GLOBAL CARBON COUNCIL

Project Submission Form

V3.2 - 2020

Contents

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<tr><td>Project Owner(s)
(Shall be consistent with De-registered CDM Type B Projects)</td><td>M/s Tata Power Renewables Energy Limited</td></tr>
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<tr><td>Eligible GCC Project Type as per the Project Standard
(Tick applicable project type)</td><td>☒ Type A:
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<tr><td>Minimum compliance requirements</td><td>☒ Real and Measurable GHG Reductions
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[1] Owners of Type B projects shall fill in the form provided in Appendix 7.

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<tr><td></td><td>☒ No GHG Double Counting
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<tr><td>Choose optional and additional requirements
(Tick applicable label categories)</td><td>☒ Do-no-net-harm Safeguards to address Environmental Impacts
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(Shall be approved by the GCC or the CDM)</td><td>ACM0002: Grid-connected electricity generation from renewable sources --- Version 20.0</td></tr>
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<tr><td>Applicable Rules and Requirements for Project Owners
(Tick applicable Rules and Requirements)</td><td>
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<tr><td rowspan="7">☒ GCC Rules and Requirements[2]</td><td>☒ Project Standard</td><td>31/12/2020</td><td>03.1</td></tr>
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<tr><td>☐ Add rows if required</td><td></td><td></td></tr>
<tr><td></td><td>☒ Approved CDM Methodology ACM0001</td><td>ACM0001</td><td>20.0</td></tr>
</table>
</td></tr>
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[2] GCC Program rules and requirements: https://www.globalcarboncouncil.com/resource-centre.html

	☒ CDM Rules[3]	☒ Tool for the demonstration and assessment of additionality	TOOL 01	7.0
		☒ Combined tool to identify the baseline scenario and demonstrate additionality	TOOL 02	7.0
		☒ Tool to calculate the emission factor for an electricity system	TOOL 07	7.0
		☐ Demonstration of additionality of microscale project activities	TOOL 19	
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		☐ Additionality of first-of-its-kind project activities	TOOL 23	
		☒ Common practice	TOOL 24	3.1
		☒ Investment analysis	TOOL 27	11.0
		☐ Positive lists of technologies	TOOL 32	
		☐ Guidelines for objective demonstration and assessment of barriers		
		☐ Add rows if required		
Choose Third Party External 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			

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

[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 to be made by the Project Owner(s)[5] (Tick all applicable statements)	The Project Owner(s) declares that: ☒ The Project Activity complies with the eligibility of the applicable project type (A1, A2, B1 or B2) as stipulated by the Project Standard. ☒ The Project Activity shall start operations, and start generating emission reductions, on or after 1 January 2016. ☒ The Project Activity is eligible to be registered under the GCC program. ☒ No carbon credits generated by the proposed Project Activity will be claimed as carbon credits in any other GHG program anywhere in the world, either for compliance or voluntary purposes, for the entire 10-year GCC crediting period. ☒ The proposed Project Activity, if Type A, is NOT registered as a GHG Project Activity in any other GHG program or any other voluntary program anywhere in the world. ☒ The proposed Project Activity is NOT included as a component Project Activity (CPA) in a registered GHG Programme of Activities (PoA) under any GHG program (such as the CDM or any other voluntary program) anywhere in the world. ☒ The proposed Project Activity is NOT a CPA that has been excluded from a registered PoA under any GHG program (such as the CDM or any other voluntary program) anywhere in the world. Provide details (if any) below for the boxes ticked above.
	☒ If a GCC project chooses to apply to use ACCs under CORSIA, the Project Owner(s) is required to declare that they are aware that they must obtain and provide to the GCC and its Registry (operated by IHS Markit) a written attestation from the host country's national focal point (e.g., Ministry of Environment or Civil Aviation Authority) or focal point's designee, as required by CORSIA Emissions Unit Eligibility Criteria, which: ☒ Confirms the avoidance of double counting as required by CORSIA;

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

	☒ Shall be made publicly available prior to the use of units from the host country under CORSIA; and ☒ Places all responsibility on the Project Owner(s) to replace any and all doubly claimed or counted ACCs by the host country, in the GCC registry operated by IHS Markit. Provide details below for the boxes ticked above
	The Project Owner(s) declares that: ☒ All of the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct; ☒ 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 1-7	Details about the Project Activity are provided in Appendixes 1 through 7 to this document.
Name, designation, date and signature of the Project Owner(s)	**For Tata Power Renewables Energy Limited** **Sivanaryana Venkat Gavadhakatla,** **Group Head- Forecasting and Scheduling** **Signature-**  **Date 24/06/2022**

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 300 MW new greenfield project activity by, TATA Power Renewable Energy Limited, 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. Project activity involves installation of two Solar photovoltaic power generation projects of 50 MW and 250 MW in Dholera Gujarat. The two projects are commissioned and are currently operational. The generated power from the project activity is supplying the DISCOM. Project Owners have signed a Power Purchase agreement with the consumer organizations to supply the generated solar power at contracted unit of price.

SPV	Capacity	Location	Commissioning date (COD)	Average Electricity generation per annum(MWh)	Average Emission Reduction per annum tCO_2
Tata Power Renewables Energy Private Limited	250MW	Dholera, State- Gujarat	27/03/2022	**576,843**	**536,759**
	50 MW			**123,644**	**115,052**

The total power generation from the project activity is 700,488 MWh and emission reduction from the project activity is 651,811 tCO_2/Annum. In the absence of project activity, the power will be generated by thermal based power generation system in the Indian National Grid.

The sustainable development indicators of the project activity

The project activity is a clean energy generation technology implementation with Zero emission into the atmosphere and follows the following main sustainable development Indicators:

1. Social Well being

The project activity improves the social well-being of all the peoples living in and around the project area. The project improves the daily wages of the local peoples and increase the opportunities of local people to upgrade their skill and improve their technical knowledge in operating the Solar Generators. There is plenty scope for the overall development of the village area including improvement in road and infrastructure around the project area

2. Environmental Well being

The project activity is a green technology infusion in host country India and installation of Solar Panels reduces greenhouse gas emission into the atmosphere, thereby help in meeting the requirements of Article 6 of Kyoto protocol and national GHG inventory.

3. Economic Well being

The project activity will provide employment opportunity to all the men and woman living in that area. There is considerable direct and indirect permanent and temporary employment opportunity, leading to economic well-being of the people living in and around the project site

4. Technology Well being

The implementation of project activity aid in upgrading the technical knowledge of the people through technology transfer and green field activity

A.2. Location of the Project Activity

>>

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	**Latitude**	**Longitude**
50 MW Dholera Gujarat	N 22.1333(Decimal)	E 72.2(Decimal)
150 MW Dholera Gujarat	N $22^0$08'0"	E $72^0$12'0"

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, Central Inverters, Transformers and other relay and protection system.
Technical specifications of the components used during the project commissioning are given below

Specification	**For 250 MW**	**For 50 MW**
PV Module Technology	Half cut mono perk	Half cut mono perk
Cell (mm)	16X8 mm	16X8 mm
Dimensions (L*B*H)	2094X1038X35mm	2094X1038X35mm
Weight	23.3Kg	23.3Kg
Cable Cross Section size(mm^2)	4 Sqmm	4 Sqmm
No. of Cells and Connections	144 (6X24)	144 (6X24)

No. of Diodes	3	3

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[6], indicate if the host country has provided approval (Yes/No)
India	Tata Power Renewables Energy Private Limited	No

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

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

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
27/03/2022	26/03/2022	Tata Power Renewable Energy Private Limited	Offsetting 651,811 Tco2 for 10 Years of Crediting Period

A.6. Additional requirements for CORSIA

>>
Explained in Section E and F

Section B. Application of selected methodology(ies)

B.1. Reference to methodology(ies)

>>

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

[6] 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).

Applied Tools

Tool 01: Tool for the demonstration and assessment of additionality (Version 07.0.0 Annex 8).

Tool 02: Tool to calculate the emission factor for an electricity system (Version 07.0, Annex 4)

Tool 03: Tool to calculate baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"; (Version 03.0, EB 96, Annex 5).

B.2. Applicability of methodology(ies)

>>

Applicability	**Project activity vis-à-vis applicability Conditions**
This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	The project activity is installation of a new grid connected Solar power plant/ unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.
The methodology is applicable under the following conditions: (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (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	The proposed project activity is an installation of a new grid connected Solar power plant/ unit and hence criteria under point (a) is met. The project does not involve any capacity additions, retrofits or replacements and therefore this criteria under point (b) is not applicable.

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.	
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 (3), 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 (3), 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 (3), 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 (4), 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 an installation of a new grid connected Solar power plant/ unit and not Hydro power plant, therefore this criteria is not applicable for this project activity.
In the case of integrated hydro power projects, project proponent shall: • 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	The proposed project activity is an installation of a new grid connected Solar power plant/ unit and not Hydro power plant, therefore this criteria is not applicable for this project activity.

• Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	
The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units.	The project activity is installation of a new grid connected Solar power project/ unit and does not involve switching from fossil fuel to renewable energy, therefore criterion described in point (a) is not relevant to the project activity. This is a Wind power plant/ unit and not a biomass fired plant, therefore criterion described in point (b) is not applicable to the project activity.
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 project activity is a new grid connected solar power plant/ unit and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.

Additionally, the proposed project activity meets applicability criteria of the following tools:

TOOL 01: Tool for the demonstration and assessment of additionality[7]: Version 7.0.0.

[7] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

Project activities that apply this tool in context of approved methodology, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity." Refer in section B.5 of PSF for details where additionality of the project activity is demonstrated using TOOL 1.

TOOL 07: Tool to calculate the emission factor for an electricity system[8] Version 7.0

"This tool may be applied to estimate 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 (eg. Demand-side energy efficiency projects)". Refer to section B.4 of PSF for detailed calculation.

The project activity is a greenfield wind power generation plant and hence, according to the applied methodology, the baseline scenario is electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL 07: Tool to calculate the emission factor for an electricity system".

TOOL 24 Common practice[9] Version 3.1

Since the proposed project activity applies the methodological tool "Tool for the demonstration and assessment of additionality", this methodological tool is applicable to project activity

TOOL 27. Investment analysis[10] Version 11.0

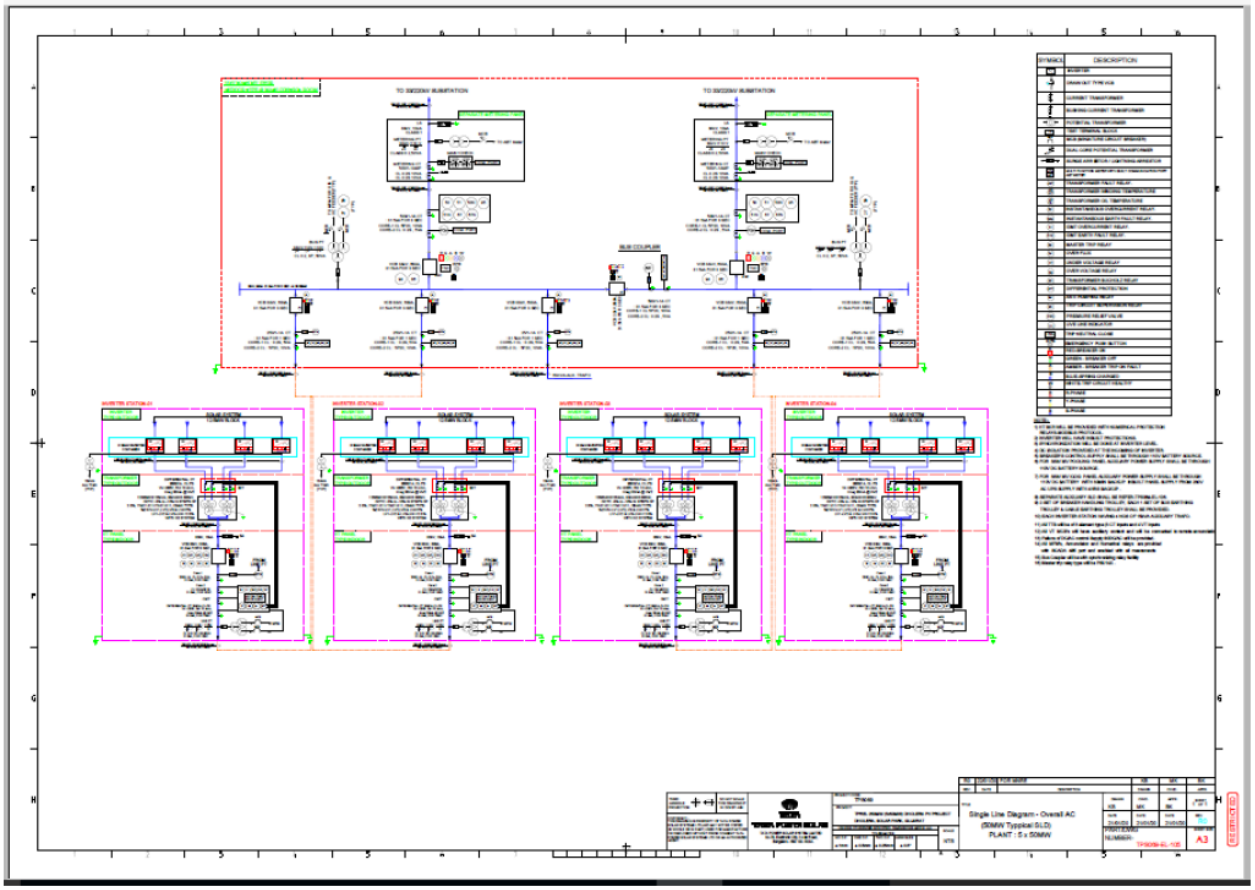
This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario. Refer to section B.5 of PSF for details.

