr></table>
Remarks	

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

>> There are no parameters identified as harmful and scored as negative indicator. Hence, monitoring is not required under this section

Data / Parameter:	**XX**
Purpose:	*To demonstrate compliance of XXXX aspects to legal/regulatory/corporate requirements or to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.*
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate "harmless" condition or demonstrate Impact on SDG	<table><tr><td colspan="2"></td></tr><tr><td>Parameter to be monitored</td><td></td></tr><tr><td>Frequency of monitoring</td><td></td></tr><tr><td>Legal /regulatory / corporate limits (if any)</td><td></td></tr><tr><td>QA/QC</td><td></td></tr></table>

Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)	

S.No.	Action and targets	Responsibility	Resource Requirement	Target to be Achieved by *(insert date)*	Key Performance Indicators (KPI)	Targets achieved on *(insert date)*
1						
2						
3						
4						
5						
6						
Date of Closing the Program:						

B.7.3. Sampling plan

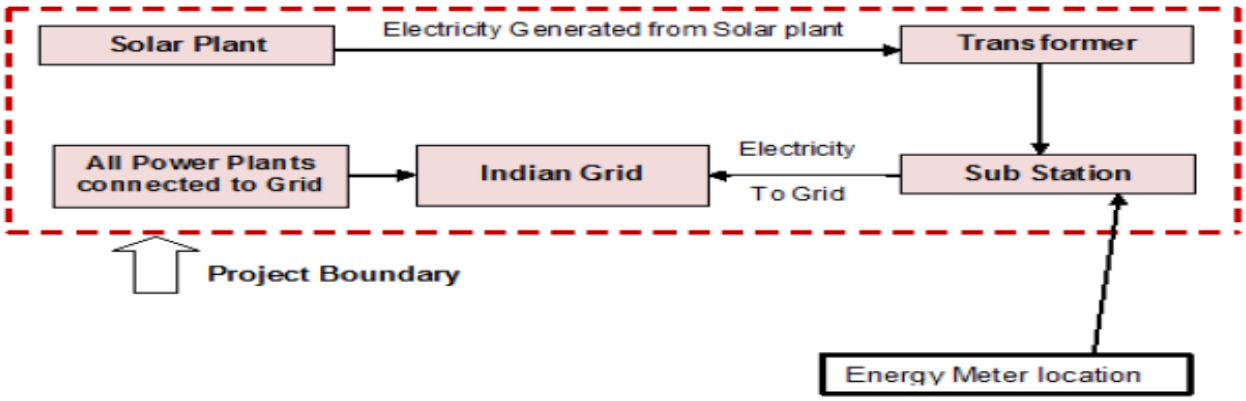
>> No sampling plan is required.

B.7.4. Other elements of the monitoring plan

>> The monitoring plan is developed in accordance with the modalities and procedures for GCC project activities and is proposed for grid-connected solar power project being implemented in Assam, India. 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 project owner has entered into agreement with the O&M Contractor for the operation and maintenance of Solar Plant. O&M contractor will provide a monthly report, which includes generation data, major breakdown events and machine availability. Project manager is responsible for recording of monthly meter readings of export and import. Monthly power export and import data will be sent regularly to site in charge of each project separately

The electricity generated from the project activity will be supplied to the national grid for the complete project lifetime under a long-term PPA with the consumers. The electricity generated from the project activity before entering the grid at the connection point will be measured by digital kilowatt hour (kWh) meters. The power meters at the connection point are bi-directional nature which records the net export and import. Both main and check meters of +/-0.2s accuracy class have been installed at the substation. These are the 3-phase bi-directional trivector meters.



Monitoring Process at project site

The metering and data collection system are installed and used to monitor the parameters including:

1. Power output of the project exported to the national grid during the year y ($EG_{export,y}$)
2. The amount of electricity the plant imported from the national grid in the year y ($EG_{import, y}$).
3. Net electricity of the plant is exported to the national grid during the year y ($EG_{facility,y}$) using for calculating baseline emissions, calculated according to the following formula:

$EG_{facility,y} = EG_{y,export} - EG_{y,import}$

The electricity generated from the project activity will be supplied to the national grid for the complete project lifetime under a long-term PPA with the consumers. The electricity generated from the project activity before entering the grid at the connection point will be measured by digital kilowatt hour (kWh) meters. The power meters at the connection point are bi-directional nature. The metering system includes the main system and back-up systems. The back-up systems will be used in case of failing of the main meter.

Data from the operating meters will be measured continuously. Additionally, monthly manual readings will be taken from the operating meters. Monthly, DISCOM staff and staff of the operation division of the power plant will cross-check manual readings from the power meter with the electronically recorded data and sign a joint balance sheet which indicates the amount of power fed into the grid within that month.

This joint balance sheet is also the basis of payment by the consumer to the project proponent. Hence, the monitoring plan is well integrated into the standard DISCOM procedures

The steps of monitoring the electricity supplied to the national grid and the electricity imported from grid by the proposed project are as follows:

1. The electricity supplied by the project to the grid and electricity imported from the grid are measured automatically by the bi-directional meter systems (main and backup power meters). The data is measured continuously

2. Persons in charge of data record and meter supervisor from the Project Developer together with staff from DISCOM shall read and collect data from power meters on the first day of every month, the result will be signed by both parties and kept respectively.

3. The data from the backup power meters will be cross checked with the data from main power meter. The data from back-up system will be used in case of failing of the main meter;

4. The Project developer provides the record of main, backup power meters, copy of invoices and other related documents to the verifier.

All monitored data will be stored for at least two years after the end of crediting period or the last issuance of ACCs for this project activity, whichever occurs later.

Monitoring roles and responsibilities:

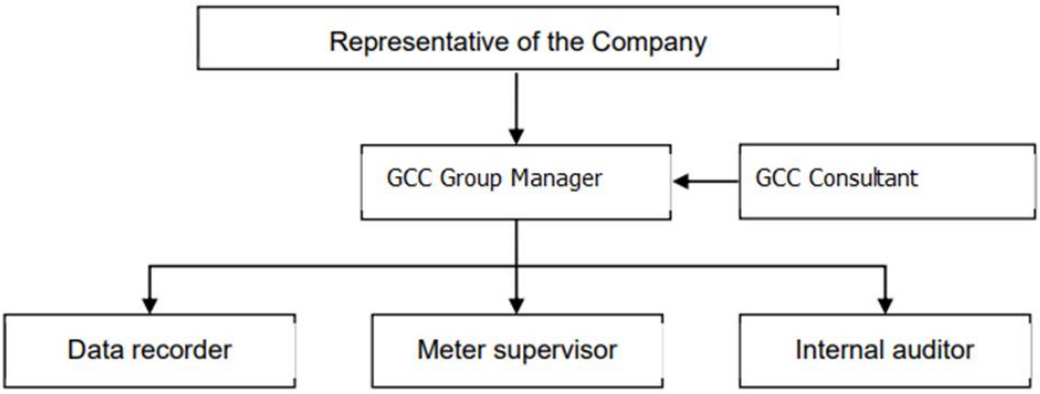


Figure: Structure of the monitoring group

The responsibilities of each person involved are elaborated as follows:

Person	Responsibility
Representative of the Company	Legal representative of the Project Company Review the monitoring report annually
GCC group manager	Managing the whole GCC business of the project, guiding and supervising data recorder after trained by GCC consultant.
GCC consultant	Providing trainings and technical support about GCC monitoring plan
Data recorder	Collecting and recording data every month.
Meter supervisor	Checking power meter periodically according to relevant regulation.

