

Gold Standard for the Global Goals
Key Project Information & Project Design Document (PDD)



Version 1.1 – August 2017

KEY PROJECT INFORMATION

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|--|--|
| Title of Project: | Hybrid (Solar+Wind) Power project by SBE Renewables, Rajasthan |
| Brief description of Project: | The project activity is a 450 MW hybrid (solar+Wind) power project, promoted by SBE Renewables Ten Projects Pvt. Ltd. The purpose of the project activity is to generate clean electricity by utilizing the renewable Solar and wind energy. |
| Expected Implementation Date: Expected duration of Project: | NA 25 years |
| Project Developer: | SBE Renewables Ten Projects Pvt. Ltd |
| Project Representative: | Infinite Solutions |
| Project Participants and any communities involved: | SBE Renewables Ten Projects Pvt. Ltd |
| Version of PDD: Date of Version: | 02 18/04/2020 |
| Host Country / Location: | India |
| Certification Pathway (Project Certification/Impact Statements & Products) | Impact statements & products |
| Activity Requirements applied: (mark GS4GG if none relevant) | Renewable Energy activity requirement |
| Methodologies applied: | ACM0002: Grid-connected electricity generation from renewable sources - Version 20.0 |
| Product Requirements applied: | GHG Emissions Reductions & Sequestration Product Requirements |
| Regular/Retroactive: | Retroactive |
| SDG Impacts: | <ol style="list-style-type: none"> 1 - SDG 7 Affordable and Clean Energy 2 - SDG 8 Decent Work and Economic Growth 3 - SDG 13 Climate Action |
| Estimated amount of SDG Impact Certified | <ol style="list-style-type: none"> 1 - SDG 7- 829,425 MWh/year 2- SDG 8 - <ul style="list-style-type: none"> • Number (employees): 15 persons • Number(Trainings): Minimum 1 training. • The income to all the unskilled workers are made on day to day basis in line with minimum wage requirements. 3- SDG 13- 777,062 tCO_{2e} per annum |

SECTION A. Description of project

A.1. Purpose and general description of project

The main purpose of the project activity is to generate electrical energy through sustainable means using solar and Wind power resources, the generated green electricity will contribute to climate change mitigation efforts. This project activity is a large scale hybrid solar + Wind power based power generation project. SBE Renewables Ten Projects Pvt Ltd is the project investors for this project activity. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 777,062 tCO_{2e} per annum, thereon displacing 829,485 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/ fossil fuel based power plant.

This is a proposed project activity and currently at very initial stage. Only Letter of Award has been issued from (SECI) government of India dated 25/01/2019, under the bidding process. The project proponent has applied under CDM & GS mechanism in parallel for project development. Currently contracts are under negotiations for equipment purchase. PP will update the status of project in due course of validation.

Expected PO raising date: 01/05/2020

Expected Commissioning date: 31/03/2021

Project is under initial development stage in CDM Mechanism as well. PP will keep updating the status of project development under CDM in due course of validation.

The project activity is the installation of a new grid-connected renewable power plant/unit and this is not a CPA that has been excluded from a registered CDM PoA as a result of erroneous inclusion of CPAs.

The details of the project are mentioned in the table:

| Project Investors' Name | Proposed Capacity in MW | Proposed Capacity in MW | Total | State |
|-------------------------------------|-------------------------|-------------------------|--------|-----------|
| SBE Renewables Ten Projects Pvt Ltd | 300 MWac (Solar) | 150 MW (Wind) | 450 MW | Rajasthan |

Scenario existing prior to the implementation of the project activity

As the project activity is the installation of a new grid-connected renewable power plant/unit. The scenario existing prior to the implementation of project activity 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" (Version 7.0, EB 100 annex 4).

Baseline Scenario

Baseline scenario and Scenario existing prior to the implementation of the project activity are both same.

Sustainable Development

The National CDM Authority (NCDMA), which is the Designated National Authority (DNA) for the Government of India (GOI) under the Ministry of Environment, Forest and Climate Change (MoEFCC), has mentioned four indicators for the sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India. The project's contribution towards sustainable development has been addressed based on the following sustainable development aspects, in line with the requirements of the NCDMA:

- **Social well being**

The project activity will provide job opportunity to local people during erection, commissioning and maintenance of the Solar+wind power project. Frequency of visiting to villages and nearby areas by skilled, technical and industrialist has increased due to installation /site visit/operation and maintenance work related to the project at plant site. This directly and indirectly positively effects the economy of nearby populace.

- **Environmental well being**

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

- **Economic well being**

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

- **Technological well being**

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

A.2. Eligibility of the project under Gold Standard

The project activity meets the eligibility criteria as per section 3.1.1 of GS4GG Principles & Requirements document as described below.

- The project applies methodology ACM0002, which is an approved methodology under Gold Standard.
- The project type is solar+wind which is an eligible project type as it is in accordance with 1.1.1 a) and 1.1.1 b) of the Eligible Project Types & Scope under Renewable Energy Activity Requirements.
- The project activity results in displacement of electricity from thermal power stations while contributing to sustainable development of India. Hence, the project contributes to the Gold Standard Vision and Mission.
- Solar and Wind projects are an approved project type and do not require further approval from Gold Standard.
- This project activity is not associated with geo-engineering or energy generated from fossil fuel or nuclear, fossil fuel switch, nor does it enhances or prolongs such energy generation.
- PP hereby declares that the project activity is neither registered nor rejected with any other GHG mechanism. However, PP is under process of regestring the project activity with UNFCCC CDM.

General Eligibility Criteria under Renewable Energy Activity Requirements

Project Type : As discussed above, the project type is eligible.

Project Location : The project is located in India.

Project scale : The project activity is a 450 MW hybrid (solar+Wind) project and thus qualifies under large scale projects.

A.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

The project participants SBE Renewables Ten Projects Pvt Ltd is the legal owners of the project and have the legal rights for the credits that shall be generated by this project activity.

A.4. Location of project

A.4.1. Host Country

India

A.4.2. Region/State/Province etc.

Rajasthan

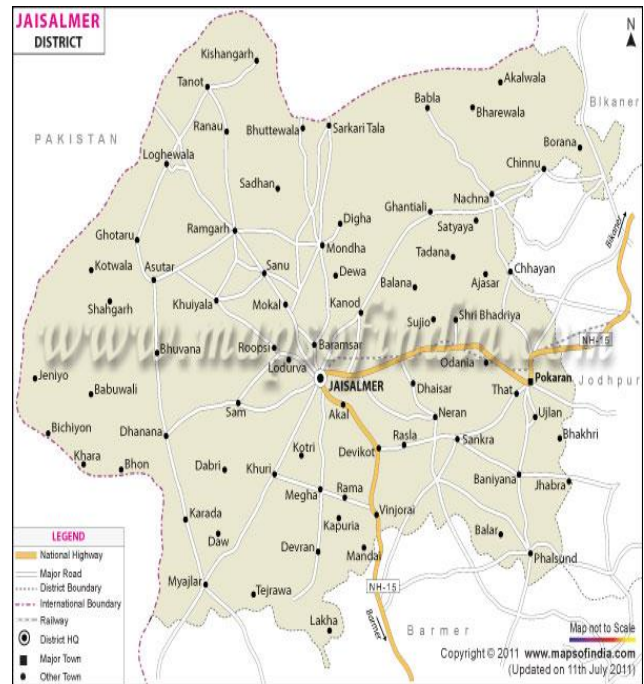
A.4.3. City/Town/Community etc.