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

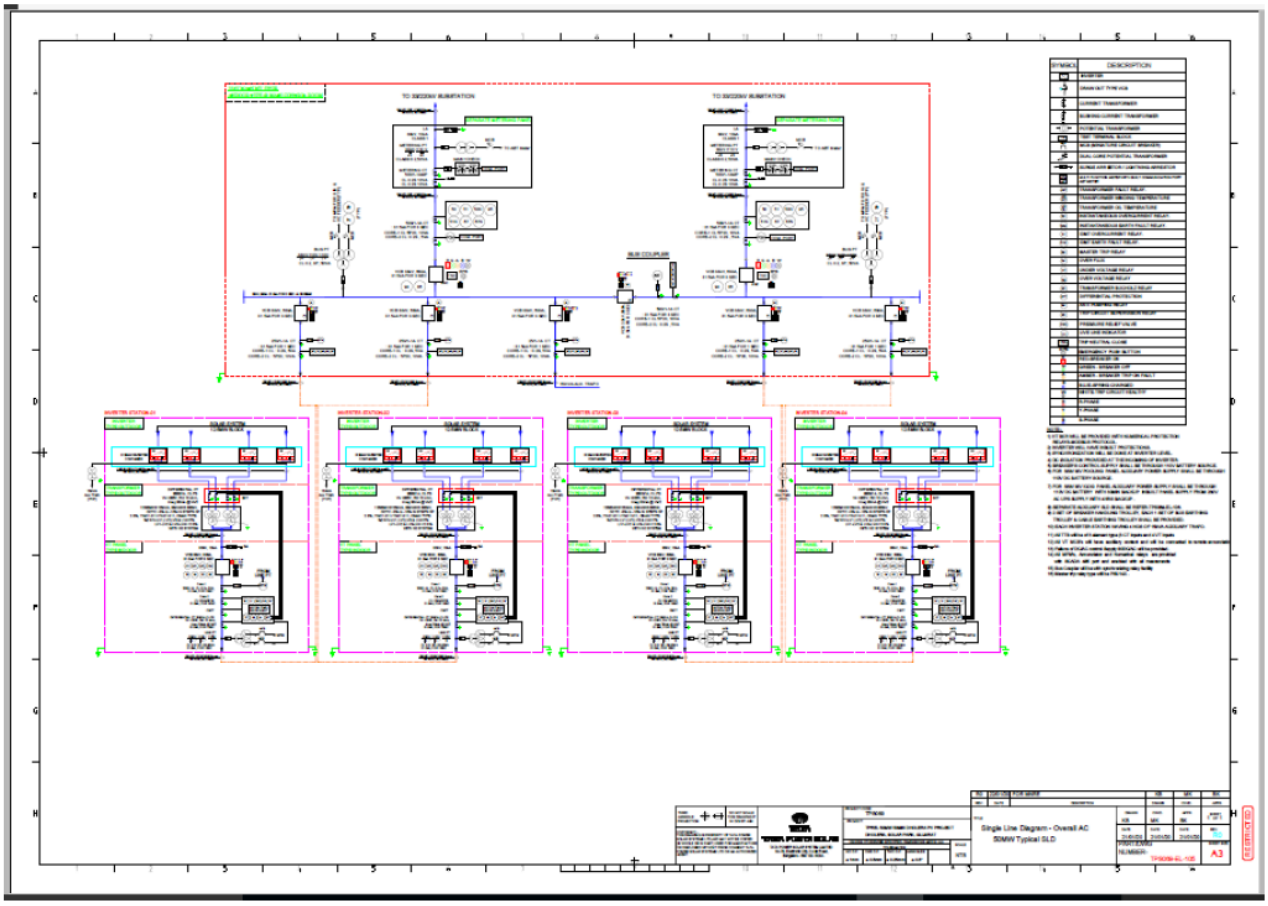
>>
As per the methodology, "the spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system that the project power plant is connected to."
The proposed project would be feeding the electricity in the Indian grid. Thus, all the power generation facilities connected to this grid form the project boundary for the purpose of baseline estimation.

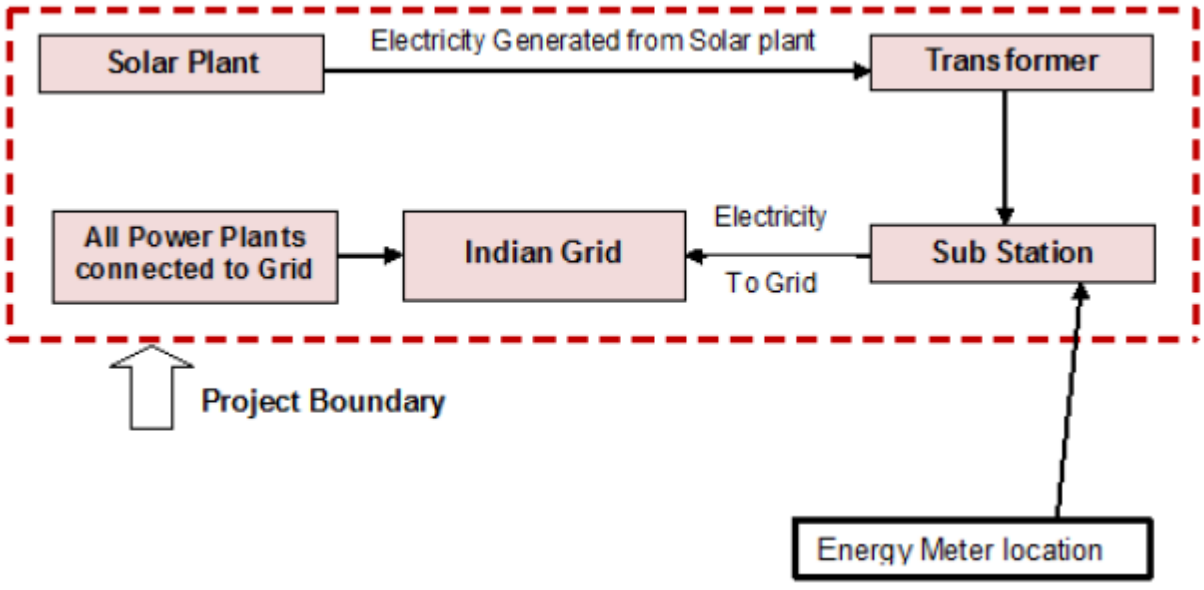
[8] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[9] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf/history_view
[10] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v11.0.pdf/history_view

The single line diagram for 250 MW is given below-



The single line diagram for 50 MW is given 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 emissions from electricity generation in fossil fuel fired power plants that are displaced due to project activity	CO_2	Yes	CO_2 emission that would have occurred in the absence of project activity from fossil fuel-based power plant.
		CH_4	No	Not applicable
		N_2O	No	Not applicable
Project Activity	Auxiliary power consumption due to operation of SPV sytems	CO_2	Yes	CDM Tool: "Tool to calculate baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"
		CH_4	No	Not applicable
		N_2O	No	Not applicable

B.4. Establishment and description of the baseline scenario

>>

As per the approved consolidated Methodology ACM0002 (Version 20.0, EB 105, Annex 3) "If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, 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 " Tool to calculate the emission factor for an electricity system" version 7.0.

The project activity involves setting up of WTGs plant to harness the power generation from wind to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. As per applicable methodology 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 the grid emission factor.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM), in accordance with the Tool to calculate the emission factor for an electricity system – Version 7.0. Calculations for this combined margin must be based on data from an official source (where available) and made

publically available. In India, Central Electricity Authority (CEA), Government of India provides this data, and accordingly the same has been used.

Baseline Emissions:

Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as

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

Where:

BE_y = Baseline emissions in year y (tCO_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" (tCO_2/MWh).

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

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9305 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline $C0_2$ Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9522 tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system in year y	Calculated as the last 3 year (2018-19, 2019-20 and 2020-21) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$	0.8653 tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 17.0. October 2021 published by Central Electricity Authority (CEA), Government of India

B.5. Demonstration of additionality

>>
The table below is only applicable if the proposed project activity is a type of project activity which is deemed automatically additional, as defined by the applied approved methodology or standardized baseline.

Specify the methodology, activity requirement or product requirement that establishes deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	Selected methodology has been applied together with the "tool to calculate the emission factor for an electricity system, version 7" and "tool for assessment and demonstration of additionality, version 7". These are the latest version of the methodology and related additionality & calculation tool.
Describe how the proposed project meets the criteria for deemed additionality.	1. Project without carbon revenue is not financially attractive as discussed in investment analysis section below (benchmark and sensitivity analysis). 2. Continuation of the current situation supply of equal amount of electricity by the newly built grid connected power plants. Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is an alternative 2 above and therefore reduces the emissions. 3. The project activity comes under white category as per local regulation, thus there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. Since project activity falls under white category and the non-polluting nature of project fulfils the compliance to the local laws and regulations The Project activity conforms to all the applicable laws and regulations in India: ✓ Power generation using renewable energy is not a legal requirement or a mandatory option. ✓ There are state and sectoral policies, framed primarily to encourage renewable power projects. ✓ These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments. ✓ The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation. ✓ There is no legal requirement on the choice of a particular technology for power generation ✓ The both alternatives are in compliance with laws and regulations required. There is no any mandatory requirement to implement the

	project activity. 4. In accordance with common practice analysis there is no plants similar to the proposed project and built without carbon revenue, the proposed type of project should not be considered as a common practice. Hence, project is additional in this aspect.

The present project generates power using solar energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline.

According to tool for demonstration and additionally the steps listed below are followed in detail:

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.

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

Sub-step 1a: Define alternatives to the project activity:
Identify realistic and credible alternative(s) available to the project owners or similar project developers that provide outputs or services comparable with the proposed project activity.

The purpose of the project activity is to generate electrical power using solar energy and feed the electricity generated to the grid. Hence, the following alternatives are considered:

Alternative 1: The proposed project activity not undertaken as a GCC project activity.

The PP could proceed with the implementation of the project without Carbon credit benefits. The electricity produced from the renewable energy project would have been sold to the grid. This is in compliance with all applicable legal and regulatory requirements and can be a part of the baseline. However, the Project activity is not feasible without revenues from sale of Carbon Credits. This argument has been discussed in step 2 of the Additionality section.

Alternative 2: No proposed project activity and equivalent amount of energy would have been produced by the grid electricity system through its currently running power plants and by new capacity addition to the grid i.e. Continuation of the present situation.

The PP would have continued without investment in Project activity with usual business activities. The grid would continue with the fossil fuel-based power projects and this would result in GHG emissions. Hence, the new capacity add-on from a fossil fuel-based power plant is appropriate, realistic & credible baseline alternative for the project activity.

Outcome of Sub-step 1a: All the realistic alternatives for the project activity have been enlisted above.
Thus, though two alternatives are mentioned above as per step of additionality tool, the first alternative is not possible as project activity is not viable without carbon credit benefits and second alternative is the baseline scenario for the project activity as per methodology as mentioned in section B.4 of PSF.

It is to be noted that being the green field project activity, "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 the "Tool to calculate the emission factor for an electricity system".

Sub-step 1b: Consistency with mandatory laws and regulations:
The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g., to mitigate local air pollution. The project activity comes under white category as per local regulation, thus there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. Since project activity falls under white category and the non-polluting nature of project fulfils the compliance to the local laws and regulations (This sub-step does not consider national and local policies that do not have legally-binding status.).