Internal auditor	Checking the monitoring procedures, double checking the collected data.

Personal Training:
The project employs qualified and experienced persons for plant operation. The training period shall be for three months, as this would be adequate and necessary to ensure proper imparting of the objective. The training course will be thoroughly and meticulously designed, highlighting the objectives, salient features, operational aspects and trouble shooting.

Emergency preparedness:
In case of any unforeseen event that is not covered under this monitoring plan, staff of the operation division will immediately inform the chief of the operation division. The chief of the operation division is then responsible to ensure that the cause for the unforeseen event is detected, the event is remedied and for the period in which the unforeseen event has occurred uncertainty in data gathered is limited as much as possible.

- In normal condition, the data of main power meter will be used as the basis of payment by the DISCOM to the PO and to calculate the emission reductions by the project activity.
- In case the main power meter is in failure and the backup power meter is still in good operation, the result of the backup meter will be used to calculate the emission reduction by the project activity.
- In case of both main and backup power meters are in failure, the Project Owner and the DISCOM will jointly calculate a conservative estimate of power supplied to the grid. The assumptions used to estimate net electricity supply to the grid will be signed by both a representative of the project owner as well as a representative of the DISCOM
- In case any power meters are in failure, the Project Owner will inform DISCOM immediately and contract with the authorized party to verify/ calibrate and/or replace the failed power meter.

Internal auditing
No requirement of internal audit for the data monitored as the data is measured by the energy meter installed by DISCOM (government authority) and the reading is recorded every month by jointly by PD & representative from DISCOM. The main energy meter readings are verified against the reading of the backup meter to check any considerable variation. In case, considerable variation found, then either main meter reading or check meter reading whichever lower will be considered. The electricity readings recorded are used for electricity invoicing to Consumer. Hence, the data collected is of high accuracy and authorized by DISCOM

Data recording & archiving: The project proponent shall maintain data both in electronic form and hard copies. The monitored data shall be archived till 2 years after the completion of crediting period.

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

>> As per the paragraph 38 of the project standard V3.1, start of commercial operations has been considered as the start date. Hence project commissioning date (COD), on which project is connected to grid and started generating power and exporting to the grid there by started generating GHG emission reductions is considered as start date and is 12/09/2020.
As the project start date is after 1st January 2016 it complies with the GCC project standard guidelines.

C.2. Expected operational lifetime of the Project Activity

>>25 Years 00 Months.

C.3. Crediting period of the Project Activity

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

>>12/09/2020 to 11/09/2030

C.3.2. Duration of crediting period

>>10 years i.e., from 12/09/2020 to 11/09/2030

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. Solar PV project activity operations do not result in direct air pollution, noise pollution. 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 and management action plans

>>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. Further amendments to the notification

have been done on 23/03/202042. As per the notification:

“Solar Photovoltaic (PV) Power projects, Solar Thermal Power Plants and development of Solar Parks, etc. are not required prior environmental clearance or environmental permission. So, the project is considered environmentally safe and EIA is not required.

Section E. Environmental and social safeguards

>> The main purpose of the environment and social safeguard assessment is to identify, evaluate and manage environmental and social impacts that may arise due to implementation and operation of the project. the solar power project is not likely to have significant adverse environmental and social impacts during the construction & operation period of the project activity.

Further, with reference to the CPCB modified direction No. F.No.B-29012/IPC-VI/2017-18/; dated November 17, 2017 43solar 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.

[42] http://environmentclearance.nic.in/writereaddata/om/6998FGGHOI_Gaztte_EIA2020_Comments.pdf
[43] https://cpcb.nic.in/openpdffile.php?id=TGF0ZXN0RmlsZS9fMTU2NzgzOTg1OF9tZWRpYXBob3RvMTk2MDYucGRm

E.1. Environmental safeguards

>>

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards								Project Owner's Conclusion		GCC Project Verifier's Conclusion (To be included in Project Verification Report only)
		Description of Impact *(positive or negative)*	**Legal/ voluntary corporate requirement / 84roject 8484/ voluntary corporate threshold Limits**	**Do-No-Harm Risk Assessment (choose which ever is applicable)**			**Risk Mitigation Action Plans for aspects marked as Harmful**		**Performance indicator for monitoring of impact**	***Ex-ante* scoring of environmental impact**	***Explanation of the Conclusion***	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational Controls**	**Program of Risk Management Actions**	**Monitoring parameter and frequency of monitoring**	**Ex- Ante scoring of the environmental impact (as per scoring matrix Appendix-02)**	**Ex- Ante description and justification/explanation of the scoring of the environmental impact**	**Verification Process**
Environmental Aspects on the identified categories[44] indicated below.	*Indicators for environmental impacts*	*Describe and identify anticipated and actual significant environmental impacts, both positive and negative from all sources (stationary and mobile) during normal and abnormal/emergency conditions, that may result from the construction and operations of the Project Activity, within and outside the project boundary, over which the Project Owner(s) has/have control.*	*Describe the applicable national regulatory requirements /legal limits / voluntary corporate limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Not Applicable***	*If environmental impacts exist but are expected to be in compliance with applicable national 84roject 8484 /stricter voluntary corporate requirements and will be within*	*If negative environmental impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as '**Harmful** at least to a level that is in compliance with*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce or eliminate the risk of impacts that have been identified as **Harmful**.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well including the data source.*	*-1* *0* *+1*	*Confirm the score of environmental impact of the project with respect to the aspect and its monitored value in relation to legal /regulatory limits (if any) including basis of conclusion.*	*Describe how the GCC Verifier has assessed that the impact of the Project Activity against the particular aspect and in case of "harmful impacts" how has the project adopted Risk Mitigation Action Plans to mitigate the risks of negative environmental impacts to levels that are unlikely to cause any harm as well as the net positive impacts of the project with respect to the most*

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

					legal/ voluntary corporate limits by way of plant design and operating principles, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as ***Harmless*** */If the project has a positive impact on the environment mark it as "harmless" as well.*	*legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be 85roject 85 as* ***Harmful***	*applicable legal/regulatory requirements or industry best practice or stricter voluntary corporate requirements*					*likely baseline alternative.* *.*
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 I*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 I (i)*	*Paragraph 13 I (ii)*	*Paragraph 12 I and Paragraph 13 (f)*	*Paragraph 22*		*Paragraph 24 and Paragraph 26 (a) (i)*
Environment – *Air*	*SO_x emissions (EA01)*	-	-	-	-	-	-	-	-	-	-	-
	NO_x emissions (EA02)	-	-	-	-	-	-	-	-	-	-	-