At the time of decision making, the PP decided to set up the projects at the below mentioned locations:

| Project Investors' Name | Capacity | District | State |
|-------------------------------------|----------|-----------|-----------|
| SBE Renewables Ten Projects Pvt Ltd | 450 MW | Jaisalmer | Rajasthan |

A.4.4. Physical/Geographical location

The proposed project activity is located at Jaisalmer district in Rajasthan. The unique identification of this project will be provided at the time of implementation. A pictorial representation of the location of the project activity on the map of India is provided as follows:



A.5. Technologies and/or measures

The project activity involves installation of 450 MW grid connected hybrid solar photovoltaic + Wind power plant.

Solar PV Technology:

The PV system will mainly consist of PV modules, module mounting structures, inverters, regulators, monitoring devices etc.

Electrical Characteristics are as below:

- 3-phase alternating current
- Nominal frequency is 50 Hz
- Final Voltage at Delivery Point is 400/220/132/66kV

The project activity is expected to operate at a plant load factor of 21.36% exporting 829,485 MWh of electrical energy to the Regional grid of India, throughout its entire life span of 25 years. This will result in average annual reduction of 777,062 tCO₂ per annum from the project activity. The project activity does not involve any technology transfer.

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Wind Technology:

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind blowing at high speeds has a considerable amount of kinetic energy. When this kinetic energy passes through the blades of the wind turbines, it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected shaft hence rotates, which is connected to a generator, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation. Hence the project activity has used an environmentally safe and sound technology. Also, there is no transfer of technology involved in this project activity.

Baseline Scenario

As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following as per applied methodology: *“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”.*

Hence, pre-project scenario and baseline scenario are the same.

Purpose of the Project

The purpose of the project activity is to generate electrical power using solar+Wind energy, there by displacing non-renewable fossil resources resulting to sustainable, economic and environmental development. In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations. Thus the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions.

Positive contribution of the project to the following Sustainable Development Goals:

1. **SDG13: Climate Action** : The project would lead to reduction of approx. 777,062 tCO₂ per annum due to implementation of project activity.
2. **SDG 7: Affordable and Clean Energy** : The project is expected to generate 829,485 MWh of clean energy per annum
3. **SDG 8: Decent Work and Economic Growth** : The project is expected to provide direct employment to around 15 persons. The project leads to Trainings & workshops which are conducted for the O&M staff of the PP.

A.6. Scale of the project

Renewable energy project activities with a maximum output capacity of 15 megawatts (or an appropriate equivalent) are small scale project activity and project activities of more than 15 MW are considered as large-scale CDM project activity.

As the project activity is of 450 MW capacity, hence clearly it is Large Scale project.

A.7. Funding sources of project

Private funding and funding from bank. The PP hereby confirms that there is no public funding from Annex 1 countries and no diversion of Official Development Assistance (ODA) involved in the project activity.

A.8. Assessment that project complies with 'gender sensitive' requirements

Question 1: Does the project reflect the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy? Explain how.

Response: As per Gold Standard Gender Policy, para 13(i) *“Foundational gender-sensitive requirement - This strengthens Gold Standard’s ‘do no harm’ approach and addresses safeguards to prevent or mitigate adverse impacts on women or men and girls and boys. Such action is mandatory for all projects seeking Gold Standard certification and includes compliance with the gender ‘do no harm’ safeguards, gender gap analysis and gender sensitive stakeholder consultations.”* The project being a renewable energy project is not gender sensitive project. The project does not adversely impact women or men.

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Question 2: Does the project align with existing country policies, strategies and best practices? Explain how.

Response: India is party to “Convention on the Elimination of All Forms of Discrimination against Women¹” and the project has aligned its policies which does not discriminate on gender.

Question 3: Does the project address the questions raised in the Gold Standard Safeguarding Principles & Requirements document? Explain how.

Response: The Project shall complete the following gender assessment questions below:

1. *Is there a possibility that the Project might reduce or put at risk women’s access to or control of resources, entitlements and benefits?*

No, the Project being a solar+wind project does not reduce access to or control of resources for women.

2. *Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?*

No, the Project beneficiaries in terms of employment and social upliftment of the area are common for both the gender.

3. *Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project’s activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?*

No, the CSR activities that are planned to be carried out by the project proponent shall be discussed with the community, consisting both the genders, before the actual implementation.

4. *Does the Project take into account gender roles and the abilities of women or men to benefit from the Project’s activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?*

Yes the project takes into account gender roles and abilities of women/men. Job profile is allocated based on the type of work to be carried out.

5. *Does the Project design contribute to an increase in women’s workload that adds to their care responsibilities or that prevents them from engaging in other activities?*

No, on the contrary the project leads to increased availability of electricity in the regional grid thereby uplifting the living standards.

6. *Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?*

No, since the project is a renewable electricity generation project, thus it will not have discriminated against women.

7. *Would the Project potentially limit women’s ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?*

No, in fact, the project leads to improved electricity in the regional grid thereby leading to less usage of fuel for lighting.

8. *Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?*

No, in fact, due to improved electricity availability the usage of fuel for lighting would be reduced as well as indoor air quality would be improved.

Question 4: Does the project apply the Gold Standard Stakeholder Consultation & Engagement Procedure Requirements? Explain how.

¹ <http://hrlibrary.umn.edu/research/ratification-india.html>

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Response: Since this is a future project and applying retroactively for GS registration, a Stakeholder consultation & Engagement procedure and Feedback round shall be carried out at a later stage. However, a stakeholder consultation shall be conducted in line with CDM requirements at the site location. The project representative will explain how such power projects help in providing clean energy and thereby help in mitigating impacts due to Global Warming and the impacts of solar power projects which lead to providing clean energy, increase in employment opportunities both long term and short term, increased income and thereby leading to improvement in living standard of the people. The stakeholders feedback shall be recorded and documented appropriately once conducted.

SECTION B. Application of selected approved Gold Standard methodology

B.1. Reference of approved methodology

- Title** : Grid-connected electricity generation from renewable sources.
- References** : Approved Large Scale Consolidated Methodology: ACM0002 “Grid-connected electricity generation from renewable sources” Version 20.0
<https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>
- Tools:** Tool for the demonstration and assessment of additionality 7.0
<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.pdf>
 Tool to calculate the emission factor for an electricity system 7.0
<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

B.2. Applicability of methodology

As per ACM0002 (Version 20.0, EB 105 Annex 3), “This methodology applies to project activities that include retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a Greenfield power plant”. The project activity meets the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 20.0, Sectoral Scope 1 for Greenfield projects as described below:

| Applicability | Project activity vis-à-vis applicability Conditions |
|--|---|
| This methodology is applicable to grid-connected renewable energy power generation project activities that: <ul style="list-style-type: none"> 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) (d) Involve a replacement of (an) existing plant(s)/unit(s). | The project activity is installation of a new grid connected renewable hybrid (solar+Wind) 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: <ul style="list-style-type: none"> (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 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. | The proposed project activity is an installation of a new grid connected hybrid (solar+Wind) 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. |