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006
- The factories act 1948

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using renewable energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage solar power projects.
- These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

The both alternatives are in compliance with laws and regulations required. There is no any mandatory requirement to implement the project activity.

Outcome of Sub-step 1b: Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. Since solar projects are categorized as white category, no any consent to operate required from pollution control board.

However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity in line with methodology.

Step 2: Investment analysis[11]

The investment analysis has been done in order to make an economic and financial evaluation of the project. No public funding or ODA are available in India for finance of this type of projects. For

[11] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v11.0.pdf

investment analysis, loan conditions have been determined considering the average market rates/term sheets signed with the banks.

Sub-step 2a: Determine appropriate analysis method

There are three options for the determination of analysis method which are:
- Simple Cost Analysis
- Investment Comparison Analysis and
- Benchmark Analysis

The Project activity envisages to export the power to Indian grid and the revenues from the sale of electricity would be generated in accordance with the terms and tariffs established in the Power Purchase Agreement (PPA). Thus, simple cost analysis (Option I) cannot be used as the analysis method as the sale of the units of generated electricity shall result in a revenue stream during the operations of the Project activity.

In the absence of the project activity grid electricity would have been the obvious choice for the Project which requires no investment. Hence investment comparison analysis (Option II) is also not appropriate for the project activity.

However, after eliminating Option I and Option II, the use of Benchmark analysis (Option III) is the method of analysis that has been selected as the most suitable method. This method determines the attractiveness of the project activity for the investors, as well as provides a measure of the viability of the investment to generate revenues during its operation, as compared with other avenues and investment options. Hence, the Benchmark analysis method is to be employed for analysis of the said project.

Sub-step 2b (Option III): Apply benchmark analysis
Choice of Benchmark:

According to the “Tool for demonstration and assessment of Additionality”, the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach. Therefore, in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.
As per Investment Analysis tool, Required/expected returns on equity are appropriate benchmarks for an equity IRR. The Equity IRR is considered as the financial indicator and the benchmarks used is cost of equity. Hence the benchmarks used are applicable to the project activity and the type of IRR calculation presented.

Hence, Project Owner has used Methodological Tool for Investment Analysis version. The default value as mentioned in Version 6, default return on equity value 10.55% (group1 project in India) is considered for the bundled project activity depending upon the project start date. PP has considered the same tool for default value of return on equity for the respective SPVs.

As per paragraph 16 of Appendix A of the above-mentioned document, “In situations where an investment analysis is carried out in nominal terms, project owners can convert the real term values provided in the table below to nominal values by adding the inflation rate. The inflation rate shall be

obtained from the inflation forecast of the central bank of the host c of the crediting period. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used". For the concerned project activity, the inflation rate has been considered from the inflation forecast published by International monetary fund (IMF).

As per para 19 of EB 101, Annex 11 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:

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

For 250 MW TATA POWER RENEWABLE ENERGY LIMITED at Dholera and 50 MW TATA POWER RENEWABLE ENERGY LIMITED at Dholera

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

Where:
- Default value for Real Benchmark = 10.55%
Inflation rate as per RBI (Reserve Bank of India) for 5 years forecast is 3.88%
Nominal benchmark = {(1+11.10%) *(1+4.80%)}-1
= 14.84%

The return on equity benchmark for the decision-making year 2019 is 14.84%

Sub-step 2c: Calculation and comparison of financial indicators

Key Assumptions supporting financial projections are provided in excel spreadsheet to the GCC Verifier. Based on result of IRR excel spreadsheets, equity IRR is less than Benchmark.

Internal Rate of Return (IRR) of the project has been calculated as 5.68% for 50 MW and 5.82% for 250 MW Tata Power Renewable Energy Limited. based on the parameters given above without considering the carbon revenue

The input assumption and the IRR outcome can be referred in below:

Parameters for IRR calculation of 50 MW

Details of the project		Source
State where the project is situated	Gujarat	
Capacity in Banda AC (MW)	50.0	As per DPR
Total Capacity in AC (MW)	50.0	As per DPR
Expected Date of Commissioning	27-Mar-22	As per PPA

Life of the plant (Yrs.)	25	As per Tech Specs
Generation and sale of electricity		
PLF (%)	29.13%	As per DPR
Total Annual generation (kWh)	12,75,89,400	Calculated Value
degradation	0.70%	As per DPR
Tariff rate at the decision making (INR/kWh)	2.75	As per DPR
Operation and maintenance cost and Insurance		
O & M Expenses (Mn)	25.96	As per DPR
Escalation in the operational expenses (%)	5.00%	As per DPR
O & M free for (Yr.)	0	As per DPR
Insurance (INR Mn.)	4.34	As per DPR
Financial parameters		
TOTAL COST (INR Mn.)	2,890.70	As per DPR
Equity Investment (INR Mn.)	722.68	As per DPR
Loan Amount (INR Mn.)	2,168.03	As per DPR
Term loan		
Margin (%)	25.00%	As per DPR
Loan Amount (INR Mn.)	2,168.03	Calculated Value
Interest rate (%)	10.00%	As per DPR
Loan Tenure (Qtr.)	64	As per DPR
Moratorium Period (Qtr.)	4	As per DPR
Repayment Period (Qtr.)	60	Calculated Value
Repayment instalments value (INR Mn.)	36.13	Calculated Value
1st instalment from (Qtr. end)	31-Mar-23	Considered from the next Quarter End
Working Capital		
No. of Days Receivables	60	As per CERC Order
O&M Expenses (Days)	30	As per CERC Order

Interest on Working Capital Debt	10.25%	As per CERC Order
Book Depreciation (SLM Method)		
Land Cost (INR Mn.)	-	Calculated Value
Gross Depreciable Value (INR Mn.)	2,890.70	Calculated Value
Salvage Value (%)	5.00%	Industrial Practice
Salvage value (INR Mn.)	144.54	Calculated Value
Net Depreciable Value (INR Mn.)	2,746.17	Calculated Value
Residual Value (INR Mn.)	144.54	Calculated Value
IT Depreciation (SLM Method)		
IT Depreciation Rate (%)	7.69%	As Per Income Tax , Depreciation rates for power generating units
Income Tax		
Financial Year	FY2018-19	
Income tax rate (%)	30.00%	Tax rates applicable to a domestic company
MAT (%)	18.50%	
Surcharge (%)	12.00%	
Health and Education Cess (%)	4.00%	
Final Tax rates		
Income tax rate (%)	34.94%	Calculated Value
MAT (%)	21.55%	Calculated Value
GST	**18.00%**	

Parameters for IRR calculation of 250 MW

Details of the project		Source
State where the project is situated	Gujarat	
Capacity in Banda AC (MW)	250.0	As per DPR
Total Capacity in AC (MW)	250.0	As per DPR
Expected Date of Commissioning	27-Mar-22	As per PPA
Life of the plant (Yrs.)	25	As per Tech Specs

Generation and sale of electricity		
PLF (%)	29.21%	As per DPR
Total Annual generation (kWh)	63,96,99,000	Calculated Value
degradation	0.70%	As per DPR
Tariff rate at the decision making (INR/kWh)	2.75	As per DPR
Operation and maintenance cost and Insurance		
O & M Expenses (Mn)	132.51	As per DPR
Escalation in the operational expenses (%)	5.00%	As per DPR
O & M free for (Yr.)	0	As per DPR
Insurance (INR Mn.)	21.50	As per DPR
Financial parameters		
TOTAL COST (INR Mn.)	14,331.30	As per DPR
Equity Investment (INR Mn.)	3,582.83	As per DPR
Loan Amount (INR Mn.)	10,748.48	As per DPR
Term loan		
Margin (%)	25.00%	As per DPR
Loan Amount (INR Mn.)	10,748.48	Calculated Value
Interest rate (%)	10.00%	As per DPR
Loan Tenure (Qtr.)	64	As per DPR
Moratorium Period (Qtr.)	4	As per DPR
Repayment Period (Qtr.)	60	Calculated Value
Repayment instalments value (INR Mn.)	179.14	Calculated Value
1st instalment from (Qtr. end)	31-Mar-23	Considered from the next Quarter End
Working Capital		
No. of Days Receivables	60	As per CERC Order
O&M Expenses (Days)	30	As per CERC Order
Interest on Working Capital Debt	10.25%	As per CERC Order

Book Depreciation (SLM Method)		
Land Cost (INR Mn.)	-	Calculated Value
Gross Depreciable Value (INR Mn.)	14,331.30	Calculated Value
Salvage Value (%)	5.00%	Industrial Practice
Salvage value (INR Mn.)	716.57	Calculated Value
Net Depreciable Value (INR Mn.)	13,614.74	Calculated Value
Residual Value (INR Mn.)	716.57	Calculated Value
IT Depreciation (SLM Method)		
IT Depreciation Rate (%)	7.69%	As Per Income Tax , Depreciation rates for power generating units
Income Tax		
Financial Year	FY2018-19	
Income tax rate (%)	30.00%	Tax rates applicable to a domestic company
MAT (%)	18.50%	
Surcharge (%)	12.00%	
Health and Education Cess (%)	4.00%	
Final Tax rates		
Income tax rate (%)	34.94%	Calculated Value
MAT (%)	21.55%	Calculated Value
GST	**18.00%**	

The obtained IRR for the 50 MW is 5.68 % and for 250 MW is 5.82% for this project activity that is below the equity benchmark value of 14.84%

Sub-step 2d: Sensitivity Analysis

Addressing Guidance 28 & 29 of EB 92, Annex 5, following factors has been subjected to sensitivity analysis:

1. PLF
2. O&M Cost
3. Project Cost
4. Tariff

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favorable conditions.

TATA POWER RENEWABLE ENERGY LIMITED 50 MW

Variation %	-10%	Normal	10%
PLF	3.61%	5.68%	7.60%
O&M	5.96%	5.68%	5.39%
Project Cost	7.51%	5.68%	4.08%
Tariff Rate	3.61%	5.68%	7.60%

TATA POWER RENEWABLE ENERGY LIMITED 250 MW

Variation %	-10%	Normal	10%
PLF	3.73%	5.82%	7.76%
O&M	6.11%	5.82%	5.52%
Project Cost	7.66%	5.82%	4.22%
Tariff Rate	3.73%	5.82%	7.76%

Outcome of Step 2:
This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark Equity IRR) for any of the investor. Thus, it can be easily concluded that project activity is additional & is not business as usual scenario.
The investment and sensitivity analysis shows that the ACC revenues will improve the financial indicators of the Project remarkably. Considering that figures above are based on a higher price rather than the government guaranteed floor price, optimistic estimations for yearly generation and that those figures do not reflect the risk for investment, role of carbon income is a most significant number to enable the project to proceed.

Step 3: Barrier analysis
Barrier analysis has not been used.

Step 4: Common practice analysis
The project activity involves generation of electricity from solar energy.

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

CPA for 250 MW
Step (1): Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity. The CPA is considered for individual projects .

Range	Capacity	Unit
+50%	375	MW

Capacity of the proposed project activity	250	MW
-50%	125	MW

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

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

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

The bundled project activity happened in Gujarat India. The solar projects in Gujarat is considered for our project activity common practice analysis, as different states in India have different investment climatic conditions and formulated their own schemes and tariff structure in promoting the solar based energy generation activities for power generation

As per the substep of step 2, the no of solar energy based project is (+/-50%) capacity as identified from CDM ratification date until PO placement is 125-375 MW. The no of projects following all the conditions, as identified above is $N_{solar}=1$

The list of project is given below-

Project Name	**Capacity (MW)**	**Start Date**	**State/province**	**Country**
300 MW Solar Project by Avaada in Gujarat (India)	300	19-10-2020	Gujarat	India

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, $N_{all.}$

The number of project activities under different carbon credits /programmes are identified and found 0 and hence the remaining projects identified $N_{all}=1$

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. As per the tool on CPA,2 projects have different nature of investments, hence $N_{diff}=0$

The project numbers identified as per step 4 is N_{diff} =0

Step 5: 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 is

i. F= 1-(Ndiff/Nall)
=1-(0/1)=1
ii. N_{all} - N_{diff} is 0-0=1

Hence the project is not a common practice as N all –N diff is less than 3 in the identified geographical area.

CPA for 50 MW

Step (1): Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity. The CPA is considered for individual projects .