	CO_2 emissions (EA03)	The project is expected to reduce CO_2 emissions wrt to baseline scenario of generation of equivalent amount of power in grid connected power plant	-	-	Harmless The overall impact is positive with respect to the baseline alternative.	-	-	-	GHG emission reduction (Tonnes of CO2e / Yr.) The parameter will be monitored on monthly basis	+1	The overall impact is positive with respect to the baseline and hence the impact is harmless	-
	CO emissions (EA04)	-	-	-	-	-	-	-	-	-	-	-
	Suspended particulate matter (SPM) emissions (EA05)	-	-	-	-	-	-	-	-	-	-	-
	Fly ash generation (EA06)	-	-	-	-	-	-	-	-	-	-	-
	Non-Methane Volatile Organic Compounds (NMVOCs) (EA07)	-	-	-	-	-	-	-	-	-	-	-
	Odor (EA08)	-	-	-	-	-	-	-	-	-	-	-
	Noise Pollution (EA09)	-	-	-	-	-	-	-	-	-	-	-
	Others (EA10)											
	Add more rows if required and corresponding notation											

	with EA as prefix)											
Environment – *Land*	*Solid waste Pollution from Plastics (EL-01)*	-	-	-	-	-	-	-	-	-	-	-
	Solid waste Pollution from Hazardous wastes (EL02)	Project anticipates generating hazardous waste (transformer oil).	Hazardous and waste management rules 2016, [45]	-	Harmless Project owner will dispose the hazardous waste (transformer oil) for recycling through the licensed hazardous waste vendor	-	-	-	Hazardous waste (Transformer Oil) quantity generated and disposed will be continuously monitored and recorded in the hazardous waste register.	+1	The impact is unlikely to cause any harm.	-
	Solid waste Pollution from Bio-medical wastes (EL03)	-	-	-	-	-	-	-	-	-	-	-
	Solid waste Pollution from E-wastes (EL04)	E- waste generation from the Solar Power Project in terms of damaged solar panels, electronic equipment wires and computer auxiliary etc	E-Waste Management Amendme	-	Harmless Lifetime of the project activity is	-	-	-	quantity of E-waste discarded at the end of life time will be monitored and recorded.	+1	The impact is unlikely to cause any harm.	-

[45] https://cpcb.nic.in/rules/

			nt rules, 2018[46]		25 years. Project Owner will collect, store and dispose the E-waste to the licensed vendors/ manufacturers at the end of life of products/ equipment's in compliance to the E-waste Management rules.							
	Solid waste Pollution from Batteries (EL05)	-	-	-	-	-	-	-	-	-	-	-
	Solid waste Pollution from end-of-life products/ equipment (EL06)	In the absence of the project activity no Solid waste Pollution from end-of-life products/ equipment will be generated. Project activity may result in the E-waste from the panels and other electronic products at the end of its lifetime.	E-Waste Management Amendment rules, 2018	-	Harmless Lifetime of the project activity is 25 years. Project Owner will collect, store and dispose the E-waste to the licensed vendors/	-	-	-	quantity of waste discarded at the end of life time will be monitored and recorded	+1	The impact is unlikely to cause any harm.	-

[46] https://cpcb.nic.in/uploads/Projects/E-Waste/e-waste_amendment_notification_06.04.2018.pdf

					manufacturers at the end of life of products/ equipment's in compliance to the E-waste Management rules.							
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury) (EL07)	-	-	-	-	-	-	-	-	-	-	-
	land use change (change from cropland /forest land to project land) (EL08)	-	-	-	-	-	-	-	-	-	-	-
	Others (EL09)	-	-	-	-	-	-	-	-	-	-	-
	Add more rows if required	-	-	-	-	-	-	-	-	-	-	-
Environment – *Water*	*Reliability/ accessibility of water supply (EW01)*	-	-	-	-	-	-	-	-	-	-	-

	Water Consumption from ground and other sources (EW02)	Water will be consumed for cleaning of modules and domestic use.	-	-	Harmless Ground water will be consumed for the cleaning and domestic needs. Project is not located in the residential or rural area hence there is no impact on the existing usage pattern. Project owner also obtained the required licenses for the use of groundwater as per the local regulations	-	-	-	No Action Required	0	No Action Required	-
	Generation of wastewater (EW03)	-	-	-	-	-	-	-	-	-	-	-
	Wastewater discharge without/with insufficient	-	-	-	-	-	-	-	-	-	-	-

	treatment (EW04)											
	Pollution of Surface, Ground and/or Bodies of water (EW05)	-	-	-	-	-	-	-	-	-	-	-
	Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)	-	-	-	-	-	-	-	-	-	-	-
	Others (EW07)	-	-	-	-	-	-	-	-	-	-	-
	Add more rows if required											
Environment – *Natural Resources*	*Conserving mineral resources (ENR01)*	-	-	-	-	-	-	-	-	-	-	-
	Protecting/ enhancing plant life (ENR02)	-	-	-	-	-	-	-	-	-	-	-
	Protecting/ enhancing species diversity (ENR03)	-	-	-	-	-	-	-	-	-	-	-
	Protecting/ enhancing forests (ENR04)	-	-	-	-	-	-	-	-	-	-	-

	Protecting/ enhancing other depletable natural resources (ENR05)	This is a renewable energy power project generating power through the solar energy which is renewable source of energy and hence there is no impact	-	-	-	-	-	-	-	-	-	-
	Conservin g energy (ENR06)	There is no scope for energy conservation since it is a solar power plant generating and supplying electricity through the grid. Hence not applicable.	-	-	-	-	-	-	-	-	-	-
	Replacing fossil fuels with renewable sources of energy (ENR07)	The solar power project replaces fossil fuel with the renewable solar energy for the power generation by installing the solar power plant which would have been otherwise generated from the fossil fuel dominant	-	-	Harmless The overall impact is positive compare d to the baseline alternativ e	-	-	-	Considering the occurrence of emission reductions through the electricity generation form the Solar power project. This parameter will be monitored through the monthly Power generation from the proposed Solar Project. Monthly electricity generation will be monitored through the energy meters installed at the substation. Energy Generation reports will be provided for the verification of generation.	+1	The impact is unlikely to cause any harm.	-
	Replacing ODS with non-ODS refrigerant s (ENR08)	-	-	-	-	-	-	-	-	-	-	-
	Others (ENR09)											

	Add more rows if required											
Net Score:			**+5**									
Project Owner's Conclusion in PSF:			The Project Owner confirms that the Project Activity will not cause any net harm to Environment.									
GCC Project Verifier's Opinion:												

E.2. Social Safeguards

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Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards							Project Owner's Conclusion		GCC project Verifier's Conclusion (to be included in Project Verification Report only)
		Description of Impact (*positive or negative*)	**Legal requirement /Limit, Corporate policies / Industry best practice**	**Do-No-Harm Risk Assessment (choose which ever is applicable)**			**Risk Mitigation Action Plans (for aspects marked as Harmful)**	**Performance indicator for monitoring of impact.**	**Ex-ante scoring of environmental impact**	**Explanation of the Conclusion**	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational / Management Controls**	**Monitoring parameter and frequency of monitoring (as per scoring matrix Appendix-02)**	**Ex- Ante scoring of social impact of the project**	**Ex- Ante description and justification/explanation of the scoring of social impact of the project**	**Verification Process** **Will the Project Activity cause any harm?**
Social Aspects on the identified categories [47] ***indicated below.***	*Indicators for social impacts*	*Describe and identify actual and anticipated impacts on society and stakeholders, both positive or negative, from all source during normal and abnormal/emergency conditions that may result from constructing and operating of the Project Activity within or outside the project boundary, over which the project Owner(s) has/have control*	*Describe the applicable national regulatory requirements / legal limits or organizational policies or industry best practices related to the identified risks of social impacts*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If social impacts exist, but are expected to be in compliance with applicable national regulatory requirements/ stricter voluntary corporate limits by way of plant design and operating principles then the Project Activity is unlikely to cause any harm (is safe)*	*If negative social impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits then the Project Activity is likely to cause harm and shall be*	*Describe the operational or management controls that can be implemented as well as best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in nature along with the data source*	*-1* *0* *+1*	*Confirm the score of the social impacts of the project with respect to the aspect and its monitored value in relation to legal/regulatory limits (if any) including basis of conclusion*	*Describe how the GCC Verifier has assessed that the impact of Project Activity on social aspects (based on monitored parameters, quantitative or qualitative) and in case of "harmful aspects how has the project owner adopted Risk Mitigation Action / management actions plans and policies to mitigate the risks of*