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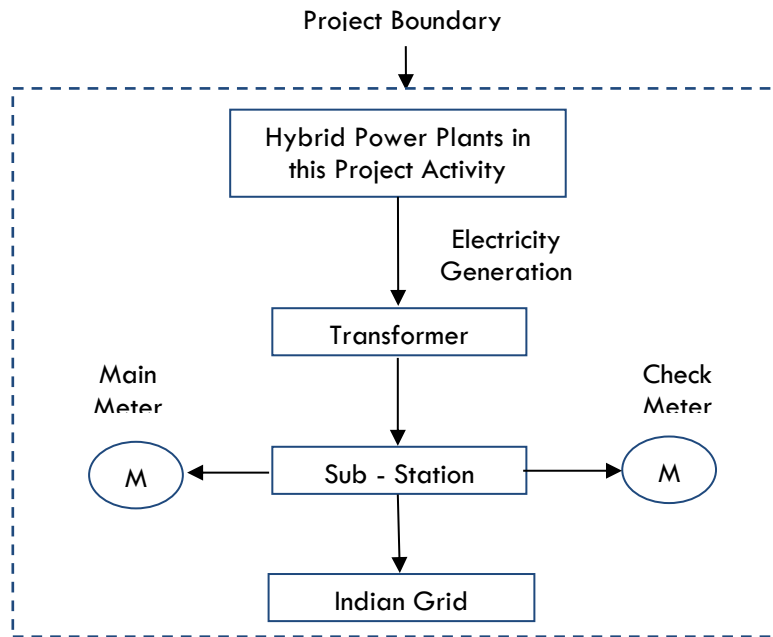
| | |
|--|--|
| <p>In case of hydro power plants, one of the following conditions shall apply:</p> <p>(a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</p> <p>(b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (3), is greater than 4 W/m²; or</p> <p>(c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m²; or</p> <p>(d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m², all of the following conditions shall apply:</p> <p>(i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m²;</p> <p>(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p> <p>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be:</p> <p>a. Lower than or equal to 15 MW; and</p> <p>b. Less than 10 per cent of the total installed capacity of integrated hydro power project.</p> | <p>The proposed project activity is an installation of a new grid connected hybrid (solar+Wind) power plant/unit and not Hydro power plant, therefore this criteria is not applicable for this project activity.</p> |
| <p>In the case of integrated hydro power projects, project proponent shall:</p> <ul style="list-style-type: none"> • 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 • 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. | <p>The proposed project activity is an installation of a new grid connected hybrid (solar+Wind) power plant/unit and not Hydro power plant, therefore this criteria is not applicable for this project activity.</p> |
| <p>The methodology is not applicable to:</p> <p>(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;</p> <p>(b) Biomass fired power plants/units.</p> | <p>The project activity is installation of a new grid connected hybrid (solar+Wind) 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.</p> <p>This is a hybrid (solar+Wind) power plant/unit and not a biomass fired plant, therefore criterion described in point (b) is not applicable to the project activity.</p> |
| <p>In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline</p> | <p>The project activity is a new grid connected hybrid (solar+Wind) power plant/unit and not a retrofits,</p> |

| | |
|--|--|
| 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”. | replacement or capacity additions and therefore this criterion is not applicable to the project activity. |
| Applicability conditions of “Tool to calculate the emission factor for an electricity system”, - Version 7.0 | |
| This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects). | This condition is applicable. OM, BM and CM are estimated using the tool under section B.6.3 for calculating baseline emissions. |
| Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in “Appendix 2: be met. Namely, the total capacity of off-grid Procedures related to off-grid power generation” should power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity. | Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly. |
| In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country. | The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity. |
| Under this tool, the value applied to the CO2 emission factor of biofuels is zero. | The project activity is a grid connected hybrid (solar+Wind) power project/ unit and does not involve emission from biofuels. Therefore, this criterion is not applicable. |

B.3. Project boundary

Project boundary has ascertained using ACM0002 (Version 20.0, EB 105, Annex 3) - “*The spatial extent of the project boundary includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to.*”

Hence the project boundary includes the Solar+Wind Project activity, sub-station, grid and all power plants connected to grid. The proposed project activity will evacuate power to the Indian grid.



| Source | | GHGs | Included? | Justification/Explanation |
|-------------------|--|------------------|-----------|--|
| Baseline scenario | Grid connected electricity generation | CO ₂ | Yes | Main emission source |
| | | CH ₄ | No | Minor emission source |
| | | N ₂ O | No | Minor emission source |
| Project scenario | Greenfield Hybrid Power Project Activity | CO ₂ | No | No CO ₂ emissions are emitted from the project activity |
| | | CH ₄ | No | No, Project Activity does not emit CH ₄ |
| | | N ₂ O | No | No, Project Activity does not emit N ₂ O |

B.4. Establishment and description of 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 solar+wind plant to generate the power from solar radiations and wind and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

The combined margin (EF_{grid,CM,y}) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM), in accordance with the Tool to calculate the emission factor for an electricity system – Version 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.

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

| Parameter | Value | Nomenclature | Source |
|-------------------------|---------------------------------|---|---|
| EF _{grid,CM,y} | 0.9368 tCO ₂ /MWh | Combined margin CO ₂ emission factor for the project electricity system in year y | Calculated ² as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 14 published by Central Electricity Authority (CEA), Government of India. |
| EF _{grid,OM,y} | 0.9610 tCO ₂ /MWh | Operating margin CO ₂ emission factor for the project electricity system in year y | Calculated as the last 3 year (2015-16, 2016-17, and 2017-18) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 14, published by Central Electricity Authority (CEA), Government of India. |
| EF _{grid,BM,y} | 0.8644 tCO ₂ /MWh | Build margin CO ₂ emission factor for the project electricity system in year y | Baseline CO ₂ Emission Database, Version 14, published by Central Electricity Authority (CEA), Government of India. |

B.5. Demonstration of additionality

The table below is only applicable if the proposed project is deemed additional, as defined by the applied approved methodology or activity requirement or product requirement.

| | |
|---|----------------|
| Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable). | Not Applicable |
| Describe how the proposed project meets the criteria for deemed additionality. | Not Applicable |

The proposed project generates power using solar+wind energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 20.0, EB 105, Annex 3).

Thus the project follows section 5.3.2 of the applied methodology which requires the project proponent to determine the additionality based on “Tool for the demonstration and assessment of additionality”, Version 7.0. The step-wise approach to establish additionality of the project activity has been followed:

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. Hence, this step is not applicable.

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

As per the applied methodology ACM0002 version 20.0; Para 41, if the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plant and by the addition of new generation sources.

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

Step 2: Investment Analysis

Sub-step 2a: Determine appropriate analysis method

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

² http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/database_14.zip

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

The project will generate revenues from sale of electricity, therefore Option I is not applicable. Option II also does not apply since there is no comparable investment alternative available to the project participant. The most appropriate financial analysis method is therefore option III: the benchmark analysis, where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country.

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

Project Participants have considered Post-Tax Equity IRR for investment analysis at the time of decision-making. As Project Participants is only interested in the returns project is generating on the portion of investment costs, which is financed by them in the form of equity.

As per Para 16 of EB92, Annex 5 states that Required/expected returns on equity are appropriate benchmarks for an equity IRR. Therefore, the Expected return on equity is considered appropriate benchmark.

Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for Investment Analysis.

Default Value Benchmark:

As per para 19 of EB105, Annex 6 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:

Appendix A in EB105, Annex 6 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 10.24%

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

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

Where:

- Default value for Real Benchmark = 10.24% (as per Appendix of EB105, Annex 6)
- Inflation Rate forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India)

As a conservative approach, benchmark of 15.24% has been selected for this project activity.

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

Key assumptions supporting the financial projections

Considering the input values, Equity IRRs is given below:

| Project Participants' Name | Equity IRR without CDM | Benchmark (Equity IRR) |
|------------------------------------|------------------------|------------------------|
| SBE Renewables Ten Private Limited | 7.59% | 15.24% |

The CDM project activity cannot be considered as financially attractive as the equity IRR for the project activity is less than the Benchmark.