Range	Capacity	Unit
+50%	75	MW
Capacity of the proposed project activity	50	MW
-50%	25	MW

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

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

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

The bundled project activity happened in Gujarat India. The solar projects in Gujarat is considered for our project activity common practice analysis, as different states in India have different investment climatic conditions and formulated their own schemes and tariff structure in promoting the solar based energy generation activities for power generation

As per the substep of step 2, the no of solar energy based project is (+/-50%) capacity as identified from CDM ratification date until PO placement is 25-75 MW. The no of projects following all the conditions, as identified above is N_{solar}=20. The list of projects is given below-

S. No	Project Name	Capacity (MW)	Start Date	Status	Reference (Link)
1	Adani Enterprises Limited Solar PV Power Project in Gujarat, India	40	22-11-2010	Registered	https://cdm.unfccc.int/Projects/DB/RWTUV1332412112.62/view
2	Solar PV power project at Patan, India	25	06-06-2011	Registered	https://cdm.unfccc.int/Projects/DB/RWTUV1345204928.51/view
3	Grid connected 25 MW P V solar power project at Charanka in Gujarat	25	08-12-2010	Registered	https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1346316979.16/view
4	Grid Interactive Solar Photovoltaic Power Project in Gujarat	25	24-02-2011	Registered	https://cdm.unfccc.int/Projects/DB/PJR%20CDM1347358809.69/view
5	Mithapur Solar Power Project	25	15-03-2011	Registered	https://cdm.unfccc.int/Projects/DB/KBS_Cert1348206298.93/view
6	Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)	25	28-02-2011	Registered	https://cdm.unfccc.int/Projects/DB/KBS_Cert1348557135.31/view
7	Solar Thermal	25	22-03-	Registered	https://cdm.unfccc.int/Projects/DB/TUEV-SUED1356526242.75/view

	Power project at Kutcch District in Gujarat		2011		
8	Solar PV Power Plants by PESPL and SEPL	30	27-12-2010	Registered	https://cdm.unfccc.int/Projects/DB/BVQI1354820286.47/view
9	Solar PV power project at Patan,India	25	04-03-2012	Registration and verification approval requested	https://registry.verra.org/app/projectDetail/VCS/1410
10	25 MW Solar PV Project in Gujarat	25	30-12-2011	Registered	https://registry.verra.org/app/projectDetail/VCS/1236
11	Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)	25	04-03-2012	Registered	https://registry.verra.org/app/projectDetail/VCS/1090
12	Renewable Solar Power Project by Torrent Power	51	31-08-2019	Under development	https://registry.verra.org/app/projectDetail/VCS/2064
13	Energising India using Solar Energy Projects	35	02-11-2018	Registered	https://registry.verra.org/app/projectDetail/VCS/1931
14	Renewable Solar Power Project by ReNew Solar Power Private Limited	40	31-03-2017	Registered	https://registry.verra.org/app/projectDetail/VCS/1851
15	Solar and Wind Power Project by NTPC Limited	50	10-11-2017	Registered	https://registry.verra.org/app/projectDetail/VCS/1772

16	Bundled Solar Power Project by Mahindra Susten Private Limited	40	31-03-2017	Registered	https://registry.verra.org/app/projectDetail/VCS/1767
17	Bundled Solar Power Project by Mahindra Susten Private Limited	25	23-05-2017	Registered	https://registry.verra.org/app/projectDetail/VCS/1767
18	Grid connected 25 MW PV solar power project at Charanka in Gujarat	25	04-03-2012	Registered	https://registry.verra.org/app/projectDetail/VCS/1685
19	Mithapur Solar Power Project	25	25-01-2012	Registered	https://registry.verra.org/app/projectDetail/VCS/1109
20	Grid Interactive Solar Photovoltaic Power Project in Gujarat	25	19-01-2012	Registered	https://registry.verra.org/app/projectDetail/VCS/1413

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, $N_{all.}$

The number of project activities under different carbon credits /programmes are identified and found 20 the remaining projects identified $N_{all}=0$

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. As per the tool on CPA,2 projects have different nature of investments, hence $N_{diff}=0$

The project numbers identified as per step 4 is $N_{diff}=0$

Step 5: 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 is

i. F= 1-(Ndiff/Nall)
=1-(0/0)=1
ii. N_{all} - N_{diff} is 0-0=1

Hence the project is not a common practice as N all –N diff is less than 3 in the identified geographical area.

B.6. Estimation of emission reductions

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As per the approved consolidated Methodology ACM0002 (Version 20.0, EB 105, Annex 03), Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y - LE_y$

Where:

ERy = Emission reductions in project year y (tCO_2)
BEy = Baseline Emissions in project year y (tCO_2)
PEy = Project emissions in project year y (tCO_2)
LEy = Leakage emissions in project year y (tCO_2)

B.6.1. Explanation of methodological choices

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As per 5.5.1 and 5.5.2 , of the ACM0002 methodology, the baseline emission includes only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

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

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

Electricity generation EG $_{pj,y\ (MWh/yr)}$	700,488
Combined margin CO2 emission factor for grid (tCO2/MWh)	0.9305

Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO2/MWh) of the CDM

Project participants shall apply the following six steps:

(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.

Project participants may delineate the project electricity system using any of the following options:
(a) **Option 1.** A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies), In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries

A national grid is, directly or indirectly affected by the project activities in host country India. Indian power system was divided into five independent regional grids, namely Northern, Eastern, Western, Southern, and North-Eastern. Each grid covered several states (see Table 2). Since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in

synchronous mode. As of 31 December 2013, the Southern grid has also been synchronized with the NEWNE grid, hence forming one unified Indian Grid.

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

CO_2 BASELINE DATABASE, OCTOBER 2021

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 Participants **has chosen only grid power plants** in the calculation, as the baseline is power generation from the Grid.

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

The percentage share of the hydro (16.15%), nuclear energy (2.36%), as per the CO2 baseline database, Version 17, hence the percentage of total grid generation by low-cost/ must-run plants 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. Hence the Simple OM emission factor is calculated as the generation-weighted average $C0_2$ emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving this system, not including low-cost/must-run power plants/units. Ex ante emission factor calculation approach is chosen, were chosen and the parameter remains constant over the whole crediting period.

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

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

Net Generation in Operating Margin (GWH) (incl. Imports)			
	2018-19	**2019-2020**	**2020-21**
Indian Grid	995,957	965,009	958,218

Simple Operating Margin (tCO2/MWh) (incl. Imports) (1) (2)			
	2018-19	**2019-2020**	**2020-21**
Indian Grid	0.9603	0.9555	0.9405

Weighted Generation Operating Margin	
Indian Grid	0.9522

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

As per Methodological tool" Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72:

Build Margin is calculated ex-ante based on the most recent information available at the time of submission of PSF and is fixed for the entire crediting period.

Build Margin (tCO2/MWh) (not adjusted for imports)			
	2018-2019	**2019-20**	**2020-21**
Indian Grid	0.8812	0.8682	0.8650

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

As per Methodological too "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 81, The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods: Weighted average CM: or Simplified CM. PP has chosen option **(a) i.e. weighted average CM** to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

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

Where

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (t CO_2/ MWh)

$EF_{grid,OM,Y}$ = Operating margin CO_2 emission factor in year y (t CO_2/MWh)

W_{OM} = Weighting of operating margin emissions factor (per cent)

W_{BM} = Weighting of build margin emissions factor (per cent)

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

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

$$EF_{grid,CM,y} = 0.9522*0.75 + 0.863*0.25$$

$$= 0.9305\ tCO_2/MWh$$

B.6.2. Data and parameters fixed ex ante

>>

Data / Parameter Table 1.

Data / Parameter:	$EF_{grid,CM,y}$
Methodology reference	ACM0002
Data unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in the year y
Measured/calculated/default	Calculated
Data source	CO2 Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India
Value(s) of monitored parameter	0.9305
Measurement/ Monitoring equipment (if applicable)	NA
Measuring/reading/ recording frequency (if applicable)	Not applicable
Calculation method (if applicable)	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * WOM + EF_{grid,BM,y} * WBM$
QA/QC	
procedures	NA
Purpose of data	To calculate baseline emissions

B.6.3. Ex-ante calculation of emission reductions

>>

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

$ER_Y = BE_Y - PE_Y$

Where,

ER_y = Emission Reduction in year y (t CO_2)

BE_y = Baseline emission year y (t $C0_2$)

PE_y = Project emissions year y (t CO_2)

LE_Y= Leakage emissions in year y (t CO_2)

Baseline Emission (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.

$BE_y = EG_{pj,y} * EF_{grid,cm,y}$

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 project activity in year y (MWh)

As per the applied methodology V20, no project emissions considered in the project activity. Hence,

Project emissions PE_y= 0 t CO_2

Leakage emissions LE_y=0 tCO_2e

Therefore, $ER_y = BE_Y$

Capacity (MW)	PLF (%)	Net Generation (MWh/year)	Baseline Emission factor (tCO_2/MWh)	Baseline emissions (tCO_2e/year)	Emission reductions (tCO_2e/year)
250 MW	29.21	639,699	0.9305	595,247	595,247
50 MW	29.13	127,589	0.9305	118,723	118,723
Total		700,488		**651,811**	**651,811**

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

>>

B.7. Monitoring plan

>>

For 250 MW

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
Year 1	5,53,885	0	0	5,53,885
Year 2	5,50,008	0	0	5,50,008
Year 3	5,46,158	0	0	5,46,158
Year 4	5,42,335	0	0	5,42,335
Year 5	5,38,539	0	0	5,38,539
Year 6	5,34,769	0	0	5,34,769

Year 7	5,31,025	0	0	5,31,025
Year 8	5,27,308	0	0	5,27,308
Year 9	5,23,617	0	0	5,23,617
Year 10	5,19,952	0	0	5,19,952
Total	5,367,595	0	0	5,367,595
Total number of crediting years	10 Years			
Annual average over the crediting period	**5,36,759.00**	0	0	**5,36,759.00**

For 50 MW

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
Year 1	1,18,724	0	0	1,18,724
Year 2	1,17,892	0	0	1,17,892
Year 3	1,17,067	0	0	1,17,067
Year 4	1,16,248	0	0	1,16,248
Year 5	1,15,434	0	0	1,15,434
Year 6	1,14,626	0	0	1,14,626
Year 7	1,13,824	0	0	1,13,824
Year 8	1,13,027	0	0	1,13,027
Year 9	1,12,236	0	0	1,12,236
Year 10	1,11,450	0	0	1,11,450
Total	11,50,527	0	0	11,50,527
Total number of crediting years	10 Years			
Annual average over the crediting period	**1,15,052.00**	0	0	**1,15,052.00**

B.7.1. Data and parameters to be monitored

>>

Data / Parameter Table 2.

<table>
<tr><td>Data / Parameter:</td><td>EG $_{PJ, y}$</td></tr>
<tr><td>Methodology reference</td><td>ACM0001 Version 20.0, “Large-scale Consolidated Methodology Grid-connected electricity generation from renewable sources”.</td></tr>
<tr><td>Data unit</td><td>MWh/year</td></tr>
<tr><td>Description</td><td>Quantity of net electricity generation supplied by the project plant/unit to the grid in year y</td></tr>
<tr><td>Measured/calculated/default</td><td>Measured and calculated</td></tr>
<tr><td>Data source</td><td>Generation statement provided by state utility</td></tr>
<tr><td>Value(s) of monitored parameter</td><td>651,811</td></tr>
<tr><td>Measurement/ Monitoring equipment</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Type of meter</td><td>Electronic Tri-vector and Bidirectional Energy Meters</td></tr>
<tr><td>Location of meter</td><td>Substation</td></tr>
<tr><td>Accuracy of meter</td><td>0.2s or 0.5s</td></tr>
<tr><td>Serial number of meter</td><td>To be confirmed during issuance time as per records</td></tr>
<tr><td>Calibration frequency</td><td>Once in five years</td></tr>
<tr><td>Date of Calibration/ validity</td><td>To be confirmed during verification</td></tr>
<tr><td>Reference No. of Calibration Certificate</td><td>To be confirmed during verification</td></tr>
<tr><td>Calibration Status</td><td>To be confirmed during verification</td></tr>
</table>
Continuous measurement & monthly recording</td></tr>
<tr><td>Measuring/reading/ recording frequency</td><td>Monthly Recording</td></tr>
<tr><td>Calculation method (if applicable)</td><td>Electricity exported/imported to the grid is in kWh. However for the calculation purpose electricity exported is converted in MWh. The Net electricity supplied to the grid by the project activity will be calculated as a difference of electricity exported to the grid, electricity imported from the grid obtained from Monthly Meter reading reports provided by UPPTCL Jhansi as per below equation:
$EG_{PJ,y} = EG_{Export} - EG_{Import}$</td></tr>
</table>

QA/QC procedures	The calibration of all the meters will be undertaken at required intervals (at least once in five years) and faulty meters will be duly replaced immediately. The meters will be of accuracy class 0.2s or 0.5s The meter(s) shall be calibrated and maintained by the state utility 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 Nation standard which recommends at least once in 5year calibration or whenever abnormal difference/inconsistency is observed between main meter and check meter.
Purpose of data	To calculate baseline emissions
Additional comments	Data will be archived electronically for a period of 2 years beyond the end of crediting period.