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

					*and shall be indicated as **Harmless**), project having positive impact on society wrt. To the BAU / baseline scenario must also mark their aspect as **"harmless"***	*indicated as **Harmful***					*negative social impacts to levels that are unlikely to cause any harm.* *Also describe the positive impacts of the project on the society as compared to the baseline alternative or BAU scenario.*
Social – *Jobs*	*Long-term jobs (> 10 year) created/ lost (SJ01)*	*The project activity generates long term job opportunities during the operation the project activity.*	The project has ensured to meet the criteria and requirement defined in applicable Indian labor laws.	-	Harmless As the impact is positive in nature	-	-	No of Permanent Jobs to be monitored on annual basis. Ex-Ante 5 permanent jobs will be created.	+1	The project is unlikely to cause any harm.	-
	New short-term jobs (< 1 year) created/ lost (SJ02)	Project has created short term job opportunity which is less than a year to the skilled and unskilled people in the project region during the construction of the project activity through contractor.	-	-	Harmless This is a positive impact	-	-	Project is already commissioned and in operation. Hence this has been already achieved and need not be monitored further.	0	The project is unlikely to cause any harm.	-
	Sources of income generation increased / reduced (SJ03)	By creating additional employment and O&M services in the project region it creates the additional sources of income for the people employed for the project activity.	None	-	Harmless This is a positive impact	-	-	Number of employees. HR Records	+1	The project is unlikely to cause any harm.	-
	Avoiding discrimination when hiring people from different race, gender, ethnics, religion, marginalized groups, people with disabilities (SJ04) *(human rights)*	Project Owner establishes the policy to ensure that there is no discrimination based on gender, racism, religion etc. during the recruitment process.	None	-	Harmless Project Owner establishes the policy to ensure that there is no discrimination based on gender, racism, religion etc. during the	-	-	HR Policy	+1	The project is unlikely to cause any harm.	-

					recruitment process.						
Social – *Health & Safety*	*Disease prevention (SHS01)*	This is a renewable energy power generation project through solar energy which is clean energy and does not emit any gasses or chemicals impact the livelihood. There is no impact.	-	-	-	-	-	-	-	-	-
	Occupational health hazards (SHS02)	There is a possibility of physical hazards in project sites due to human intervention or technical failure or emergency	EHS policy	-	Harmless By establishing EHS policy guidelines, and imparting periodic trainings and providing PPE kits to employees and visitors	-	Establishing EHS Guidelines Imparting Trainings, Keeping Sign boards Providing PPE Kits.	1. PPEs 2.Trainings to Employees	+1	BY implementing Risk mitigation measures the project is unlikely to cause any harm	-
	Reducing / increasing accidents/Incidents/fatality (SHS03)	There is a possibility of accidents/incidents/near miss in project sites due to human intervention or technical failure or emergency.	EHS Policy	-	Harmless By establishing EHS policy guidelines, and imparting periodic trainings and providing PPE kits to employees and visitors	-	Establishing EHS Guidelines Imparting Trainings, Keeping Sign boards Providing PPE Kits.	1. PPEs 2.Trainings to Employees	+1	BY implementing Risk mitigation measures the project is unlikely to cause any harm	-
	Reducing / increasing crime (SHS04)	-	-	-	-	-	-	-	-	-	-
	Reducing / increasing food wastage (SHS05)	-	-	-	-	-	-	-	-	-	-
	Reducing / increasing indoor air pollution (SHS06)	This is a renewable energy power generation project through solar energy.	-	-	-	-	-	-	-	-	-

		Hence there is no impact on indoor air pollution.									
	Efficiency of health services (SHS07)	-	-	-	-	-	-	-	-	-	-
	Sanitation and waste management (SHS08)	Project will generate domestic waste during construction and operation of the project.	As per Factories Act, Solid waste management rules	-	Harmless The project will have proper sanitation facilities (during construction portable toilets, during operation permanent toilets) as per factories act and domestic waste generated will be disposed as per local regulations.	-	-	-	0	The project is unlikely to cause any harm.	-
	Other health and safety issues (SHS09)	-	-	-	-	-	-	-	-	-	-
	Add more rows if required	-	-	-	-	-	-	-	-	-	-
Social – *Education*	*specialized training / education to local personnel (SE01)*	The employees will receive on job training as per training needs. It imparts a positive impact by helping employees in all-round development.	None	-	Harmless It is a positive impact.	-	-	No of Trainings	+1	This is a positive impact.	-
	Educational services improved or not (SE02)	-	-	-	-	-	-	-	-	-	-

	Project-related knowledge dissemination effective or not (SE03)	The employees will receive on job training as per training needs. It imparts a positive impact by helping employees in all-round development.	None	-	Harmless It has a positive impact.	-	-	No of Trainings	+1	This has a positive impact.	-
	Other educational issues (SE03)	-	-	-	-	-	-	-	-	-	-
	Add more rows if required (SE04)	-	-	-	-	-	-	-	-	-	-
Social – *Welfare*	*Improving/ deteriorating working conditions (SW01)*	Project Owner will create and maintain the healthy and working conditions and try to maintain the work life balance for all the employees working for the project	None	-	Harm less Project Owner ensures and maintain the HR policy to ensure that all the employees are provided with healthy and non-deteriorating working conditions both at the corporate office and the project site as well.	-	Taking the employee feedback on work life balance. Conducting the employee employer interactive sessions. Addressing the employee grievances if any on immediate basis.	HR Policy	0	The project is unlikely to cause any harm.	-
	Community and rural welfare (indigenous people and communities) *(SW02)*	There is a positive impact on the community and rural welfare.	None	-	Harmless. Project activity implementation contributes to the Economic, Environmental, Economical, and social well-being for the community. 1.Empower and upskill the local people and youth by training and	-	Project Owner made the provision to receive any community needs if any and will address the needs during the project operational period.	The records of community development activities will be maintained	+1	This is a positive impact	-

					creating the employment to local people during construction and operation of the project activity. 2.Leads to the infrastructure development like internal roads in the nearby villages. 3.Creates economic development by empowering the other project developers to implement more projects in the project area.						
	Poverty alleviation (more people above poverty level) (SW03)	Though the project creates certain no of employment the impact is not considerable in scale.	-	-	-	-	-	-	-	-	-
	Improving / deteriorating wealth distribution/ generation of income and assets (SW04)	Though the project creates certain no of employment the impact is not considerable in scale.	-	-	-	-	-	-	-	-	-
	Increased or / deteriorating municipal revenues (SW05)	-	-	-	-	-	-	-	-	-	-
	Women's empowerment (SW06)	-	-	-	-	-	-	-	-	-	-