Sub-step 2d: Sensitivity Analysis

Addressing Guidance 27 & 28 of EB 105, Annex 06, following factors has been subjected to sensitivity analysis:

1. PLF
2. O&M Cost

3. Project Cost
4. Tariff

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

The results of sensitivity analysis 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 favourable conditions.

| |
|--|
| Probability to breach the benchmark: |
| Sensitivity Parameter 1 : PLF |
| PLF considered in financials is as per "Guidelines for the reporting and validation of Plant load factors" stated in EB48 Annex 11 ³ . |
| Variation in PLF of more than 10% is unlikely to happen as the PLF has been reported as per the Third Party Report based. |
| Sensitivity Parameter 2 : O&M |
| The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and also subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. Hence, the reduction in the O&M cost is highly unlikely. |
| Sensitivity Parameter 3 : Project Cost |
| Estimated Project Cost for financial analysis is considered as available at the time of decision making. However, even if we consider the actual cost of the project even then the benchmark is not breached. Moreover the Sensitivity is carried out for +/-10%. |
| Sensitivity Parameter 4 : Tariff Rate |
| The tariff is determined by PPA which is fixed for the entire project life of 25 years. Hence, there is no probability to get variation for the same. |

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.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice analysis

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

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

| Range | Capacity | Unit |
|---|----------|------|
| +50% | 675 | MW |
| Capacity of the proposed project activity | 450 | MW |
| -50% | 225 | MW |

³http://cdm.unfccc.int/EB/048/eb48_repan11.pdf

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

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

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

- a) As the project is located in Rajasthan state of India, therefore, projects in the geographical area of Rajasthan has been chosen for analysis.
- b) The project activity is a green-field renewable hybrid solar + Wind power project and uses measure (b) "Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies".
Therefore, projects applying same measure (b) are candidates for similar projects.
- c) The energy source used by the project activity is Wind + solar. Hence, only hybrid wind + solar energy projects have been considered for analysis.
- d) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
- e) The capacity range of the projects is within the applicable capacity range from 675 MW to 225 MW.
- f) The start date of the project activity 01/05/2020.

Numbers of Similar projects identified, which fulfil above-mentioned conditioned are

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

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

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

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

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

As per the tool on Common Practice, the project activities have been separated from the different technologies on the basis of Investment climate on the date of the investment decision.

Hence, projects where this condition is satisfied projects are counted for calculating N_{diff} projects.

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

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

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

Outcome of Step 4:

As,

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

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

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

Demonstration of Parallel and continuing actions:

| Project Timelines | Date |
|--|------------|
| Letter of Award | 25/01/2019 |
| Date of Notification to CDM EB & NCDMA | 11/01/2020 |

B.6. Sustainable Development Goals (SDG) outcomes

B.6.1. Relevant target for each of the three SDGs

| Item | Goals and Targets | Indicators |
|---|--|---|
| SDG 7: Affordable and Clean Energy | 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix | 7.2.1: Renewable energy share in the total final energy consumption |
| | Target: 829,485 MWh per annum | |
| SDG 8: Decent Work and Economic Growth | 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. | 8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities. |
| | Target: <ul style="list-style-type: none"> • Training: 1 nos annually • Employment of 15 staff | |
| SDG 13: Climate Action | 13.2: Integrate climate change measures into national policies, strategies and planning | 13.2.1: Number of countries that have communicated establishment or operationalization of an integrated policy/ strategy/ plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other) |
| | Target: 777,062 tCO ₂ per annum | |

B.6.2. Explanation of methodological choices/approaches for estimating the SDG outcome

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The company shall conduct regular surveys during construction as well as O&M phases in the villages near project locations to check the requirement of facilities by the villages. Based on the surveys, PP shall identify and works on several scope(s) of developmental activities such as health camps, distribution of furniture & sports kits in schools, toilet requirements in government schools, drinking water requirements etc. For this project activity, following SDGs are expected to be impacted:

SDG 7 : Affordable and Clean Energy

The baseline for the project is no project, thus leading to generation in the relevant grid which is dominated by fossil fuel. The clean energy generated by the project is calculated based on the amount of electricity generated by the project per annum. The project is expected to generate 829,485 MWh of clean energy per annum.

SDG 8: Decent Work and Economic Growth

The project leads to Trainings & workshops which are conducted for the O&M staff of the PP. It is expected that a minimum of 1 training (either of the a)[p=-bove) would be carried out annually.

The project will also provide employment to approximately 15 persons including O&M staff, management, outsourced jobs as well as security guards during the O&M phase.

SDG13 : Climate Action :

The project leads to mitigation of 777,062 tCO₂ per annum.

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

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (t CO₂e/yr)

BE_y = Baseline emissions in year y (t CO₂/yr)

PE_y = Project emissions in year y (t CO₂e/yr)

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 (t CO₂/yr)

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

EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO₂/MWh).

Calculation of EG_{PJ,y}

The calculation of EG_{PJ,y} is different for

- Greenfield plants,
- Retrofits and replacements, and
- Capacity additions

The project activity is the installation of solar+wind projects and it is a green field project. So the formula in option (a) i.e., greenfield plants is used to calculate the value of EG_{PJ,y}. In accordance with para 44 of the applied methodology:

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

Where:

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

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

The proposed project activity falls under Indian grid, which constitutes of both fossil fuels and non-fossil fuels sources of electricity generation. Emission reductions due to the project activity are considered to be equivalent to the baseline emissions, since the solar+wind project would not lead to any project emission and leakage emissions. Emission reductions are related to the electricity exported by the project and the emission coefficient of the grid system.

Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin and build margin factors according to the procedures prescribed in the latest tool for calculating the emission factor for an electricity system. The steps of calculation are as follows:

Step 1: Identify the relevant electricity systems

As described in tool “For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems”. It also states that “If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used”. Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern. However, all the 5 zones have been synchronized and called as Indian Grid.

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

Option I is opted for the project activity i.e. only grid connected power plants are included in the calculation.

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

According to the tool, the calculation of the operating margin emission factor is based on one of the following methods:

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

Any of the four methods can be used for calculating OM. However, the simple adjusted OM and dispatch data analysis OM cannot be currently applied in India due to lack of necessary data however, the simple OM method (option a) can only be used if low cost/must-run resources constitute less than 50% of total grid generation in:

- 1) average of the five most recent years, or
- 2) based on long-term averages for hydroelectricity production.

The Share of Low Cost / Must-Run (% of Net Generation) in the generation profile of the different grids in India in the last five years is as follows:

| | Share of Must-Run (Hydro/Nuclear) (% of Net Generation) | | | | |
|-------------|---|---------|---------|---------|---------|
| | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
| Indian Grid | 18.6% | 16.8% | 15.1% | 14.6% | 14.3% |

Source: CO2 Baseline Database for the Indian Power Sector - Central Electricity Authority (CEA)

The CEA database uses the option A i.e. data on net electricity generation and CO₂ emission factor for each power unit, the average efficiency of each power unit and the fuel type(s) used in each power unit, to calculate the OM of the different regional grids.

$$EF_{\text{grid,OMsimple},y} = \sum (EG_{m,y} \times EF_{EL,m,y}) / \sum EG_{m,y}$$

Where:

$EF_{\text{grid,OMsimple},y}$: Simple operating margin CO₂ emission factor in year y (tCO₂/MWh)

$EG_{m,y}$: Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$: CO₂ emission factor of power unit m in year y (tCO₂/MWh)

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m : All power units serving the grid in year y except low-cost / must-run power units
 y : The relevant year as per the data vintage chosen in step 3

In India, the Central Electricity Authority (CEA) has estimated the baseline emission factor for the power sector. This data has also been endorsed by the DNA and is the most authentic information available in the public domain.