Data / Parameter Table 2.

Data / Parameter:	**CO_2 Emissions**
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v2
Data unit	tCO_2
Description	Reduction of CO2 emissions due to implementation of project activity that would otherwise be emitted by thermal power plants
Measured/calculated/default	Calculated
Data source	Electricity generated by project and OM & BM calculations
Value(s) of monitored parameter	651,811

<table>
<tr><td>Measurement/ Monitoring equipment</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Type of meter</td><td>Electronic Tri-vector and Bidirectional Energy Meters</td></tr>
<tr><td>Location of meter</td><td>Substation</td></tr>
<tr><td>Accuracy of meter</td><td>0.2s or 0.5s</td></tr>
<tr><td>Serial number of the meter</td><td>To be confirmed during issuance time as per records</td></tr>
<tr><td>Calibration frequency</td><td>Once in five years</td></tr>
<tr><td>Date of Calibration/ validity</td><td>To be confirmed during verification</td></tr>
<tr><td>Reference No. of Calibration Certificate</td><td>To be confirmed during verification</td></tr>
<tr><td>Calibration Status</td><td>To be confirmed during verification</td></tr>
</table>
</td></tr>
<tr><td>Measuring/reading/ recording frequency</td><td>Continuous reading, monthly recording</td></tr>
<tr><td>Calculation method (if applicable)</td><td>Calculated from CEA database and Energy Generation</td></tr>
<tr><td>QA/QC procedures</td><td>A check meter is also installed near to the export meter to cross check the electricity exported to the grid. The check meter reading would also be used in case of failure of export meter</td></tr>
<tr><td>Purpose of data</td><td>To assess the contribution SDG 13 Climate Action / 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions development.</td></tr>
<tr><td>Additional comments</td><td>Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period.</td></tr>
</table>

Data / Parameter Table 3.

Data / Parameter:	**Quantitative Employment (long term)**
Methodology reference	GCC Project Sustainability Standard_V2.1.
Data unit	Number
Description	Number of people permanently working for the operation of the project
Measured/calculated/default	Measured

Data source	Site Records
Value(s) of monitored parameter	15
Measurement/ Monitoring equipment	N/A
Measuring/reading/ recording frequency	Yearly
Calculation method (if applicable)	Number of the employees can be seen through the records.
QA/QC procedures	The records for the number of employees will be provided during each monitoring period
Purpose of data	SDG 8.5. By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
Additional comments	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period.

Data / Parameter Table 4.

Data / Parameter:	**Quantitative Employment (Short term)**
Methodology reference	GCC Project Sustainability Standard_V2.1.
Data unit	Number
Description	Number of people temporarily working for the operation of the project
Measured/calculated/default	Measured
Data source	Site Records
Value(s) of monitored parameter	10
Measurement/ Monitoring equipment	N/A
Measuring/reading/ recording frequency	Yearly

Calculation method (if applicable)	Number of the employees can be seen through the records.
QA/QC procedures	The records for the number of employees will be provided during each monitoring period
Purpose of data	SDG 8.5. By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
Additional comments	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period.

Data / Parameter Table 5.

Data / Parameter:	**Quality of employment**
Methodology reference	GCC Project Sustainability Standard_V2.1.
Data unit	Number
Description	Number of Trainings provided to employees
Measured/calculated/default	Measured
Data source	Plant records or the training records for all the employees/ DOE interview with employees, etc.
Value(s) of monitored parameter	1 training per year
Measurement/ Monitoring equipment	Manual
Measuring/reading/ recording frequency	-
Calculation method (if applicable)	NA
QA/QC procedures	The training records for all the employees
Purpose of data	To Monitor the SDG 8
Additional comments	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period.

Data / Parameter Table 6.

Data / Parameter:	Project Waste i. Hazardous wastes ii. E-wastes iii. Plastic waste
Methodology reference	GCC Project Sustainability Standard_V2.1.
Data unit	-
Description	Hazardous wastes: Expired/Damaged batteries E-wastes: Broken/damaged PV modules & Damaged Batteries/End of life products Plastic wastes: Plastic covers of the panels, Batteries etc.
Measured/calculated/default	Measured
Data source	Plant Records
Value(s) of monitored parameter	-
Measurement/ Monitoring equipment	Manually
Measuring/reading/ recording frequency	Annually recorded
Calculation method (if applicable)	NA
QA/QC procedures	The waste will be disposed to the waste handlers and the firm will comply with all the local laws for monitoring and disposal.
Purpose of data	Analysis of safeguarding principle
Additional comments	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period. There will no significant plastic waste is expected from the project activity during operational phase Hence, this parameter will not be scored and will remain insignificant throughout the crediting period.

Data/Parameter Table 7:

Data / Parameter:	**Air Pollution**
Methodology reference	GCC Project Sustainability Standard_V2.1.

Data unit	PPM
Description	Air pollution caused due to the Project activity
Measured/calculated/default	-
Data source	-
Value(s) of monitored parameter	-
Measurement/ Monitoring equipment	NA
Measuring/reading/ recording frequency	NA
Calculation method (if applicable)	NA
QA/QC procedures	Air pollution level will be observed during the construction phase by the plant persons and the locals.
Purpose of data	Analysis of environmental safeguarding.
Additional comments	Since there is no significant air pollution caused due to solar plant. The parameter will be taken care of during the construction phase only and it will remain insignificant throughout the crediting period and will not be scored.

Data/Parameter Table 8:

Data / Parameter:	**Noise Pollution**
Methodology reference	GCC Project Sustainability Standard_V2.1.
Data unit	DB
Description	Noise pollution caused due to the Project activity
Measured/calculated/default	-
Data source	-
Value(s) of monitored parameter	NA
Measurement/ Monitoring equipment	NA

Measuring/reading/ recording frequency	NA
Calculation method (if applicable)	NA
QA/QC procedures	No significant noise emission is expected from project activity during operational phase as there is no major equipment in solar project which generate noise.
Purpose of data	Analysis of environmental safeguarding.
Additional comments	Since there is no significant noise pollution caused due to solar plant. The parameter will remain insignificant throughout the crediting period and will not be scored.

Data/Parameter Table 9.

Data / Parameter:	**5**.C Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v2
Data unit	numbers
Description	Non-Discrimination in employment generation and equal pay for equal work for both men and women
Measured/calculated/default	Measured
Data source	Organization Policy
Value(s) of monitored parameter	1
Measurement/ Monitoring equipment	.HR Records, Pay slip
Measuring/reading/ recording frequency	yearly
Calculation method (if applicable)	- Not Applicable. It can be verified with document check or interview with the employees
QA/QC procedures	The project activity ensures that “equal pay for work of equal value” for both men and women and there is no any discrimination against women.
Purpose of data	To justify SDG Goal 5 – Achieve gender equality and empower all women and girls

Additional comments	

Data/Parameter Table 10.

Data / Parameter:	**Ensure healthy lives and promote well-being for all at all ages**
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v2
Data unit	Number of employees provided with health facilities
Description	Every permanent employee is having either ESIC card or health insurance covering him/her and family. Health camps will be organized
Measured/calculated/default	Measured
Data source	Offer letter /ESIC card/ESI letter/health card and Evidence of health camps
Value(s) of monitored parameter	-
Measurement/ Monitoring equipment	-
Measuring/reading/ recording frequency	Yearly
Calculation method (if applicable)	-
QA/QC procedures	Salary slips/offer letters will be cross checked to verify the health services/ health facilities made available to employees. Photographs and other evidences for health camps.
Purpose of data	To support SDG 3.8 through Achieving universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
Additional comments	-

B.7.2. Monitoring-program of risk management actions

>> The project is solar energy power project. There will be no harm identified form the project and hence no mitigations measures are applicable.

Data / Parameter:	Not Applicable
Objective of the Program of Risk Management Actions	Not Applicable

Purpose:	Not Applicable
Describe the environment /social impact risk that needs to be mitigated.	Not Applicable
Describe the actions and targets that will be implemented to ensure that the Project Activity will avoid negative impacts that cause harm.	Not Applicable
Program of Risk Management Actions to achieve the target(s):	Not Applicable
QA/QC procedures:	Not Applicable
Describe whether the Project Activity has achieved the targets set out in this Program of Risk Management Actions. If yes, describe the outcome(s).	Not Applicable

B.7.3. Sampling plan

>>

Not Applicable.

B.7.4. Other elements of the monitoring plan

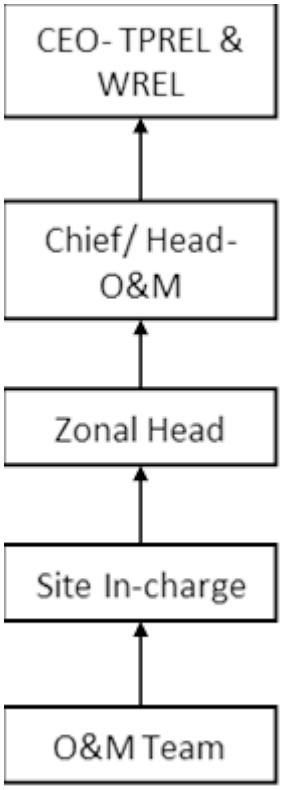
>>

The monitoring plan is developed in accordance with the modalities and procedure with project activity and is proposed for grid-connected solar energy power projects being implemented in Gujarat India. The monitoring plan, describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project owners. The following structure is proposed for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:

Organizational Structure for Monitoring

Responsibilities of Head- Projects: Tracking and reviewing the overall functioning and maintenance of the project activity from Head (Operations). Head (Operations) will be reporting Head (Projects).
Responsibilities of Head- Operations: Overall functioning of the project activity and Coordinating with the O & M Team for the proper functioning of Project activity. He will be reporting to Head (Projects).
Responsibilities of O & M Team: O & M team is responsible for Operations and Maintenance related issues, they are also responsible for day-to-day data collection and monitoring, ensures completeness and reliability of data (calibration of equipment).



The Site In-charge will be responsible for carrying out internal auditing and QA/QC.

Data measurement

The meters will be tested & sealed by the State Utility and are in the custody of State Utility. The metering arrangement, accuracy class of meters, calibration frequency is under control of state utility and Project owner do not have any control on it. The calibration of all the meters will be carried out in-line with the National standard which recommends at least once in 5-year calibration. Faulty meters will be duly replaced. The meters will be of accuracy class 0.2s or 0.5s.
In any case where values have slightest of variation in different records the most conservative value will be taken in the project monitoring report.
Data collection and archiving

Export & Import readings from main & check meter are collected under the supervision authorized representative of PP. The net electricity supplied to grid are calculated based on export & import readings. Export and Import data would be recorded and stored in electronic &/or paper. The records are checked periodically by the Head (Operations) and discussed thoroughly with the O & M Team. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of ACCs for the project activity whichever occurs later.

Mismatch in Monitoring Period and the Billing Period

In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated from:

A= Difference of number of days which are not matching of billing period and monitoring period.
B=Number of days of the billing period/month which was not matched with the monitoring period.
C= Net electricity supplied to the grid for that given billing period/month
The calculated value after apportioning would be used for calculation of emission reductions during that period.

Emergency preparedness

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

Personnel Training

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

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

>>

03/12/2021

C.2. Expected operational lifetime of the Project Activity

>>

25 Years

C.3. Crediting period of the Project Activity

>>

03/12/2021 to 02/12/2031

C.3.1. Fixed crediting period

>>

Fixed crediting period of 10 years

C.3.2. Start date of the crediting period

>>
03/12/2021

C.3.3. Duration of the crediting period

>>

10 years

Section D. Environmental impacts

D.1. Analysis of environmental impacts

>>

The project activity does not involve any major construction activity. It primarily requires the installation of the Solar Panels, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The project is under construction phase. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that Solar 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

>>

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 14/07/2018. As per notification:

"The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall herein after referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at Category 'B' in the said schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

1) All new projects or activities listed in the Schedule to this notification:
2) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits given in the Schedule, after expansion or modernization:
3) Any change in product- mix in an manufacturing unit included in Schedule beyond the specified range."

As the solar energy projects are not listed in any of the categories in the Schedule, the project is considered environmentally safe and as per regulations in Host party-India no EIA is required.