	(human rights)										
	Reduced / increased traffic congestion (SW07)	-	-	-	-	-	-	-	-	-	-
	Exploitation of Child labour *(human rights)* *(SW08)*	No Impact	Labour Act	-	Harmless Child Labour and forced labour are strictly prohibited by law	-	-	Company HR Policy and interview	0	The project is unlikely to cause any harm.	-
	Minimum wage protection *(human rights) (SW09)*	-	-	-	-	-	-	-	-	-	-
	Abuse at work place.(with specific reference to women and people with special disabilities / challenges) *(human rights) (SW10)*	-	-	-	-	-	-	-	-	-	-
	Other social welfare issues (SW11)	-	-	-	-	-	-	-	-	-	-
	Avoidance of human trafficking and forced labour *(human rights)* *(SW12)*	-	-	-	-	-	-	-	-	-	-
	Avoidance of forced eviction and/or partial physical or	-	-	-	-	-	-	-	-	-	-

	economic displacement of IPLCs *(human rights)* *(SW13)*										
	Provisions of resettlement and human settlement displacement *(human rights)* *(SW14)*	-	-	-	-	-	-	-	-	-	-
	Add more rows if required	-	-	-	-	-	-	-	-	-	-
Net Score:		**+8**									
Project Owner's Conclusion in PSF:		The Project Owner confirms that the Project Activity will not cause any net harm to society.									
GCC Project Verifier's Opinion:											

Section F. United Nations Sustainable Development Goals (SDG)

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UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs					GCC Project Verifier's Conclusion (To be included in Project Verification Report only)	
			Project-level SDGs	Project-level Targets/Actions		Contribution of Project-level Actions to SDG Targets	Monitoring	Verification Process	Are Goal/ Targets Likely to be Achieved?
Describe UN SDG targets and indicators *See: https://unstats.un.org/sdgs/indicators/indicators-list/*	*Describe the UN-level target(s) and corresponding indicator no(s)*	*Has the host country declared the SDG to be a national priority? Indicate Yes or No*	*Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope or creating a new indicator(s). Refer to previous column for guidance.*	*Define project-level targets/actions in line with nee project level indicators chosen. Define the target date by which the project Activity is expected to achieve the project-level SDG target(s).*		*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG indicator and its correspondi ng target, frequency of monitoring and data source*	*Describe how the GCC Verifier has verified the claims that the project is likely to achieve the identified Project level SDGs target(s).*	*Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or no)*
Goal 1: End poverty in all its forms everywhere	-	-	-	-	-	-	-	-	-

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	-	-	-	-	-	-	-	-	-
Goal 3. Ensure healthy lives and promote well-being for all at all ages	-	-	-	-	-	-	-	-	-
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	-	-	-	-	-	-	-	-	-
Goal 5. Achieve gender equality and empower all women and girls	-	-	-	-	-	-	-	-	-
Goal 6. Ensure availability and sustainable management of water and sanitation for all	-	-	-	-	-	-	-	-	-
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all	7.2 Increase global percentage of renewable energy	Yes	Amount of renewable energy supplied to grid for consumption.	Annually generate around 183,241 MWh of renewable energy using solar energy	Project is already in operation since 12/09/2020 and complies with the SDG target	Annually generate around 183,241 MWh of renewable energy using solar energy	Measurement of monthly energy generation from the project		
Goal 8. Promote sustained, inclusive, and sustainable	8.5 Full employment and	No	Average earning of females and male employees engaged in the	Create employment for minimum of 10	Project is already in operation	Create employment for minimum of	Number of Employment		

economic growth, full and productive employment and decent work for all	decent work with equal pay		project and segregated by age and persons with disabilities	people with minimum wages as per the minimum wages act of host country	since 12/09/2020 and complies with the SDG target	10 people with minimum wages as per the minimum wages act of host country	created and wages. Monitored through HR Records.		
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.4 Upgrade all industries and infrastructure for sustainability	No	Reductions in Emissions (tCO_2e) per unit of product due to project	Achieve annual emission reductions of 108,734 tCO_2e over the crediting period for the project	Project is already in operation since 12/09/2020 and complies with the SDG target	Achieve annual emission reductions of 108,734 tCO_2e over the crediting period for the project.	Measurement of monthly energy generation from the project. Calculation of amount of actual emission reductions achieved by the project.		
Goal 10. Reduce inequality within and among countries	-	-	-	-	-	-	-	-	-
Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable	-	-	-	-	-	-	-	-	-
Goal 12. Ensure sustainable consumption and production patterns	-	-	-	-	-	-	-	-	-
Goal 13. Take urgent action to combat climate change and its impacts	13.A Amount of emission reduction achieved by project	No	Reductions in Emissions (tCO_2e) per unit of product due to project	Achieve annual emission reductions of 108,734 tCO_2e over the crediting period for the project	Project is already in operation since 12/09/2020 and complies with the SDG target	Achieve annual emission reductions of 108,734 tCO_2e over the crediting period for the project	Measurement of monthly energy generation from the project. Calculation of amount of		

	under UNFCCC / GORD / Domestic market mechanism						actual emission reductions achieved by the projectt.		
Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	-	-	-	-	-	-	-	-	-
Goal 15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	-	-	-	-	-	-	-	-	-
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels	-	-	-	-	-	-	-	-	-
Goal 17. Strengthen the means of implementation and revitalize the global partnership for	-	-	-	-	-	-	-	-	-

sustainable development									

SUMMARY	Targeted	Likely to be Achieved
Total Number of SDGs	**+4**	**+4**
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF	**Gold**	**Gold**

Section G. Local stakeholder consultation

G.1. MODALITIES FOR LOCAL STAKEHOLDER CONSULTATION

There is no mandatory regulations and definitive rules in the host country to conduct a local stakeholder consultation for the solar power projects in India.

Project owner has conducted the Local stakeholder consultation on along with the ESIA team as a part of the Environmental and Social Impact Assessment (ESIA) study for all the projects. Project Owner has below described and demonstrated the local stakeholder consultation process undertaken for the Project Activity.

Scope of Consultation:

The scope of this Local Stakeholder Consultation meeting is to provide an opportunity to engage stakeholders in a meaningful manner at an early stage of the project activity which helps them to understand the project, participate in decision-making and exchange views and/or concerns regarding the project impacts and opportunities. This also enables or helps the project owner to identify, avoid and minimize adverse impacts and establish ongoing communications with relevant stakeholders during the lifetime of the project activity.

Means of Inviting Stakeholders:

Since the local communities are the predominant stakeholders for the meeting sending individual invitations is not a possible option. So, the local people were invited through the public notice which is more appropriate. For village authorities and officials' invitations were handed over as they were available locally in the project area.

Group of Stakeholders to be Involved

The stakeholders identified and invited for the meeting were relevant and are directly /indirectly affected by the project. The invitees include individuals from the local communities irrespective of caste, creed, gender or community, representatives of local authority and official representatives. Group of stakeholders identified for this project includes following

1. Local villagers in the study area, and villagers outside the study area where an existing project is operational (Both men and woman gender were invited to the meeting at the plant site).
2. Land sellers
3. Village officials such as village/panchayat president and Village development officer
4. Local Government officers such as Environmental officers and engineers.