Following tables shows the simple OM and Net generation⁴ respectively for the recent three years:

| Simple Operating Margin Emission Factors (t CO ₂ /MWh) (incl. Imports) | | | |
|---|---------|---------|---------|
| | 2015-16 | 2016-17 | 2017-18 |
| Indian Grid | 0.9655 | 0.9636 | 0.9543 |

| Net Generation in Operating Margin (GWh) (incl. imports) | | | |
|--|---------|---------|---------|
| | 2015-16 | 2016-17 | 2017-18 |
| Indian Grid | 871,753 | 916,278 | 960,693 |

Therefore the 3 years net generation weighted OM average for Indian grid comes out to be 0.9610 tCO₂/MWh

The emission factor of each power unit m has been determined as follows:

$$EF_{EL,m,y} = (\sum FC_{i,m,y} \times NCV_{i,y} \times EF_{CO_2,i,y}) / EG_{m,y}$$

Where:

EF_{EL,m,y} : CO₂ emission factor of power unit m in year y (tCO₂/MWh)
 FC_{i,m,y} : Amount of fossil fuel type i consumed by power unit m in year y (Mass or volume unit)
 NCV_{i,y} : Net calorific value (energy content) of fossil fuel type i in year y (GJ / mass or volume unit)
 EF_{CO₂,i,y} : CO₂ emission factor of fossil fuel type i in year y (tCO₂/GJ)
 EG_{m,y} : Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
 m : All power units serving the grid in year y except low-cost / must-run power units
 i : All fossil fuel types combusted in power unit m in year y
 y : The relevant year as per the data vintage chosen in step 3

Step 5: Calculate the build margin (BM) emission factor

The sample group of power units m used to calculate the build margin consists of either:

- The set of five power units that have been built most recently, or
- The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

Project participants should use the set of power units that comprises the larger annual generation. Accordingly, the CEA database calculates the build margin as the average emissions intensity of the 20% most recent capacity additions in the grid based on net generation. The build margin emission factor has been calculated ex-ante based on the most recent information available on units already built for sample group m at the time of PDD submission to the DOE for validation. This option does not require monitoring the emission factor during the crediting period.

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

$$EF_{grid,BM,y} = (\sum EG_{m,y} \times EF_{EL,m,y}) / \sum EG_{m,y}$$

Where:

EF_{grid,BM,y} : Build margin CO₂ emission factor in year y (tCO₂/MWh)

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| | |
|---------------|---|
| $EG_{m,y}$ | Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh) |
| $EF_{EL,m,y}$ | CO ₂ emission factor of power unit m in year y (tCO ₂ /MWh) |
| m | Power units included in the build margin |
| y | Most recent historical year for which power generation data is available |

The CO₂ emission factor of each power unit m ($EF_{EL,m,y}$) is determined as per the procedures given in step 4 (a) for the simple OM, using option A1 for y most recent historical year for which power generation data is available, and using for m the power units included in the build margin.

Build margin emission factor is calculated, ex-ante as per the most recent data available. So, build margin emission factor for Indian grid for 2017-2018 is 0.8644 tCO₂/MWh

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

The emission factor EF_y of the grid is represented as a combination of the Operating Margin (OM) and the Build Margin (BM). Considering the emission factors for these two margins as $EF_{OM,y}$ and $EF_{BM,y}$ then the EF_y is given by:

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

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) |

According to “Tool to calculate the emission factor for an electricity system” the weights for OM and BM are 0.75 and 0.25 respectively.

Using the values for operating and build margin emission factor provided in the CEA database and their respective weights for calculation of combined margin emission factor, the baseline carbon emission factor (CM) is 0.9368 tCO_{2e}/MWh.

Project Emission

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

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

Where:

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

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

Leakage Emissions

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

B.6.3. Data and parameters fixed ex ante for monitoring contribution to each of the three SDGs

| | |
|---|--|
| Relevant SDG Indicator | SDG13 : Climate Action |
| Data/parameter | EF _{OM,y} |
| Unit | tCO ₂ e/MWh |
| Description | Operating Margin Emission Factor of Indian Grid |
| Source of data | Calculated from CEA database, Version 14, Dec 2018 ⁵ |
| Value(s) applied | 0.9610 |
| Choice of data or Measurement methods and procedures | The data are obtained from “CO2 Baseline Database for Indian Power Sector” version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| Purpose of data | The data is used to calculate baseline emission reductions. |
| Additional comment | This parameter is fixed ex-ante for the entire crediting period. |

| | |
|---|--|
| Relevant SDG Indicator | SDG13 : Climate Action |
| Data/parameter | EF _{BM,y} |
| Unit | tCO ₂ e/MWh |
| Description | Build Margin Emission Factor of Indian Grid |
| Source of data | Calculated from CEA database, Version 14.0 |
| Value(s) applied | 0.8644 |
| Choice of data or Measurement methods and procedures | Calculated as per “Tool to calculate the emission factor for an electricity system,”. The data are obtained from “CO2 Baseline Database for Indian Power Sector” version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| Purpose of data | The data is used to calculate baseline emission reductions. |
| Additional comment | This parameter is fixed ex-ante for the entire crediting period. |

| | |
|---|---|
| Relevant SDG Indicator | SDG13 : Climate Action |
| Data/parameter | EF _{CM,y} |
| Unit | tCO ₂ e/MWh |
| Description | Combined Margin Emission Factor of Indian Grid |
| Source of data | Calculated from CEA database, Version 14 |
| Value(s) applied | 0.9368 |
| Choice of data or Measurement methods and procedures | Calculated as per “Tool to calculate the emission factor for an electricity system,”. The data is obtained from “CO2 Baseline Database for Indian Power Sector” version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| Purpose of data | The data is used to calculate baseline emission reductions. |
| Additional comment | - |

B.6.4. Ex ante estimation of outcomes linked to each of the three SDGs

SDG 7: Affordable and Clean Energy - Project expected to generate 829,485 MWh clean energy every year

⁵ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/database_14.zip

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SDG 8: Decent Work and Economic Growth - Minimum 1 training to be carried out annually, apart from providing employment to approximately 15 persons.

SDG13 : Climate Action - The project leads to mitigation of 777,062 tCO₂ per annum.

Calculation of Outcome for SDG13 : Climate Action

Baseline emissions

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

$$BE_y = EG_{P,y} * EF_{grid,CM,y}$$

Where,

$EG_{P,y}$ = Total quantity of net electricity delivered to the Indian grid.

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y
= 0.9368 t CO₂/MWh.

| Capacity | PLF (%) | Generated Power (MWh/year) | Net generation with Degradation factor | Baseline Emission Factor (tCO ₂ /MWh) | Baseline emissions (tCO ₂ /year) |
|----------|---------|----------------------------|--|--|---|
| 450 MW | 21.36% | 842,011 | 829,485 | 0.9368 | 777,062 |

$$BE_y = 829,485 * 0.9368 \text{ t CO}_2/\text{year} = 777,062 \text{ tCO}_2/\text{year}$$

Project emissions

$$PE_y = 0$$

Leakage

No leakage emissions are applicable.

Emission reductions

$$ER_y = BE_y - PE_y = 777,062 - 0 = 777,062 \text{ tCO}_2/\text{year}$$

B.6.5. Summary of ex ante estimates of each SDG outcome

SDG 7: Affordable and Clean Energy

| Year | Baseline estimate | Project estimate MWh | Net benefit MWh |
|--|-------------------|----------------------|-----------------|
| Year 1 | 0 | 842,011 | 842,011 |
| Year 2 | 0 | 837,801 | 837,801 |
| Year 3 | 0 | 833,612 | 833,612 |
| Year 4 | 0 | 829,444 | 829,444 |
| Year 5 | 0 | 825,297 | 825,297 |
| Year 6 | 0 | 821,170 | 821,170 |
| Year 7 | 0 | 817,065 | 817,065 |
| Total | 0 | 5,806,400 | 5,806,400 |
| Total number of crediting years | 7 | | |

| | | | |
|---|-------|---------|---------|
| Annual average over the crediting period | 0 MWh | 829,485 | 829,485 |
|---|-------|---------|---------|

The proposed project activity falls under Indian grid, which constitutes of both fossil fuels and non-fossil fuels sources of electricity generation hence in baseline, the affordable and Clean Energy generated was 0. Since the project is a solar+wind energy project, therefore the Affordable and Clean Energy produced by the project is 829,485 MWh per year.