However, an Environmental Impact Assessment has been carried out by third party ERM and all suggested mitigation measures and control technologies, safeguards identified through the process are listed below:

S. No.	Environmental/ Social Resource	Impacts/Issue	Applicable Project Phase	Mitigation Measures

1.	Topography & Drainage	Changes in Topography and Drainage	Construction Phase	Disruption/alteration of micro-watershed drainage pattern will be minimized to the extent possible
2.	Land Use	Permanent and temporary changes in land use	Construction Phase	• On completion of construction activities, land used for temporary facilities will be restored to the extent possible. • Waste will not be allowed to litter in and around the Project area. • The land use in and around permanent project facilities will not be disturbed, and Construction activities will be restricted to designated area.
3.	Soil	Soil compaction and erosion	Construction Phase	• Top soil will be retained and reused to the extent possible; • Vehicles will utilize existing roads to access the site; • Existing roads will be utilized with minor strengthening and widened to have the width and turning radius to accommodate the necessary vehicles for the project; • Limited new roads will be constructed to facilitate with transport of project equipment and components; • It will be ensured that transportation and construction vehicles, workers etc. used defined routes only to minimize soil compaction; • It will be ensured that site clearance, piling, excavation and access road construction are not be carried out during the monsoon season and scheduled accordingly to avoid extreme weather events as heavy rainfall and high winds to minimize erosion and run-off; • Stockpiles will be vegetated or appropriately covered to reduce soil loss as a result of wind or water erosion;
4.	***Water Resource Availability and Quality***	Depletion of Water resources and Water contamination	Construction Phase Operation and Maintenance (O&M) Phase	• Construction labor deputed onsite to be sensitized about water conservation and encouraged for optimal use of water; • Regular inspection for identification of water leakages and preventing wastage of water from water supply tankers is necessary for efficient utilization of water; • Blending of low-quality water with fresh water for construction uses to ensure efficient use of natural resource; • Recycling/reusing to the extent possible;

				• Hazardous material will be kept on impervious layer with secondary containment; • In case of accidental/unintended spillage, the contaminated soil will be immediately collected and stored as hazardous waste; • Maintain logbook for water consumption; and • Prepare and implement water conservation scheme e.g., rainwater harvesting at the project site.
5.	***Air Quality***	• Site preparation and excavation for foundation and piling work • Access road widening, strengthening and maintenance;	Construction Phase Decommissioning Phase	• Speed of vehicles on site will be limited to 10-15 km/hr which will help in minimizing fugitive dust emissions due to vehicular movement; • Cease or phase down work if excess fugitive dust is observed. Investigate the source of dust and ensure proper suppression measures; • Proper maintenance of engines and use of vehicles with Pollution Under Control (PUC) Certificate; and • Idling of vehicles and equipment will be prevented • Emissions from the emergency DG sets and other stationary machines will be controlled ensuring that the engines are always properly tuned and maintained
	Occupational and Community Health and Safety	• Working at heights; • Working with live electrical components; and • Operation of cranes and other mechanical lifting equipment	Construction Phase Operation Phase Decommissioning Phase	• Health & safety training to be provided to all the workers during both construction and operation phase • Prior to start of work, workers will be informed about the related safety risks and precautions to be taken through tool box meetings • All persons performing construction work to wear safety shoes and helmets confirming to national standard • Every worker engaged in handling sharp objects which may cause injury to hand shall be provided suitable hand gloves • Site specific safety or emergency response plan will be in place to account for natural disasters, accidents and any emergency situations • Site specific/ activity specific Hazards • Identification and Risk Assessment (HIRA) will be developed prior to start of the activities at site

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 document has been made to comply with the requirements of TATA POWER RENEWABLE ENERGY LIMITED Environmental and Social commitment, Environment & social safeguard standard (version.02) of GCC, Health and Safety (EHS) Guidelines, as well as applicable local and national regulations.

Further, with reference to the CPCB modified direction No. B29012/ESS(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries.

Hence, as per below assessment, the solar power project is not likely to have significant adverse environmental and social impacts during the construction & operation period of the project activity.

E.1. Environmental safeguards

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Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards									Project Owner's Conclusion	
		Description of Impact *(both positive and negative)*	**Legal requirement / Limit**	**Do-No-Harm Risk Assessment**			**Risk Mitigation Action Plans**		**Do-No-Harm Residual Risk Assessment**		**Self-Declaration**	
				Not Applicable *(No actions required)*	**Harmless** *(No actions required)*	**Harmful** *(Actions required)*	**Operational Controls**	**Program of Risk Management Actions**	**Re-evaluate Risks**	**Monitoring**	**Explanation of Conclusion**	**The Project Activity will not cause any harm**
Environmental impacts on the identified categories[12] indicated below.	*Indicators for environmental impacts*	*Describe anticipated environmental impacts, both positive and negative from all sources (stationary and mobile), that may result from the Project Activity, within and outside the project boundary, over which the Project Owner(s) has control, and beyond what would reasonably be expected to occur in the absence of the Project Activity.*	*Describe the applicable national regulatory requirements /legal limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Not Applicable** (No actions required)*	*If environmental impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ below the legal limits, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Harmless** (No actions required)*	*If environmental impacts are anticipated that will not be in compliance with the applicable national regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be indicated as **Harmful** (Actions required).*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as **Harmful**.*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce the risk of impacts that have been identified as **Harmful**.*	*Re-evaluate risks after Risk Mitigation Action Plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as **Harmless** (No actions required)*	*Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and described in the PSF (refer to Table 3).*	*Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.*	*Confirm that the Project Activity risks of negative environmental impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for **Yes** or and -1 for **No**)*
Environmental Safeguards												

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

Environment *- Air*	*SO_x emissions*	The solar power project does not cause any SOx emissions in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted SO_x emissions, on which data is not available and can't be quantified.	The Air (Prevention & Control of Pollution) Act 1981stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable as no emissions occur in the project scenario and therefore is not expected to or does not cause any harm.	Not Applicable. No Action Required	Not Applicable. No Action Required	**Not Applicable.**	Not Applicable.	No Action Required	Not Applicable.	With reference to the CPCB modified direction No. B29012/ESS (CP A)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted SOx emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA
	NO_x emissions	The solar power project does not cause any NOx emissions in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted NO_x emissions, on which data is not available and can't	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified B29012/ESS (CP A)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted NOx emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA

		be quantified.									
	CO_2 emissions	The solar power project does not cause any CO2 emissions in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO2 emissions, which has been calculated by the combined margin emission factor as mentioned in the PSF	The Air (Prevention & Control of Pollution) Act 1981stipulates thresholds for both ambient air quality as well as stack emissions.	Not Applicable as no emissions occur in the project scenario and therefore is not expected to or does not cause any harm.	Not Applicable. No Action Required	Not Applicable. No Action Required	Not Applicable	Not Applicable	No Action Required	The generated electricity by the project activity will be continuously measured and the related CO2 emission reduction will be calculated according to the underlying methodology GCCM001 v3.0.	With reference to the CPCB modified direction No. B29012/ESS (CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO2 emissions, which has been calculated by the combined margin emission factor as mentioned in the PSF. Therefore, emission reductions are expected to be reduced which will be regularly monitored and verified ex-post and therefore is eligible to be scored.	+1
	CO emissions	The solar power project does not cause any CO emissions in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ESS(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA

		CO emissions, on which data is not available and can't be quantified										
	Suspended particulate matter (SPM) emissions	The solar power project does not cause any SPM emissions in the project scenario. However, during site preparation and excavation for foundation and piling work and access road widening, strengthening and maintenance etc. may cause SPM emissions	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Speed of vehicles on site will be limited to 10-15 km/hr which will help in minimizing fugitive dust emissions due to vehicular movement. Phase down work if excess fugitive dust is observed. Proper maintenance of engines and use of vehicles with Pollution Under Control (PUC) Certificate will be used and idling of vehicles and equipment will be prevented Emissions from the emergency DG sets and other stationary machines will be controlled ensuring that the engines are always properly tuned and maintained	With reference to the CPCB modified direction No. B29012/ESS(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. However, during construction phase, mitigation measures as per ESIA will be followed to prevent the SPM emissions from other sources due to project. In the baseline scenario (grid) some of the fossil fuel power plants may have emitted SPM emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA
	Fly ash emissions	The solar power project does not cause any *Fly ash* emissions in the	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ESS(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate''	NA

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

		Odor emissions in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted *Odor* emissions, on which data is not available and can't be quantified	Pollution) Act 1981							mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted Odor emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
	Noise Pollution	The solar power project does not cause any *NMVOCs* emissions in the project scenario. However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted *NMVOCs* emissions, on which data is not available and can't be quantified	Noise (Regulation and Control) Rules 2000 amended in 2010)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	No significant noise emission is expected from project activity during operational phase as there is no major equipment in solar project which generate noise	NA

Environment *- Land*	*Solid waste Pollution from Plastics*	Not Applicable	Plastic Waste (Management and Handling) Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant plastic waste is expected from the project activity during operational phase Hence,, this parameter will not be scored.	NA
	Solid waste Pollution from Hazardous wastes	Not Applicable	Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	As per MoEFCC notification dated 01.03.2019 (G.S.R. 178(E)) the Occupier (developer) is not required to obtain authorization under Hazardous and Other Wastes (Management and Transboundary Movement) Amendment, Rules, 2019 if they are exempted from obtaining consent under Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. However, Project owner will ensure proper disposal of Hazardous Waste (Batteries) through actual user, waste collector or operator of the disposal facility, in accordance with the Central Pollution Control Board guidelines. Moreover, though not covered under the rule, the broken part of the solar plant are recommended to be sent back to the manufacture or an authorized recycler Hence,, this parameter will not be scored	NA
	Solid waste Pollution from Bio-medical wastes	Not Applicable	Bio-medical Waste Management Rules, 2016	Not Applicable	No Action Required	No Action Required	Not Applicable	No Action Required	No Action Required	Not Applicable	No significant bio-medical waste will be generated from the project activity. Hence, this parameter will not be scored.	NA
	Solid waste Pollution from E-wastes	Not Applicable	Tata Power E-waste Management policy	Not Applicable	Not Applicable	-	Records all electrical & electronics waste of projects sites and filling of return	Project management is responsible to maintain records and filling of returns as per applicable law	Not Applicable	Records of E-waste generated and sold out	No significant *E-wastes* will be generated from the project activity. However, broken solar panel and batteries wastes will be sent back to the vendors. Hence, this parameter will be scored.	+1

	Solid waste Pollution from Batteries	Not Applicable	Batteries (Management and Handling) Rules	Not Applicable	Not Applicable	-	Records all electrical & electronics waste of projects sites and filling of return	Project management is responsible to maintain records and filling of returns as per applicable law	Not Applicable	Not Applicable	Project management is responsible to maintain records and filling of returns as per applicable law and have no significant impact. Hence, this parameter will not be scored.	NA
	Solid waste Pollution from end of life products/ equipment	Not Applicable	Solid Waste Management Rules, 2016	Not Applicable	Not Applicable	-	Solid waste from the project activity must be disposed as applicable law	Project management is responsible to maintain records and dispose all products after ending lifecycle as per applicable law	Not Applicable	A self-attested declaration mentioning that the equipment waste from the end of project life will be disposed as per Solid Waste Management Rules, 2016 has been submitted.	Project management is responsible to maintain records and dispose all products after ending lifecycle as per applicable law. This parameter will not be scored.	NA
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury)	Not Applicable	In India, there are no comprehensive soil quality regulations and standards to ascertain the seriousness of contamination	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No significant soil pollution from chemicals during operation phase of the project activity However, in the baseline scenario (grid) some of the fossil fuel power plants may have polluted soil from chemicals, on which data is not available and can't be quantified therefore this parameter will not be scored.	NA
	Soil erosion	Soil compactio	In India, there are no comprehe	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Top soil will be retained and reused to the extent possible;	During construction phase, mitigation measures as per ESIA will be followed to prevent the soil erosion due to the project. There is	NA