Meeting details:

LSC meeting details of all the project activities are presented below:

Project Activity 1:

Stakeholder type	Name of the person	Department/Address	Date
Project Proponent	Manoj shah	Azure Power	27/05/2019
	Sameer chandna	Azure Power	27/05/2019
	Kanwardeep singh narula	Azure Power	27/05/2019
Health centre	Atul Daimary, Supervisor	Primary Sub Health Center, Lailangpara	27/05/2019
	Rupalim Sinha (ANM)	Primary Sub Health Center, Lailangpara	27/05/2019
	Bijoli Devi (ANM) Worker	Primary Sub Health Center, Lailangpara	27/05/2019
Revenue officer	Pinkei Borgoyari	Revenue	28/05/2019
Educational institution	Mabel Narzary	Lailangpara High school	28/05/2019
	Komal sundra basomatan	Lailangpara High school	28/05/2019
	Jagmurti brahma	Lailangpara Lower Primary school	28/05/2019
Villagers	• Mr. Nakar Singh, • Mr. Bom Singh, • Mr. Nakta Ram, • Mr. Dan Ram, • Mr. Mohan Singh, • Mr. Sugana Ram, • Mr. Ghevar Ram, • Mr. Jhethu Singh, • Mr. Mukhand Singh, • Mr. Suphu Kumar,	Sarbaherua	28/05/2019

	• Mr. Chander Kaur • Mr. Prem Kaur, • Mr. Tej Singh, • Mr. Aman Sigh, • Mr. Raul Singh • Mr. Padam Singh, • Mr. Man Singh, • Mr. Sawal Singh • Mr. Punjraj Singh		

Project Activity 2:

Stakeholder type	Name of the person	Department/Address	Date
Project Proponent	Manoj shah	Azure Power	22/08/2019
	Manoj Das	Azure Power	22/08/2019
	Kanwardeep singh narula	Azure Power	22/08/2019
Revenue officer	NA	Revenue	23/08/2019
Anganwadi centre	Pramila Daimary	Banialehitha Anganwadi Center	23/08/2019
	Binita Daimary	Banialehitha Anganwadi Center	23/08/2019
	Niru Gaigary	Banialehitha Anganwadi Center	23/08/2019
Health centre	Dr. Aprajita Patar (MBBS)	Bhalukghatu state dispensary	23/08/2019
	Dr. Swapan Kr Sen (MBBS)	Bhalukghatu state dispensary	23/08/2019
	Dalimi Nath Das, Nurse	Bhalukghatu state dispensary	23/08/2019

	Rabiul Hussain (pharmacist)	Bhalukghatu state dispensary	23/08/2019
Villagers	Bipla Palita	Makeli	23/08/2019
	Thanda kalita	Makeli	23/08/2019
	Dolita kolita	Makeli	23/08/2019
	Ikon kalita	Makeli	23/08/2019
	Jyoti Prabha Ralik	Makeli	23/08/2019

Project Activity 3:

Stakeholder type	**Name of the person**	**Department/Address**	**Date**
Project Proponent	Mr. Sumit Barat	Azure Power	14/11/2019
	Kamardeep Narula	Azure Power	14/11/2019
Land Aggregator	Sunanda Chakarwarti	Nagaon	14/11/2019
	Gautam Kalita		14/11/2019
Revenue Circle Office	Shri Sanjib Dalai, Samaguria Rav. Circle	Nagaon	14/11/2019
Forest Ranger Samaguri & Nagaon	Mr Das	Forest Range office, Samaguri	14/11/2019
Educational Institution	Maneshwar Das, Head Master	Gohai Grant School	14/11/2019
	Junu Mai Bora, teacher	Gohai Grant School	14/11/2019
	Middle Goswami, Teacher	Lower Primary School	14/11/2019
	Monija Begum, Teacher	Lower Primary School	14/11/2019
	Tapan Krishan Boro, Teacher	Lower Primary School	14/11/2019
	Reena Rong pipi, Helper	Lower Primary School	14/11/2019
Villagers	• Morami Aidew	Mikir Gaon Bamuni and Bor Lalung Gaon	14/11/2019

	• Rati Aidue • Pankaja Aidew • Jitendra Goha • Mukund Gohai • Gayatri Gohai • Anamika Gohai • John Singh Engiti • Pradeep Shahar • Buddheshear Rongpi • Stephan • Rajan Timu • Shikari Bay • Kundu Maji • Bihu Ram Timu • Mangal Singh Inti • Kaveri Terang Pith • Ompu Timungpi • Reena Rogpi • Malini Doloi • Rastina Bepi • Reena Terangpi • Purnima Ingjai Pi • Romila Cropi		

Project Activity 4:

Stakeholder type	Name of the person	Department/Address	Date
Project Proponent	Mr. Manoj Shah	Azure Power	16/12/2019
	Manjji/ dina/ manish (site senior management trainee)	Azure Power	16/12/2019
	Manish Ranjan (senior executive manager)	Azure Power	16/12/2019
	Azure- raju das (senior manager) crafts	Azure Power	16/12/2019
Land Aggregator	Nashiruddin	ADA enterprise	16/12/2019
	Islamuddin- subordinate	ADA enterprise	16/12/2019
	Abdul rauf- subordinate	ADA enterprise	16/12/2019
Revenue Circle Office	Fakhar Uddin lashkar (supervisor)	Revenue	16/12/2019
	Hira Babu singh (patwari)		16/12/2019
Educational Institution	Lili Sinha	587 no lalangpar lower primary school	17/12/2019
	Jamuna Singha	587 no lalangpar lower primary school	17/12/2019
	Lalin Kumar	587 no lalangpar lower primary school	17/12/2019
Resettlement officer	Jaisika R Lal Singha-	Cachar, ADM	17/12/2019
Health centre	Dr. H.M Murtaza Lashkar	Bansakandi primary health centre	17/12/2019
	Bipal das/ M. Ahmad Farbeen (doctor)	Bansakandi primary health centre	17/12/2019
Villagers	• Innutamba singha • Mazuriddin • Abdul Malik	Lalang Kitta Labocpar	17/12/2019

	• Raman Singha • Mani Mohan • Raju Singha • Dasini devi • Rimila devi • Ranjana devi • Romita devi		

G.2. SUMMARY OF COMMENTS RECEIVED

All the respondents, communities in and around study area were aware about the proposed solar power project and expressed their support and cooperation for project activity. They didn't seem to have any objections or problem related to the development of solar power project in their area.

Local people were concerned about the employment opportunity from the proposed solar power project. The Project Owner has assured, that they will prefer local people for unskilled labors during project construction period, while based on the skills and education they will provide employment opportunities to eligible youths of the locality.

The summary of comments received during the meeting and responses provided by PP representative are provided below:

Stakeholder comment	**Explanation provided by PP representative**
What is the lifetime of the project? What will happen to modules after the lifetime?	The lifetime of the solar power plant is about 25 years. After the lifetime, the solar modules will be disposed as per the regulatory requirements.
Does the solar plant affect the rain in the local area?	No, the solar module installation does have impact over the rainfall.
Will the solar power plant project pose a risk to human health and the environment?	No. Solar PV Power plants do not present any risks to public health and the environment.
What will be benefits due to upcoming solar project to local villagers	The proposed project will enhance the economy of the local area It will provide employment opportunity to local community during construction period. Monetary gains, education, health, sanitation, water conservation, plantation and improvement in general environment through community development plan. The PP

	will provide some Corporate Social Responsibility's (CSR) activity in the locality to improvement livelihoods standard of villagers.
Is there any vacancy in the solar plant?	Currently there is no vacancy available at the plant. However, you can provide your CV to the plant in-charge. If any vacancy arises in the future, the first preference will be given to qualified people from the local area.

G.3. CONSIDERATION OF COMMENTS RECEIVED

There were no concerns raised by the local stakeholders. The potential benefits of the project activity for the local stakeholders were acknowledged.

No negative comments have been received on project activity from any of the local stakeholders consulted. As all comments were very positive about the project, no further action is required.

There were no further 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

Host country approval will be submitted in later stages as end when required.