SDG 8: Decent Work and Economic Growth

| Year | Baseline estimate | Project estimate | Net benefit |
|---|--------------------|----------------------|----------------------|
| Year 1 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Year 2 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Year 3 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Year 4 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Year 5 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Year 6 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Year 7 | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |
| Total | 0 Training, 0 Jobs | 5 Trainings, 15 Jobs | 5 Trainings, 15 Jobs |
| Total number of crediting years | 7 | | |
| Annual average over the crediting period | 0 Training, 0 Jobs | 1 Training, 15 Jobs | 1 Training, 15 Jobs |

There was no training in the baseline however the training and jobs generated by the project activity is 1 Training and 15 jobs.

SDG13 : Climate Action

| Year | Baseline estimate tCO2 | Project estimate | Net benefit tCO2 |
|---|---------------------------|------------------|---------------------|
| Year 1 | 788,796 | 0 tCO2 | 788,796 |
| Year 2 | 784,851 | 0 tCO2 | 784,851 |
| Year 3 | 780,927 | 0 tCO2 | 780,927 |
| Year 4 | 777,022 | 0 tCO2 | 777,022 |
| Year 5 | 773,137 | 0 tCO2 | 773,137 |
| Year 6 | 769,272 | 0 tCO2 | 769,272 |
| Year 7 | 765,426 | 0 tCO2 | 765,426 |
| Total | 5,439,431 | 0 tCO2 | 5,439,431 |
| Total number of crediting years | 5 | | |
| Annual average over the crediting period | 777,062 | 0 tCO2 | 777,062 |

The proposed project activity falls under Indian grid, which constitutes of both fossil fuels and non-fossil fuels sources of electricity generation hence in baseline, the estimated emission is 777,062 tCO₂ per year. Since the project is hybrid solar+Wind energy project, therefore the project does not emit any GHG.

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

| | |
|---|--|
| Relevant SDG Indicator | SDG 7.2.1 : Affordable and Clean Energy |
| Data / Parameter | $EG_{\text{facility},y}$ |
| Unit | MWh |
| Description | Quantity of net electricity supplied to the grid |
| Source of data | Statement of net export of power to the grid at the plant site |
| Value(s) applied | 829,485 MWh |
| Measurement methods and procedures | <p>Data Type: Measured Monitoring equipment: Energy Meters of accuracy class 0.2s Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually. Archiving Policy: Paper &/or Electronic Calibration frequency: Once in 5 years as per CEA guidelines⁶</p> <p>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 SECI as per below equation:</p> $EG_{P,y} = EG_{\text{Export}} - EG_{\text{Import}}$ <p>Cross Checking: Quantity of net electricity supplied to the grid will be cross checked from the Invoices/ Monthly Bill raised by the Project Participants to SECI.</p> |
| Monitoring frequency | Monthly |
| QA/QC procedures | Calibration of all the meters will be undertaken once in 5 years as per CEA guidelines. The meters will be of accuracy class 0.2s. |
| Purpose of data | The Data/Parameter is required to calculate the baseline emission |
| Additional comment | Data will be archived electronically for a period of 2 years beyond the end of crediting period. |

| | |
|-------------------------------|--|
| Relevant SDG Indicator | SDG 8.5.1: Decent Work and Economic Growth |
| Data / Parameter | <ul style="list-style-type: none"> • Quantitative employment, • Quality of employment • Income generation |
| Unit | <ul style="list-style-type: none"> • Number (Trainings) • Number (employees) • INR (salary) |

⁶

http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page 12

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| | |
|---|---|
| Description | <ul style="list-style-type: none"> • Number of Trainings provided to employees & O&M staff • Number of project employees with Number of male/female, permanent/temporary, age and person with disabilities. • Salary given to the employees of the project. <p>The income to all the unskilled workers are made on day to day basis in line with the minimum wage requirements. Annual records of income paid to all the employees would be available.</p> |
| Source of data | Training Records (HSE & HR) Salary Slip of the project employees. |
| Value(s) applied | <p>The trainings & workshops will be given to the O&M staff are:</p> <ul style="list-style-type: none"> • HSE Training Record • Soft Skill Training <p>It is expected that a minimum of 1 training (either of the above) would be carried out annually.</p> <p>The training programmes help in making the workforce efficient and skilled at their job. This not only helps the company but adds to growth of individual employees. Thus, the project has a positive impact on the parameter.</p> |
| Measurement methods and procedures | <ul style="list-style-type: none"> • Training Attendance sheets. • Employee Records • Salary slip of the employees |
| Monitoring frequency | Once in a Monitoring period |
| QA/QC procedures | The number of persons employed would be mentioned in the plant register, which can be crossed checked with daily attendance register. Salary slip can be checked for earnings of employees |
| Purpose of data | Continuation of regular trainings/workshops for employees & O&M staff |
| Additional comment | - |

| | |
|---|--|
| Relevant SDG Indicator | SDG13.2.1 : Climate Action |
| Data / Parameter | Air quality |
| Unit | tCO ₂ |
| Description | Reduction in CO ₂ emission reduction due to implementation of project activity |
| Source of data | Calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| Value(s) applied | 777,062 tCO ₂ emission reductions estimated per annum |
| Measurement methods and procedures | Calculated from CEA database and Energy Generation |
| Monitoring frequency | Calibration and Testing of Meters will be done by the accredited agency as per norms. Once in 5 years as per CEA guidelines ⁷ |
| QA/QC procedures | 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 |
| Purpose of data | Calculation of baseline emissions |
| Additional comment | The data will be archived for crediting period+2 years |

⁷http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page 12

B.7.2. Sampling plan

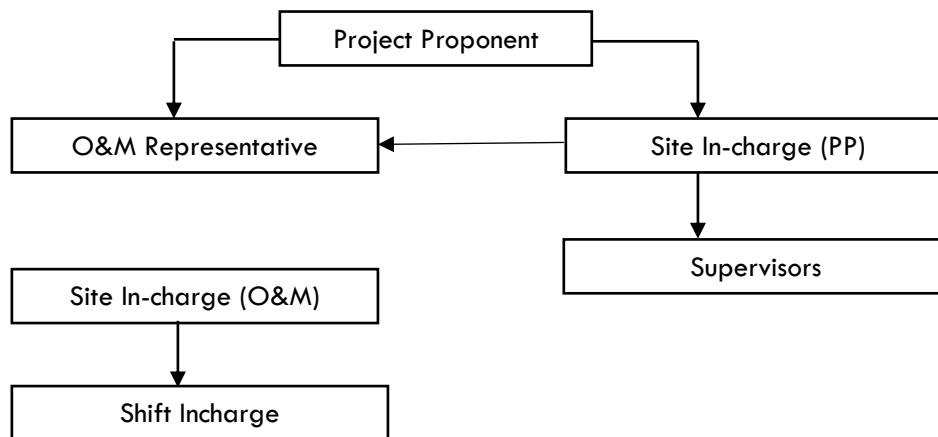
Sampling is not required for the given project activity.

B.7.3. Other elements of monitoring plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected hybrid solar+wind power project/ unit being implemented in Rajasthan, India. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, 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 participant.

The monitoring team will be composed of the following staff:



Responsibilities of Site In-charge (PP): Overall functioning and maintenance of the project activity, the Site in-charge shall coordinate with the O&M operator as well as the site supervisors.

Responsibilities of O&M Representative: Co-ordination between Site in-charge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day monitored data.

Data archiving policy: All monitored data will be archived electronically for a period of two years after the end of the crediting period or the last issuance of CERs, whichever occurs later.