		n and erosion	nsive soil quality regulations and standards to ascertain the seriousness of contamination							Vehicles will utilize existing roads to access the site; Existing roads will be utilized with minor strengthening and widened to have the width and turning radius to accommodate the necessary vehicles for the project; Limited new roads will be constructed to facilitate with transport of project equipment and components; It will be ensured that transportation and construction vehicles, workers etc. used defined routes only to minimize soil compaction; Stockpiles will be vegetated or appropriately covered to reduce soil loss as a result of wind or water erosion;	no chance of soil erosion during operation phase of the project activity. However, in the baseline scenario (grid) some of the fossil fuel power plants may have caused soil erosion, on which data is not available and can't be quantified therefore this parameter will not be scored.	
Environment - *Water*	*Reliability/ accessibility of water supply*	Depletion of Water resources and Water contamination	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Construction labor deputed onsite to be sensitized about water conservation and encouraged	During construction phase, mitigation measures as per ESIA will be followed to prevent the Depletion of Water resources and Water contamination due to the project. Further, the project is located in a desert; therefore, the project uses dry robotic cleaning. Use of dry-cleaning technology will be adopted	NA

										for optimal use of water; Regular inspection for identification of water leakages and preventing wastage of water from water supply tankers is necessary for efficient utilization of water; Recycling/reusing to the extent possible; In case of accidental/unintended spillage, the contaminated soil will be immediately collected and stored as hazardous waste Prepare and implement water conservation scheme e.g., rainwater harvesting at the project site	to undertake module cleaning and water requirement for module cleaning purpose will be minuscule during Operation Further As per the Rajasthan Solar Energy Policy, 2019, water resource department of Rajasthan is authorized to allocate required quantity of water from IGNP canals nearest available source for cleaning of solar panels and auxiliary consumption for Solar PV power plants subject to availability of water. The project will intimate estimated water requirement to Rajasthan Renewable Energy Corporation Limited (RREC). The nearest source of the IGNP canal system is located approximately 5.8 km away from the proposed project site towards the southern direction. Supply water from local body will be used and necessary approval to be obtained. However, in the baseline scenario (grid) some of the fossil fuel power plants would have accessibility of water supply, but the data is not available and can't be quantified and therefore this parameter will not be scored.	
	Water Consumption from ground and other sources	Not Applicable	Permission for abstraction of Ground water under Environmental (Protection) Act 1986	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No ground water will be consumed in all sites of the project activity & necessary permission to be obtained from concerned local authority in case use ground water in future. However, in the baseline scenario (grid) some of the fossil fuel power plants may have consumed water from ground and other sources, on which data is not available and can't be quantified and therefore this parameter will not be scored.	NA
	Generation of wastewater	Not Applicable	The Water (Prevention & Control of	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of	NA

			Pollution) Act 1974								wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas will be away from natural drainage channels However, in the baseline scenario (grid) some of the fossil fuel power plants may have generation of waste water on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
	Wastewater discharge without/with insufficient treatment	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas will be away from natural drainage channels However, in the baseline scenario (grid) some of the fossil fuel power plants may have generation of waste water or its treatment on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA
	Pollution of Surface, Ground and/or Bodies of water	Not Applicable	The Water (Prevention & Control of Pollution) Act 1974	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas will be away from natural drainage channels However, in the baseline scenario (grid) some of the fossil fuel power plants may have pollution of surface water on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	NA
Environment *– Natural Resources*	*Conserving mineral resources*	Not Applicable	In India, there are no conserving mineral resources regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	This is solar project activity and it is not using any natural minerals. therefore, this parameter will not be scored.	NA

			s and standards to ascertain									
	Protecting/ enhancing plant life	Not Applicable	In India, there are no comprehensive regulations and standards to ascertain for protecting plant life	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No action required	Not Applicable	The project activity has been implemented in barren land. There were no trees at the start during the start of the project so and no trees have been removed from the site due to project activity therefore this parameter will not be scored.	NA
	Protecting/ enhancing species diversity	Not Applicable	In India, there are no comprehensive regulations and standards to ascertain for protecting plant life	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity, therefore this parameter will not be scored.	NA
	Protecting/ enhancing forests	Not Applicable	The Forest (Conservation) Act 1980 & 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	No Action Required	Not Applicable	Not Applicable	No forest land has been used for the project activity.	NA
	Protecting/ enhancing other delectable natural resources	Not Applicable	National Forest Policy (Revised) 1988	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No action required	Not Applicable	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity or no other natural resource has been used to operate project activity therefore this parameter will not be scored.	NA
	Conserving energy	Not Applicable	Energy Conservation Act 2001	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	All efficient products & instruments has been used in the project activity, hence no significant impact due to this. therefore this parameter will not be scored	NA
	Replacing fossil fuels with renewable	The project utilizes renewable solar resource to	In India, there are no comprehensive	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Continuous measuring for electricity generation will be done	The project activity supplies renewable energy to the grid. .	NA

	sources of energy	generate electricity which will replace the electricity generated by fossil fuel plants.	regulations and standards for replacing fossil fuels with renewable sources of energy							This parameter will not be scored.	
	Replacing ODS with non-ODS refrigerants	Not Applicable	In India, there are no comprehensive regulations and standards to ODS & non ODS	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	No impact Therefore this parameter will not be scored.	NA
Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to Environment. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.												
Net Score:		**+2**										
Project Owner's Conclusion in PSF:		The Project Owner confirms that the Project Activity will not cause any net harm to the environment.										

E.2. Social Safeguards

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Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards									Project Owner's Conclusion	
		Description of Impact (*both positive and negative*)	**Legal requirement /Limit**	**Do-No-Harm Risk Assessment**			**Risk Mitigation Action Plans**		**Do-No-Harm Residual Risk Assessment**		**Self-Declaration**	
				Not Applicable (*No actions required*)	**Harmless** (*No actions required*)	**Harmful** (*Actions required*)	**Operational Controls**	**Program of Risk Management Actions**	**Re-evaluate Risks**	**Monitoring**	**Explanation of Conclusion**	**The Project Activity will not cause any harm**
Social impacts on the identified categories[13] indicated below.	*Indicators for social impacts*	*Describe the impacts on society and stakeholders, both positive and negative, that may result from constructing and operating of the Project Activity.*	*Describe the applicable national regulatory requirements / legal limits related to the identified risks of social impacts.*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Not Applicable** (No actions required)*	*If social impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ legal limits, then it the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Harmless** (No actions required)*	*If social impacts are anticipated that will not be in compliance with the applicable national regulatory requirements/ legal limits, then the Project Activity is likely to cause harm (may be unsafe) and shall be indicated as **Harmful** (Actions required).*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as **Harmful**.*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., construction of crèche for workers) that will be adopted to reduce the risk of impacts that have been identified as **Harmful**.*	*Re-evaluate risks after Risk Mitigation Actions plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as **Harmless** (No actions required)*	*Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and to be described in the PSF (refer to Table 3).*	*Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.*	*Confirm that the Project Activity risks of negative social impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for **Yes** or and -1 for **No**)*
Social Safeguards												

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

Social - *Jobs*	*Long-term jobs (> 1 year) created/ lost*	The project creates long term job opportunities during operation.	There is no legal requirement from local authority to create permanent employment from the project activity	Not Applicable	-	-	Not Applicable	Not Applicable	No Action Required	15 Number of people employed by the project will be monitored through checking payroll records or the social insurance	There is no mandatory law to generate permanent employment from the project activity, however, project Owner has been decided to provide training to the local people & generate permanent employment for local people. Therefore, this parameter will be scored.	+1
	New short-term jobs (< 1 year) created/ lost	The project creates short term job opportunities during construction.	There is no legal requirement from local authority to create permanent employment from the project activity	Not Applicable	-	-	Not Applicable	Not Applicable	No Action Required	10 Local labor force will be employed during construction period	There is no mandatory law to generate employment from the project activity, however, Project Owner has decided to generate temporary employment in construction phase for local people. Therefore, this parameter will be scored.	+1
	Sources of income generation increased / reduced	Not Applicable	There is no legal requirement from local authority to create permanent employment from the project activity	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable		NA
Social - *Health & Safety*	*Disease prevention*	Not Applicable	The Factories Act, 1948	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	It will be ensured that proper and adequate number of toilets is constructed for the Labor's so that hygienic conditions prevail in the site area. Therefore this parameter will not be scored.	NA

	Reducing / increasing accidents	Working at heights; Working with live electrical components; and Operation of cranes and other mechanical lifting equipment	The Factories Act, 1948 & EHS policy of project activity	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Health & safety training to be provided to all the workers during both construction and operation phase and prior to start of work, workers will be informed about the related safety risks and precautions to be taken through tool box meetings. All persons performing construction work to wear safety shoes and helmets confirming to national standard. Every worker engaged in handling sharp objects which may cause injury to hand shall be provided suitable hand gloves Identification and Risk Assessment (HIRA) will be developed prior to start of the activities at site	The project owner will provide regular safety training to their workers about the accident hazards and risk related to specific works and preventive measures for avoiding accidents at site However, this parameter will not be scored.	NA

	Reducing / increasing crime	Not Applicable	Crime comes under law & order of local government authority and there is no legal requirement from local authority to project owner to liable to reduce crime.	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project activity will increase local employment so there is no chance to increase crime in the local area due to the solar power projects. Therefore, this parameter will not be scored.	NA
	Reducing / increasing food wastage	Not Applicable	THE COMPULSORY FOOD WASTE REDUCTIO N BILL, 2018	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The PO will use a 2-bin system so that food waste and recyclables viz. paper, plastic, glass, scrap metal waste etc. are segregated and stored in designated waste bins/ containers. Therefore, this parameter will not be scored.	NA
	Reducing / increasing indoor air pollution	Not Applicable	The Air (Prevention & Control of Pollution) Act 1981	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	With reference to the CPCB modified direction No. B29012/ESS(CPA)/2015-16; dated March 07, 2016 (Appendix A) solar power project falls in White category and it is mentioned in the notification that there shall be no necessity of obtaining the Consent to Operate'' for White category of industries, hence it can be assumed that no chance of increasing air pollution from project activity. Therefore this parameter will not be scored.	NA
	Efficiency of health services	Not Applicable	No local regulation available	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Health services are limited to villages falls under project activity. Project management shall conduct health camp in all villages as per their CSR commitment throughout the operation time of the project activity Therefore this parameter will not be scored.	NA
	Sanitation and waste management	Not Applicable	CSR policy of tata	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Providing health and sanitation facilities	There is no mandatory law to provide health and sanitation facilities from the project activity, however, project Owner has been decided to provide this facilities neighborhood as part of CSR activity. Therefore, this parameter will be scored.	NA

										in neeighbourhood		
	Other health and safety issues	Not Applicable	EHS and CSR policy of project activity	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	All health & safety issue at project sites to be mitigate as per EHS policy of project activity and local regulation. Therefore this parameter will not be scored.	NA
Social - *Education*	*Job related training imparted or not*	The project owner provides 1 job related training according to the positions	There is no legal requirement from local authority to provide training to local people	Not Applicable	-	-	Not Applicable	Not Applicable	No Action Required	Training records/evidence by the project owner	The project Owner will provide regular safety training to their workers about the accident hazards and risk related to specific works and preventive measures for avoiding accidents at site Therefore this parameter will be scored.	+1
	Educational services improved or not	Not Applicable	CSR policy of project activity	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project management will take initiative for Promotion of education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects	NA
	Project-related knowledge dissemination effective or not	Not Applicable	CSR policy of project activity	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Stakeholder consultation meeting was done before starting of project work where project owner was informed about the project and taken their comments. Further meeting can be planned in future as per stakeholder request. Therefore this parameter will not be scored.	NA
	Other educational issues	Not Applicable	CSR policy of project activity	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project management will take initiative Promotion of education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects Therefore this parameter will not be scored.	NA
Social - *Welfare*	*Improving/ deteriorating working conditions*	Not Applicable	EHS policy of project management	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	There is no chance of deteriorating working conditions as project management will maintain high working culture for their employee with complying EHS guideline & local regulation Therefore this parameter will not be scored.	NA

	Community and rural welfare	Not Applicable	CSR policy of project management	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	In the stakeholder meeting, the local communities were of the opinion that apart from the economic opportunities, the local community will also benefit from the project in terms of community development activities. Some of the key areas for development activities identified included medical infrastructure, access to middle and higher schools, separate schools for girls and trainings for youth and women within the village. This can be done by collaborating with local NGOs working on these areas Therefore this parameter will not be scored.	NA
	Poverty alleviation (more people above poverty level)	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	The objective of the company policy of project management is to assist project sites to reduce poverty and enhance economic growth, human well-being, and development effectiveness by addressing the gender disparities and inequalities that are barriers to development, and by assisting member countries in formulating and implementing their gender and development goals Therefore this parameter will not be scored.	NA
	Improving / deteriorating wealth distribution/ generation of income and assets	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Local community might choose to work during the construction of access roads and other project components and as security guards for the plant. There is also a likelihood of reduced dependence on agriculture for income. Therefore this parameter will not be scored.	NA
	Increased or / deteriorating municipal revenues	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Projects is not falling under municipal areas, hence same will not be applicable. Therefore, this parameter will not be scored.	NA
	Women's empowerment	Not Applicable	No regulation/ legal requirement	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Project management will take initiative for Promoting gender equality, empowering women, setting up homes and hostels for women and orphans, setting up old age homes, day care centers and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups etc. However, this parameter will not be scored.	NA
	Reduced / increased traffic congestion	Not Applicable	No local regulation	Not Applicable	No Action Required	No Action Required	Not Applicable	Not Applicable	No Action Required	Not Applicable	Adequate training on traffic and road safety operations will be imparted to the drivers of project vehicles. Road safety awareness programs will be organized in coordination with local authorities to sensitize target groups viz. school children, commuters on traffic safety rules and signage during construction & operation phase of the project Therefore this parameter will not be scored	NA
Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to society. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.												