APPENDIX 1. CONTACT INFORMATION OF PROJECT OWNERS

Organization name	Azure Power Forty Private Limited
Country	India
Address	5th Floor, Southern Park, D-II, Saket, New Delhi - 110017
Telephone	9468442097
Fax	--
E-mail	Sunil.hansu@azurepower.com
Website	www.azurepower.com
Contact person	Mr. Sunil Hansu

Organization name	Azure Power India Private Limited
Country	India
Address	5th Floor, Southern Park, D-II, Saket, New Delhi – 110017
Telephone	+91 9468 442 097
Fax	-
E-mail	sunil.hansu@azurepower.com
Website	www.azurepower.com
Contact person	Mr. Sunil Hansu

APPENDIX 2. AFFIRMATION REGARDING PUBLIC FUNDING

>> Not Applicable

APPENDIX 3. APPLICABILITY OF METHODOLOGY(IES)

>> Refer section B.2

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

>> Not Applicable

APPENDIX 5. FURTHER BACKGROUND INFORMATION ON MONITORING PLAN

>> Not Applicable

APPENDIX 6. SUMMARY REPORT OF COMMENTS RECEIVED FROM LOCAL STAKEHOLDERS

>> Refer section G.2

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

>> Not Applicable

Complete this form in accordance with the instructions attached at the end of this form.	
Program Name	
Project registration number	
Date of registration in the program	
Title of the Project Activity	
Project de-registration reference number	
Date of de-registration of the Project	

Project Participants (Authorized by the host / annex 1 country letter of approval)	
Country where the project is located	
Applied methodology(ies) (Provide reference and version number(s))	
Pre-registration changes to the Project Activity (Tick as applicable)	

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

Post-registration changes to the Project Activity

(Tick as applicable)

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

Crediting Period(s)	

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

<table>
<tr><td>Details of Previous Issuance Requests</td><td>
<table>
<tr><th>Issuance Request</th><th>Period (start & end dates)</th><th>ERs as per registered PDD</th><th>Quantity of Credits requested to be issued</th><th>Quantity of Credits issued</th></tr>
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</td></tr>
<tr><td>List any open issues in the Validation and last Verification Report (e.g., FARs, if any) and how they have been addressed</td><td></td></tr>
<tr><td>Any other relevant information that has not been reported in the registered documents and that may have adverse impacts on the environmental integrity of the Project Activity</td><td></td></tr>
<tr><td>Provide the list of all the registered documents related to this project, as available on the program’s website and the corresponding URLs.</td><td></td></tr>
</table>

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

>>

The overall 'Bundled Project' consists of 04 projects with diverse capacities with an aggregated capacity of 90 MW. 04 different solar power projects located in principally different districts of the host country India are bundled together. The electricity generated will be exported to national Grid. For this Bundled Project, the Letter of Authorization states that there is only one legal owner namely Azure Power Forty Private Limited and which is authorized to be the only focal point to act on behalf of all the project owners and has authority to manage the project and will have the ownership of ACCs. The investment decision for all the activities in the bundle were taken in FY 2020-21 within 1 year of each other and confirms that a post-tax equity IRR without ACC revenues, over IRR period of 25 years is used to demonstrate that the economic attractiveness of the bundles is lower than the post-tax benchmark for such projects in the whole country.

All the three project activities in the Bundle are legally owned and promoted by Group Company Azure Power India Private Limited through its subsidiary Azure Power Forty Private Limited. It is the Special purpose vehicle 100% owned by Azure group with common directors in the subsidiary company. They have authorized Sunil Hansu as the authorized focal point on behalf of all the project activities in the bundle.

Milestones:

Project Activity	Investment Decision Date	Commissioning Date
Project Activity 1	08/02/2021	12/09/2020
Project Activity 2	04/10/2021	30/12/2021
Project Activity 3	24/12/2019	27/01/2022
Project Activity 4	04/10/2021	31/03/2022

As per the above table, investment decision date and commission dates for all the three project activities in the Bundle are within the one-year range.

Analysis:

Two-level analysis for formulation of homogeneous bundles:

The Project owner has applied two-level analysis for formulation of homogeneous bundles as per section 4 of 'ClarificationNo. 1' version (v1.3) and as described below:

(a) Level 1 Analysis: Consideration of key aspects for developing Homogeneous Bundles:

An analysis of the project indicates that the 03 Project activities (A1 ~A4 consisting of four solar power generation projects spread over different districts within the Host country and these villages apply same solar energy based technology and methodology, ACM0002, v21.0, has same baseline (which is national electricity grid), generate the same output (electricity), apply the same additionality approach (Investment analysis) at bundle level but are located in different villages of single district of the host country. The investment decisions of the 03 activities were made within a year time of each other. This indicates that all the activities included within the individual bundles are located at distinct areas and homogenous and therefore can apply requirements (baseline, additionality, monitoring, etc.) at the bundle level.

(a) Level 2 Analysis: Criteria for differentiating Bundles:

The analysis of the information presented above demonstrates that those 04 different activities (A1~ A4 consisting of four different solar power generation units spread over 4 different districts) are into a single bundle are similar at the bundle level.

Other considerations for Bundled Projects

The analysis of the information presented in Table below demonstrates that all other requirements stipulated by paragraphs 13-19 of Clarification No.1 are complied.

Based on the outcome of the above analysis, this bundled project has been designed to have four levels as depicted in figure below.