Data Measurement: Projects activity comprises of installation Energy meters at a Pooling Substation prior to the Delivery point.

The export and import energy will be measured continuously using above mentioned meters installed at Substation. Export & Import readings of meters shall be taken on monthly basis by authorized officer of SECI in the presence of representative(s) of PP. The meter reading will be taken jointly and signed by the representatives of the SECI and representative(s) of PP. Based on the readings, invoices/ monthly bills will be raised by PP. These invoices/ monthly bills can be used for cross checking the meter readings taken for the respective project activity.

In case of pooling of multiple Projects at the same Substation, power from multiple Projects will be pooled at a Pooling Substation prior to the Delivery point and the combined power will be fed at Delivery point through a common transmission line from the Pooling Substation. In such cases, sub-meters also to be set up at pooling substation for individual projects in addition to the meters at Delivery Point.

It is to be noted that though the PP or their representatives are available during meter reading, the calculations of net electricity supplied to grid is completely under purview of SECI and PP does not have any control on it. Also accuracy class of meters and calibration frequency is under purview of SECI/Discom officer and PP does not have any control on it. PP gets the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations.

Data collection and archiving

Export & Import readings from main and check meters will be collected under the supervision of the O&M Team or authorized representatives of PP. The net electricity supplied to grid would be calculated based on export & import readings. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of CERs 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:

$$D = (A/B)*C$$

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 unlikely event of failure of both Main meter &/or Check meter installed at sub-station, where both the faulty meters are required to repair or replaced simultaneously, the meters shall be replaced immediately by the spare meter kept available at the site.

Personnel training

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

SECTION C. Duration and crediting period

C.1. Duration of project

C.1.1. Start date of project

Supplies order is expected by 01/05/2020

C.1.2. Expected operational lifetime of project

25 years

C.2. Crediting period of project

C.2.1. Start date of crediting period

01/08/2020, or the date of Project Design Certification, whichever is later.

C.2.2. Total length of crediting period

7⁸ Years 00 Months for first crediting period. Which will be renewed twice (2), limited to total crediting period 15⁹ years

SECTION D. Safeguarding principles assessment

D.1. Analysis of social, economic and environmental impacts

| Safeguarding principles | Assessment questions | Assessment of relevance to the project (Yes/potentially/no) | Justification | Mitigation measure (if required) |
|--|--|---|---|----------------------------------|
| SOCIAL & ECONOMIC SAFEGUARDING PRINCIPLES | | | | |
| 1. Human Rights | <p>a. The Project Proponent and the Project shall respect Internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights.</p> <p>b. The Project shall not discriminate with regards to participation and inclusion.</p> | No | <p>a. The Project is not in conflict with the economic livelihood or other issue of the local community. Thus, the Project does not cause any human rights abuse and respects internationally proclaimed human rights issue.</p> <p>b. Project activities are not expected to cause any human rights abuse. As a member of United Nations¹⁰ and part of UN Agreement on Human Rights¹¹, it is ensured by law in India that no action can be taken against human rights.</p> | Not Required |

⁸ PP has applied under CDM Mechanism as well. Hence, para 6.1.10 of GHG Emissions Reduction & Sequestration Product requirements states that "CDM Project Crediting Cycle: the project cycle shall mirror the CDM Cycle in terms of any Certification Renewals (e.g. 7 years).."

⁹ Renewable Energy Activity Requirements; Para 4.1.7, Projects may receive Issuance of Certified Impact Statements or Products for a maximum of three Certification Renewal Cycles i.e., a total of 15 years, unless mentioned otherwise in the Product Requirements.

¹⁰ <https://labour.gov.in/lcandilasdivision/india-ilo>

¹¹ <https://www.ilo.org/newdelhi/lang--en/index.htm>

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| <p>2. Gender Equality & Women's Rights</p> | <p>1. The Project shall complete the following gender assessment questions in order to inform Requirements, below:</p> <p>a. Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits?</p> <p>b. Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?</p> <p>c. Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?</p> <p>d. Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?</p> <p>e. Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?</p> <p>f. Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design</p> | <p>NO</p> | <p>1. The project does not decrease women's access to or control of resources.</p> <p>a) No, the Project does not reduce women's access to or control of resources, entitlements and benefits. The project will benefit to local community regardless of gender.</p> <p>b) No, the Project does not create any adverse effect on the local community.</p> <p>c) No, the Project does not consider the gender roles while engaging them and thereby provide equal rights to men and women¹². Local community meetings are scheduled considering participation by both Men and Women.</p> <p>d) The project does not discriminate the local community on basis of gender or caste or religion and therefore equally serve to all.¹³</p> <p>e) No, the Project design neither increase women's workload nor prevent them from engaging in other activities.</p> <p>f) There is no room for discrimination against women in this Project¹⁴.</p> <p>g) The Project will not limit women's ability regarding natural resources. The project is solely utilizing</p> | <p>Not Required</p> |
|--|--|-----------|--|---------------------|

¹² <https://labour.gov.in/sites/default/files/Equal%20Remuneration%20Rules,%201976.pdf>

¹³ https://labour.gov.in/sites/default/files/equal_remuneration_act_1976.pdf

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| | <p>and implementation or access to opportunities and benefits?</p> <p>g. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?</p> <p>h. Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?</p> <p>2. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women.</p> <p>a. Sexual harassment and/or any forms of violence against women - address the multiple risks of gender -based violence, including sexual exploitation or human trafficking.</p> <p>b. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.</p> <p>c. Restriction of women's rights or access to resources (natural or economic).</p> <p>d. Recognise women's ownership rights regardless of marital status - adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources.</p> <p>3. Projects shall apply the principles of non discrimination, equal treatment, and equal pay for equal work, specifically:</p> <p>a. Where appropriate for the implementation of a Project, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.</p> | | <p>solar+wind power and therefore does not impact natural resources of the region.</p> <p>h) No, the Project will not expose women and girls to further risks or hazards.</p> <p>2. The project does not create any direct or indirect impacts on gender equality and/or the situation of women:</p> <p>a. The project proponent has a grievance cell which would investigate complaints.</p> <p>b. Project participation by women or girls is merely voluntary basis and there is no compulsion on them. The project proponent has a grievance cell which would investigate complaints.</p> <p>c. The Project will not restrict women's rights or access regarding natural resources.</p> <p>d. Marital status is completely irrelevant to the Project. The project proponent does not discriminate on gender, caste, religion etc.</p> <p>3. The project has applied the principles of non-discrimination and equal treatment, pay & work as follows:</p> <p>a. Yes, the Project has equal opportunity for women and men to contribute both in volunteer and working positions.</p> | |
|--|---|--|---|--|

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| | <p>b. Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.</p> <p>c. Ensure that these conditions do not limit the access of women or men, as the case may be, to Project participation and benefits.</p> <p>4. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks.</p> | | <p>b. The project proponent has a specified HR policy that considers participation by both men and women.</p> <p>c. There is no limit on the access to Project participation and benefits from either of these conditions.</p> <p>4. PP does not involve in any form of discrimination in any kind. India also ratified relevant ILO core conventions on equality, namely Equal Remuneration Convention (Convention No 100) and Discrimination (Employment and Occupation) Convention (Convention No 111) in 1997¹⁵.</p> | |
| 3. Community Health, Safety & Working Conditions | <p>a. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community.</p> | No | <p>a. The project proponent is committed to the employee's workplace health & safety during all phases of the project. All employees will attend health & safety trainings. This is issued in the Labour code on Occupational Safety, Health and Working Conditions and UN Agreement on Human Rights¹⁶.</p> | Workplace Health & Safety trainings will be conducted regularly during the project operation. |
| 4. Cultural Heritage, Indigenous Peoples, Displacement and Resettlement | <p>a. Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)?</p> <p>b. Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?</p> <p>c. Does the Project require any change to land tenure arrangements and/or other rights?</p> | | <p>a. There are no protected archeological and cultural heritage sites are reported within the project footprint". Law on Cultural heritage is protected against alteration, damage or removal by the "law on cultural heritage¹⁷".</p> <p>b. The project does not involve any settlement areas. Thus, this project does not cause the physical or economic relocation of peoples. The project activity does not involve any alteration of existing roads as well as it does not add additional traffic. Since the site located isolated area, the traffic volume is negligible. Hence, there is no additional burden to the existing traffic. In addition, the project proponent built new roads for those sites which do not have road access.</p> | Not required |