Net Score:	+3
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.

Section F. United Nations Sustainable Development Goals (SDG)

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UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs					Project Owner(s)'s Conclusion	
			Project-level SDGs	**Project-level Targets/ Actions**	**Project-level Indicators**	**Contribution of Project-level Actions to SDG Targets**	**Monitoring**	**Explanation of Conclusion**	**Are Goal/ Targets Likely to be Achieved?**
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.* ***For guidance see:*** *Integrating the SDGs into Corporate Reporting- A Practical Guide: https://www.unglobalcompact.org/docs/publications/Practical_Guide_SDG_Reporting.pdf* *Case-study from Coca-Cola and other organizations to develop organization-wide SDGs (page 114): https://pub.iges.or.jp/pub/realising-transformative-potential-sdgs*	*Define project-level targets/actions, by suitably modifying and customizing UN/Country-level targets to the project scope. Define the target date by which the Project Activity is expected to achieve the project-level SDG target(s). Refer to the previous column for guidance*	*Define project-level indicators by suitably modifying and customizing UN/Country-level indicators to the project scope or creating a new indicator(s). Refer to the previous column for guidance*	*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets and is additional to what would have occurred in the absence of the Project Activity*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG target and Indicator*	*Describe how the Project Owner has concluded 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	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	NA	NA	NA	NA	NA	NA	NA	NA	NA

Goal 3. Ensure healthy lives and promote well-being for all at all ages	3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines	Yes	Health facilities provided to the employees	Tata Renewables provides health services to each and every employee working at the plant site	Providing health facilities to all employees	Providing health insurance to employees	health Care card of employees	As per company policy of Tata renewables every employee shall be provided with health care services.	Yes
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 5. Achieve gender equality and empower all women and girls	5.C Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels	Yes	Project owner identifies equal opportunities and pay for work of equal value for both men and women. Moreover, project owner will endeavor towards creating livelihood opportunities for women.	Equal working opportunity for both men and women	Equal working opportunity for both men and women.	Project owner implement and maintain the HR policy to ensure that no gender discrimination should be entertained while employing the workforce and paying the wages for the project activity 100% probability and equal pay packages will be provided to the both men and women employees	Project proponent monitors the parameter through Employment register and PF challans for cross checking the nos and values.	Project proponent concludes that by strictly implementing the company policy men & women have equal rights and no discrimination will be tolerated against women. Project is already implemented and hence the targeted	Yes

								SDG is already is being under implement ation.	
Goal 6. Ensure availability and sustainable management of water and sanitation for all	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix. 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology. 7.b by 2030, expand infrastructure	Yes	Quantity of net electricity supplied to the grid by project activity in year y	700,488 MWh/yr	7.2.1 Renewable energy share in the total energy consumption	Contribute renewable energy share in total grid energy consumption	The net electricity supplied to the grid by the project activity is continuously monitored through energy meter (main and check meter) installed at the sub-station. The meters remain under the custody of state utility	Contributing clean energy mix of grid.	Yes

	and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support								
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value 8.8 Protect labor rights and promote safe	Yes	Project activity supports creation of short term and long term job opportunities for men and women during the construction and operation of the project activity. Supports economic productivity through technology up gradation and innovation through training of labour in high intensive sector for both the genders. Project protects labour rights and promotes safe and secure working environments. Supports a transition to a low-carbon society through employment training for former fossil fuel industry employees	Project creates new employment and generates income for 25 no of people during the project lifetime. Through Project activity economic development has been achieved in the project location by creating employment opportunities to the other allied services and indirect employment for men and women.	Project creates new employment and generates income for 25 no of people including men and women during the project lifetime. 15 Long term jobs and 10 short term jobs will be provided	1. Employment as per the national labour and company law including national geneder policy 2. Maintains company HR policy to create standard operating procedures (SOPs) to follow and maintain safe and secure work environment 3. paying the wages as per the minimum	Project owner monitors the implantation of the policies and employee grievances if any, through the separate HR manager and site in charge. Quantity of employment for both men and women will be monitored through employment records which will	Number of people (men & Women) employed directly due to the project activity	YES Targeted SDG is likely to be achieved during the entire crediting period.

	and secure working environments for all workers, including migrant workers, in					wages act of the country.	include Name, Gender and salary etc.		
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Target: 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities Indicator: 9.4.1 CO2 emission per unit of value added	Yes	Provides one clean and resilient energy generation facility Supports advanced industrialization by providing zero greenhouse gas and non-polluting clean electricity. Support industrialization through local hiring, procurement, and training and skills development.	Project activity involves installation of 300 MW wind power plant project in India.	9.4.1 CO2 emission per unit of value added (tCO_2/m^2) The project will reduce 651,811 tco2	The project activity is a new green field installationof green technology and the Project O&M team continuously work to improve the efficiency and reduce the plant outages and trying to achieve the maximum grid availability to generate and feed the maximum renewable energy to the grid	The net electricity supplied to the grid by the project activity is continuously monitored through energy meter (main and check meter) installed at the sub-station. CO2 emission reductions realized by the project activity will represent the added value.	Project has already commissioned and started reducing the emissions. Hence complied to the SDG No.9	Yes
Goal 10. Reduce in*equality within and among countries	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 11. Make cities and human	NA	NA	NA	NA	NA	NA	NA	NA	NA

settlements inclusive, safe, resilient and sustainable									
Goal 12. Ensure sustainable consumption and production patterns	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 13. Take urgent action to combat climate change and its impacts	13.2 Integrate climate change measures into national policies, strategies and planning	Yes	Emission reductions achieved per year	651,811 tCO_2	SDG 13	Emission reduction achieved per year	Electricity produced by the renewable generating unit multiplied by an emission factor	Reduction of Greenhouse gases	Yes
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	NA	NA	NA	NA	NA	NA	NA	NA	NA
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	NA	NA	NA	NA	NA	NA	NA	NA	NA
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

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

Section G. Local stakeholder consultation

G.1. Modalities for local stakeholder consultation

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Local stakeholder consultation (LSC) was performed by Tata Power Renewable Energy Limited on 20/06/2022 for 250 MW and on 20/06/2020 on 50 MW site, Following stakeholder consultations were undertaken for the social impact assessment

1. Project team
2. Land team
3. CSR team
4. Villagers in the study area, and villagers outside the study area where an existing project is operational.
5. Taluka Development Officer
6. Mamlatdar Officer
7. Land-sellers

During the meeting both men and women were invited for consultation. The Project representatives presented the salient features of the project activity to the stakeholders including the impact of project activity on Social, economic and environmental safeguards with the implementation of the project. The stakeholders also acknowledged the socio-economic benefits of the project activity including improved infrastructure in the region, and employment opportunities for local residents.

Questions were distributed to collect comments from Government officials, Social Organizations and local residents, and all questionnaires have been recollected.

The following questions were asked in the questionnaires:

Are you aware of the project?

In your opinion, what are the pros and cons of the project?

Has the project provided livelihood opportunities to you?

Does the project generate any hazardous waste?

Does the project do water pollution?

Does the project do air pollution?

Has the project contributed to development of nearby areas?

Any questions or comments ?

Comments from the 26 questionnaires have been summarized in section G.2 below

No concerns are reported in the feedback form. All the feedback forms will be submitted to the verifier during validation Project owner has requested the stakeholders to contact the site in-charge any time through the email or phone or to the site to express their grievances in future.

G.2. Summary of comments received

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All stakeholders interviewed are supportive to the implementation of the project, believing that the Project will help mitigate the air pollutions by landfill site, improve the community environment and promote local economic development.

Local stakeholders also have raised their concerns about environmental and social impacts of the project during construction and operation period. Comments are summarized below.

Stakeholder concerns	**Response**
The project shall use open space as project site to avoid forest occupation and vegetation destruction	The project site selected by the project owner locates inside the private land which has been purchased through a sale deed. The area of cultivation in this region is considerably low owing to the lack of adequate water and any irrigation facilities. Highly unpredictable pattern of rain coupled with frequent droughts often leads to poor farm yield/ productivity.
Local area has adequate workforce in unskilled category as mostly working population of the local area are cultivators/agriculture laborer	The employment of local laborer will positively influence the project operations, in strengthening project relations with the local community and building a positive rapport.
Construction waste shall be properly collected and disposed	Part of the construction waste will be recycled by the project, the rest will be collected and disposed in the landfill site
Some key areas of intervention for CSR activities have been highlighted earlier under 'Local Gram Panchayat' heading of this table.	The CSR activities focused on education and health, among others will also be targeted at the neighboring villages and the immediate local community which will lead to improvement in livelihood.

G.3. Consideration of comments received

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Since there is no negative comment received and the local are supportive of the project activity, no further consideration on the received comments is required.

Section H. Approval and authorization

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As per the guideline available in this regard, submission of Host Country Attestation (HCA) on Double Counting as and when required by CORSIA will provide during the verification.

Appendix 1. Contact information of project owners

Organization name	Tata Power Renewable Energy Limited
Country	India
Address	Corporate Centre B, 34 Sant Tukaram Road, Carnac Bunder, Mumbai Maharashtra, India-400 009.
Telephone	022 6717 1912
Fax	-
E-mail	sivanarayana@tatapower.com
Website	https://www.tatapower.com/
Contact person	Siva Narayana Venkat Gavadhakatla

Appendix 2. Affirmation regarding public funding

>>
Not Applicable

Appendix 3. Applicability of methodology(ies)

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Refer Section B.2

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

>>
Not applicable

Appendix 5. Further background information on monitoring plan

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Not applicable

Appendix 6. Summary report of comments received from local stakeholders

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Refer Section G.2

Appendix 7. Summary of de-registered CDM project (Type B)

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Not Applicable as this project activity is not a De-Registered CDM project activity

Appendix .8.

Double counting Requirement

Avoidance of Double Accounting in regional Emission Trading Schemes: Allows A1 or A2 type projects from the jurisdiction where Emission Trading Schemes (ETS) are in operation (e.g., European Union Emission Trading Scheme (EUETS), Chinese ETS) to be submitted as a GCC project, provided that they are not included or covered in the ETS and avoid double accounting (new requirement)

A self-declaration from the Project Owner in the PSF that written attestation from the host country's national focal point or focal point designee will be provided at the earliest opportunity, but prior to submission of requesting issuance to the GCC Program.

Bundling criteria

Criteria	**Project Specific information**
Criteria 1-(**Not a bundled project)Project which apply same technology (Solar power**) and methodology (ACM0002, v20.0), has same baseline (which is national electricity grid), generate the same output (electricity), apply the same additionality approach (Investment analysis) and has single investment decision for all the activities in the project, are by default 'homogenous' and is not a bundled project, therefore can apply requirements applicable to single projects (with single or multiple sites	The bundled project activity for 50 MW Tata Renewables Energy Pvt Ltd at banda and 250 MW Tata Renewables Energy Pvt Ltd at prayagraj **has different investment decision dates** and hence criteria 1 is not applicable
Criteria 2-The bundled project has 2 legal owners who implements the project in 2 different locations at different time of investment decision within the must be one year bundling project).Investment climate is same	The project activity is located at two different locations and have same project owner and the investment decision is within one year for both the projects. Hence **criteria 2 is applicable**
Criteria 3-The bundling project by a legal owner and two/three project owner at different district with investment decision making within the bundle is 1 year.The irr should be 5% variation across each projects in a bundle	**Not applicable,** as project owner is same

DOCUMENT HISTORY

Version	Date	Comment
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 o Revised Table in section B.7.2 on Monitoring-program of risk management actions o Revised Table in section E.1 on Environmental Safeguards o Revised Table in section E.1 on Social Safeguards o 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: o Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC); o 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). o Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA[14];
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

[14]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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