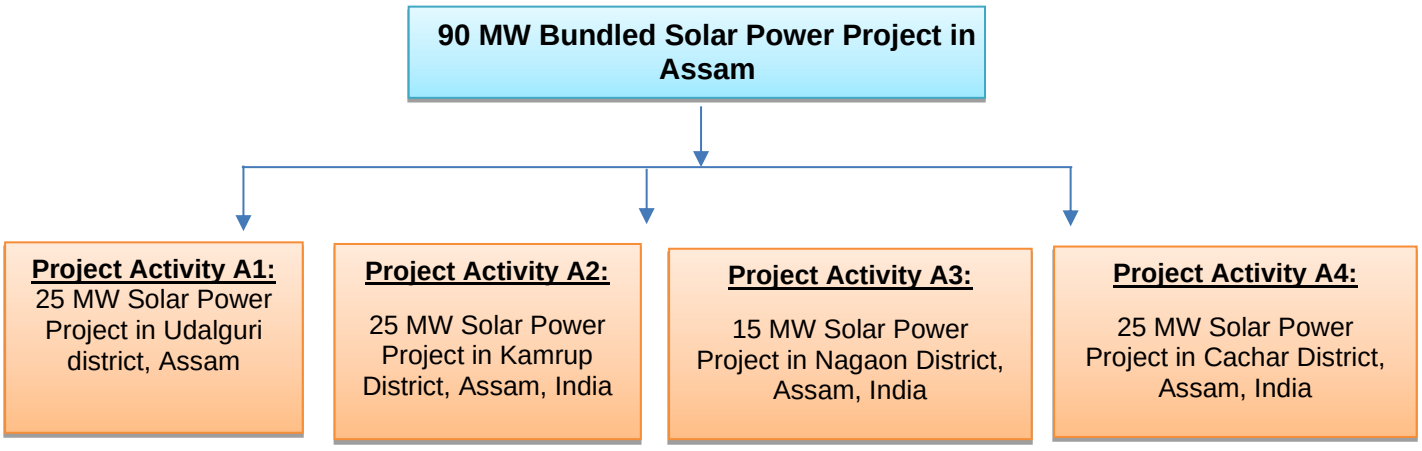

Figure: Levels in Bundled Project

Table 1: Level-1 analysis - Consideration of key aspects for developing Homogeneous Bundles:						
Requirements of paragraphs 10-11 of Clarification No. 1		**Reference**	**Similar Bundles/Activities** (color coded)			
			Bundled Project			
			Project Activity A1	**Project Activity A2**	**Project Activity A3**	**Project Activity A4**
Similarity in Technological Considerations	Technology	Paragraph 11 (i)	Solar Power	Solar Power	Solar Power	Solar Power
	Methodology		ACM0002, v21.0 , AMS 1-D, v18.0			
	Cross-effects exists or not		No cross effects exist			
	Same output of each activity (e.g., heat or power or cogeneration);	Paragraph 12 (b)	Electricity			
Similarity in Economic and Policy Considerations	Additionality approach (investment or barrier analysis as stipulated by the applicable methodology)	Paragraph 11 (ii)	Investment Analysis			
	All the activities within the bundle should have same barrier(s).	Paragraph 12 (d) (iii)	Does not apply barrier analysis. Not applicable.			
	Investment analysis method and financial indicator (e.g., post tax project or equity IRR, or pre-tax project or equity IRR, NPV, etc.)	Paragraph 11 (ii)	Post-Tax Equity IRR.			
	Comparable key input values (which constitute more than 20% of total project investment costs and total project revenues, which is applicable as		Key input values to the investment analysis (such as investment cost/MW, electricity tariff, PLF (%) and net electricity generation/MW) for activities A1~A4 do not vary more than 5%			

	per the specific project situation) **(Key differentiating parameter between bundles)**					
	Same investment decision year		The investment decisions for activities A1 ~ A4 is within one year of each other.			
	Same investment benchmark applicable for additionality analysis (e.g. Cost of Equity, weighed average cost of capital).		14.49% Post-Tax equity Benchmark			
	Location		Village: Sarbaheura District: Udalguri, Assam	Village: Makeli, Tehsil: Samaria, District: Kamrup, Assam	Village: Nagaon District, Assam, India	Village: Polairband District: Cachar, Assam
	Supplying electricity to the different grids/ captive purposes		Exported to national Grid	Exported to national Grid	Exported to national Grid	Exported to national Grid
	Project capacity		25 MW	25 MW	15 MW	25 MW
	Project investors profile		Owned by Azure Power Forty Private Limited	Owned by Azure Power Forty Private Limited	Owned by Azure Power Forty Private Limited	Owned by Azure Power Forty Private Limited
	Legal ownership of bundles		All the four project activities in the Bundle are legally owned and promoted by Group Company Azure Power India Private Limited through its subsidiary Azure Power Forty Private Limited. It is the Special purpose vehicle 100% owned by Azure group with common directors in the subsidiary company. They have authorized Sunil Hansu as the authorized focal point on behalf of all the project activities in the bundle. The Letter of Authorization states that there is only one legal owner Azure Power Forty Private Limited, which is			

			authorized to be the only focal point to act on behalf of all the project owners and has authority to manage the project and will have the ownership of ACCs
Similarity in Environmental or Methodological Considerations	Application of same methodology (or approved combinations where cross effects are addressed)	Paragraph 11 (iii) i	ACM0002, v21.0
	Same baseline approach and the outcome	Paragraph 11 (iii) ii	The baseline for all the activities in the bundle is national electricity grid.
	Same monitoring approach and parameters for the part included for GHG	Paragraph 11 (iii) iiii	All projects in this category have same monitoring approach and measurement parameters.

Table 2: Level 2- analysis - Criteria for differentiating the Bundles:			
Requirements of paragraph 12 of Clarification No. 1	**Reference**	**Description of how the activities within bundles are similar**	**Are the requirements met?**
Do the bundles have same baseline of each activity within a bundle?	Paragraph 12 (a)	Yes, the baseline for all the activities in all the bundle is national electricity grid.	Yes
Do the bundles have same output of each activity (e.g., heat or power or cogeneration);	Paragraph 12 (b)	Yes, all the all the activities in all the bundle generate the same output (electricity)	Yes
Do the bundles have same Technology for each activity (e.g., wind or solar)?	Paragraph 12 (c)	Yes, all the activities in a bundle apply the same technology Solar power generation	Yes
Do the bundles have same additionality approach stipulated by the applicable methodology: i. If a large scale CDM/GCC as well as small scale CDM methodology, considered for cross-effects, is applied in a bundled project, the additionality approach stipulated by the large-scale methodology will supersede.	Paragraph 12 (d)	Yes, all activities in bundle apply the same additionality approach and apply single Investment analysis at bundle level.	Yes

ii. If investment analysis is applied: a) Similar key investment costs of activities (which constitute more than 20% of either total project investment costs or total project revenues, which is applicable as per the specific project situation); and b) Same investment benchmark applicable for additionality analysis (e.g: Cost of Equity, weighed average cost of capital). iii. If barrier analysis is used: a. All the activities within the bundle should have same barrier(s).			

Table 3: Other Considerations for Bundled Project

Requirements of paragraph 13-19 of Clarification No. 1		**Reference**	**Description of how the requirements are met**	**Requirement met?**
Other considerations for Bundled Projects	The crediting period of entire project Bundle shall be same	Paragraph 13	The crediting period for the entire bundled project is for a period of 10 years from 12/09/2020 till 11/09/2030	Yes
	The start date of operation of the Bundled Project shall be the earliest date among all of the bundles.	Paragraph 13	The start date of operation of the Bundled Project is 12/09/2020, which is the earliest date among all of the activities.	Yes
	Separate monitoring plans shall be defined for each bundle in a bundled project that account for: a) GHG Reduction Component b) For voluntary certification labels (E+, S+). These labels for the entire bundled project shall be issued if all the bundles demonstrate no-net-harm; and	Paragraph 14	This is a single bundled project with four solar power projects in the bundle. Hence similar monitoring plans are provided for GHG, as well as voluntary certifications (E+. S+ and SDG+).	Yes

	c) For voluntary SDG+ certification labels. The SDG label for the entire project shall be issued corresponding to the lowest SDG label achieved among all the bundles			
	If combination of methodologies is applied, the cross-effects between methodologies and/or technologies/measures and/or bundles within and across the bundles shall be addressed and impacts considered as per 'Guidelines for the consideration of interactive effects for the application of multiple CDM methodologies for a programme of activities (EB68, Annex 3)'	Paragraph 15	As single methodology (ACM0002, v21.0) is applied by all the activities in all the 3 bundles, so there are no cross effects.	Yes
	The Letter of Authorization shall be signed by each organization and legal owner of the activities included in bundle and bundled project and shall nominate and authorize a single Project Owner (organization to act on behalf of the all the parties/ legal owners/ Project Owners) for GCC project development (to open account in GCC Portal, for document submission, etc) and for ownership of ACCs.	Paragraph 16	The Letter of Authorization states that there is only one legal owner Azure Power Forty Private Limited, which is authorized to be the only focal point to act on behalf of all the project owners and has authority to manage the project and will have the ownership of ACCs.	Yes
	Common practice for the bundled project shall be defined as per the CDM Tool for Common Practice. The common practice shall be ascertained for each bundle or activity depending upon the level for which additionality is defined.	Paragraph 18	Yes, all activities in bundle apply the same additionality approach and apply single Investment analysis at bundle level. Bundles Similarly, common practice analysis is also applied at the bundle level.	Yes

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

>> Not Applicable

DOCUMENT HISTORY

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

		approval under CORSIA[48];
V 2.0	25/06/2019	▪ Revised version released for approval by the GCC Steering Committee. ▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

[48]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

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