¹⁵ https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new-delhi/documents/publication/wcms_650119.pdf

¹⁶ <https://www.ohchr.org/EN/Countries/AsiaRegion/Pages/INIndex.aspx>

¹⁷ <https://cpwd.gov.in/Publication/ConservationHertBuildings.pdf>

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| | <p>d. For Projects involving land-use tenure, are there any uncertainties with regards land tenure, access rights, usage rights or land ownership?</p> <p>e. Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?</p> | | <p>c. The Solar Panels and WTGs are all developed on private land and all of them will belongs to PP. Moreover, the project is not located with close proximity of any forest.</p> <p>d. There are no uncertainties regarding land tenure, access rights, usage rights or land ownership.</p> <p>e. No cultural heritage/ indigenous people are replaced by the project.</p> | |
| 1. Corruption | a. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects. | No | PP does not involve and is not complicit in any kind of corruption. India has ratified UN convention against Corruption in 2011 ¹⁸ . | Not required |
| 2. Economic Impacts | <p>a. The project does not employ and is not complicit in any form of child labor.</p> <p>b. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments.</p> <p>c. The project does not involve and is not complicit in any form of forced or compulsory labor.</p> | No | <p>a. PP and their subcontractors complying with all relevant national laws regarding child labor. PP will not employ children in any shape or form for their works. India has ratified ILO “C138 – Minimum Age Conventions” and “C182 – Worst Forms of Child Labour Convention”¹⁹.</p> <p>b. The project owner is committed to the safe and healthy working conditions all phases of the project. All employees will attend trainings health & safety. This issue is protected by Labor code²⁰ and UN Agreement on Human Rights²¹.</p> <p>c. PP and appointed contractors will not involve in any form of forced or compulsory labour. India has ratified ILO “C029 – Forced Labour Convention”²²</p> | Not Required |
| ENVIRONMENTAL & ECOLOGICAL SAFEGUARDING PRINCIPLES | | | | |
| 1. Climate and Energy | <p>a. Will the Project increase greenhouse gas emissions over the Baseline Scenario?</p> <p>b. Will the Project use energy from a local grid or power</p> | No | <p>a. The project reduces Greenhouse Gas (GHG) emissions and fossil fuel usage compared to the baseline scenario.</p> <p>b. On the contrary the project generates renewable energy and supplies (except plant’s auxiliary consumption) to the grid.</p> | Not required |

¹⁸ https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XVIII-14&chapter=18&clang=en#EndDec

¹⁹ https://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102691

²⁰ <https://www.ohchr.org/EN/Countries/AsiaRegion/Pages/INIndex.aspx>

²¹ <https://www.ohchr.org/EN/Countries/AsiaRegion/Pages/INIndex.aspx>

²² https://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102691

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| | supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users? | | The auxiliary consumption is measured by deduction of power supplied to the grid from the total power generated by the plant. However, it's to be noted that the auxiliary power consumed by the plant is generated as renewable energy and thereby no emission involved. Hence, it's not required to be monitored. | |
| 2. Water | <p>a. Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?</p> <p>b. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? If 'Yes' or 'Potentially' proceed to question 2.</p> <p>c. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?</p> | No | <p>a. The project being a hybrid solar+wind power project thus there is no impact of water resources. The plant area does not have large rivers and streams, only small gaps flow. In the dry season, there is almost no water, only water in the rainy season.</p> <p>b. No. The risk of erosion is unlikely by the project.</p> <p>c. No. The risk of erosion is unlikely by the project.</p> | Not required |
| 3. Environment, Ecology and Land Use | <p>a. Does the Project involve the use of land and soil for production of crops or other products?</p> <p>b. Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?</p> <p>c. Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?</p> <p>d. Could the Project potentially result in the release of pollutants to the environment?</p> | NO | <p>a. The project will be established at the desert/barren land which was not used for production of crops and other products for a long time.</p> <p>b. The project is susceptible to decreased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme conditions.</p> <p>c. The hybrid (solar+Wind) plant does not affect the herbal life.</p> <p>d. The project takes a precautionary approach regarding environmental challenges and is not complicit in practices contrary to the precautionary principle. The environment is protected by several Laws and Regulations in India. The purpose of the "Law on Environmental Protection" is to protect the environment with principles of sustainable development and environment ²³. The project owner also follows necessary</p> | Not Required |

²³ file:///C:/Users/hp/Downloads/The-Environment-Protection-Act-1986.pdf

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| <p>e. Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?</p> <p>f. Will the Project involve the application of pesticides and/or fertilisers?</p> <p>g. Will the Project involve the harvesting of forests?</p> <p>h. Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?</p> <p>i. Will the Project involve animal husbandry?</p> <p>j. Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites[11] identified?</p> <p>k. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?</p> <p>l. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?</p> | | <p>procedures for environmental safety at the project.</p> <p>e. All hazardous and non-hazardous wastes will be disposed as per the local regulations.</p> <p>f. Not applicable for solar and wind power plants.</p> <p>g. No. the project area was deserted before project implementation.</p> <p>h. No. The project does not modify the quantity or nutritional quality of food available.</p> <p>i. No. Not applicable for solar project.</p> <p>j. The projected area of the Project is saline soils, not located in sensitive ecological zones, biodiversity conservation areas, and there are no rare and valuable plant and animal species.</p> <p>k. No. There were no endangered species found in the project boundary.</p> <p>l. No. The project does not impact other areas where endangered species may be present.</p> | |
|---|--|---|--|

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from stakeholders

It is a future project and a physical meeting integrated with the SFR in line with GS4GG guidelines will be organized for local stakeholder consultation.

E.2. Summary of comments received

It is a future project and a physical meeting integrated with the SFR in line with GS4GG guidelines will be organized for local stakeholder consultation. Summary of the comment will be transparently documented and reported here.

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E.3. Report on consideration of comments received

It is a future project and a physical meeting integrated with the SFR in line with GS4GG guidelines will be organized for local stakeholder consultation. Input on the comments will be transparently documented and reported here.

Appendix 1. Contact information of project participants

| | |
|--|--|
| Organization name | SBE Renewables Ten Private Limited |
| Registration number with relevant authority | U74999DL2018PTC335493 (Ministry of Corporate Affairs) |
| Street/P.O. Box | NH-08 |
| Building | 1st floor, Worldmark-2 |
| City | Aerocity Delhi |
| State/Region | New Delhi – 110037 |
| Postcode | |
| Country | India |
| Telephone | +91 – 1149217999 |
| Fax | - |
| E-mail | yogesh@sbenergy.com |
| Website | |
| Contact person | |
| Title | |
| Salutation | Mr. |
| Last name | Srivastava |
| Middle name | |
| First name | Yogesh |
| Department | |
| Mobile | 91-9958095123 |
| Direct fax | |
| Direct tel. | |
| Personal e-mail | yogesh@sbenergy.com |

Revision History

| Version | Date | Remarks |
|---------|----------------|---|
| 1.1 | 24 August 2017 | Updated to include section A.8 on 'gender sensitive' requirements |
| 1 | 10 July 2017 | Initial adoption |