

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



**Version 1.1 – August 2017**

## KEY PROJECT INFORMATION

Title of Project:	Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)
Brief description of Project:	The project activity is a 25 MW solar power project, promoted by Roha Dyechem Pvt. Ltd. The purpose of the project activity is to generate clean electricity with utilization of solar energy.
Expected Implementation Date: Expected duration of Project:	NA 25 years
Project Developer:	Roha Dyechem Pvt. Ltd.
Project Representative:	Infinite Solutions
Project Participants and any communities involved:	Roha Dyechem Pvt. Ltd.
Version of PDD: Date of Version:	02 02/01/2020
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 19.0
Product Requirements applied:	GHG Emissions Reductions & Sequestration Product Requirements
Regular/Retroactive:	Retroactive
SDG Impacts:	<ul style="list-style-type: none"> <li>1 - SDG 7 Affordable and Clean Energy</li> <li>2 - SDG 8 Decent Work and Economic Growth</li> <li>3 - SDG 13 Climate Action</li> </ul>
Estimated amount of SDG Impact Certified	<ul style="list-style-type: none"> <li>1 - SDG 7- 38,543 MWh/year</li> <li>2- SDG 8 - <ul style="list-style-type: none"> <li>• Number (employees): 31 persons</li> <li>• Number(Trainings): Minimum 1 training.</li> <li>• The income to all the unskilled workers are made on day to day basis in line with minimum wage requirements.</li> </ul> </li> <li>3- SDG 13- 36,731 tCO<sub>2</sub>e per annum</li> </ul>

## 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 power resources, the generated green electricity will contribute to climate change mitigation efforts. This project activity is a large scale solar project. Roha Dyechem 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 36,731 tCO<sub>2</sub>e per annum, thereon displacing 38,543 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.

The projects have been selected through a competitive bidding process set up under the 'Mukhyamantri Sour Krishi Vahini Yojana' (or Chief Minister Agricultural Solar Feeder Scheme), a recent scheme that the state of Gujarat has come up wherein the power generated will be directly fed into dedicated agricultural feeders. The projects are being set up under phase-I of the scheme and are among the first such projects in the country.

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	Capacity in MW	State
Roha Dyechem Pvt. Ltd.	25 MW	Gujarat

### 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 2.2.1).

### 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 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**  
Solar power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. The impact on land, water, air and soil is negligible. Thus the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment.
- **Economic well being**
  - ✓ This scheme will help ease the problems of electric supply in the agricultural sector - especially to run the agro-feeders. The main target is to provide power at least 12 hours a day.

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- ✓ Since the prices of the electric supply system are cheaper, the farmers will be able to use them as production units at lesser costs. Hence it will boost the agricultural produce.
- ✓ At present the farmers suffer because there is an issue of interruption in agricultural works due to power cuts. This problem will be readily addressed when this scheme comes into effect.
- ✓ The agricultural workers will have an extra source of income from the land they are renting out for this purpose.

- **Technological well being**

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

## A.2. 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 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 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.

### General Eligibility Criteria under Renewable Energy Activity Requirements

<i>Project Type</i>	: As discussed above, the project type is eligible.
<i>Project Location</i>	: The project is located in India.
<i>Project scale</i>	: The project activity is a 25 MW solar project and thus qualifies under large scale projects.

Project is also registered in VCS mechanism and can be checked on the webpage [https://www.vcsprojectdatabase.org/#/project\\_details/1090](https://www.vcsprojectdatabase.org/#/project_details/1090); however the project proponent hereby confirms that there would not be double counting of credits for any particular monitoring period. The project is not registered under the REC mechanism of India and the same can be cross-checked at <https://recregistryindia.nic.in>.

A declaration mentioning the same is submitted from the Project Developer.

## 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 have received Evacuation Approvals from Gujarat Urja Vikas Nigam Limited (GUVNL); also the Power Purchase Agreement demonstrating the PP as the legal owner has already been signed with GUVNL. Thus the project participants Roha Dyechem 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.

Gujarat

## A.4.3. City/Town/Community etc.

**Village:** Charanka

**Taluka:** Santalpur

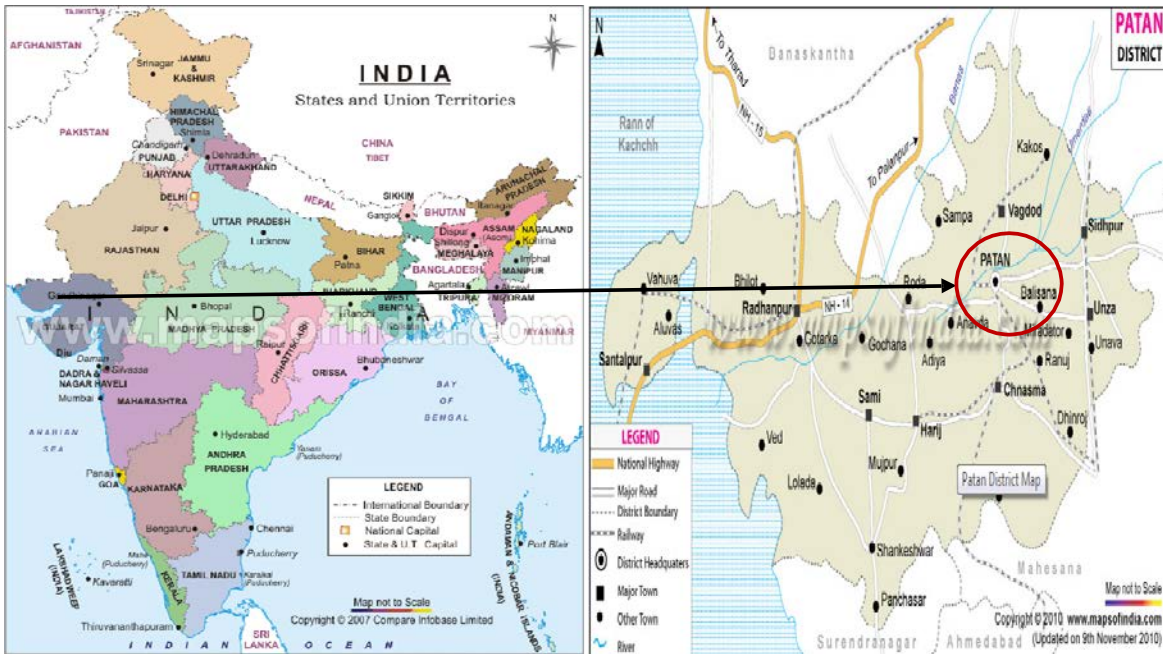
**District:** Patan

## A.4.4. Physical/Geographical location

The proposed project activity is located at Charanka village of Patan district in Gujarat. The nearest railway station is at Santalpur and the nearest airport is at Ahmedabad and the nearest highway is NH-15. The geographical coordinates of the project site have been provided below:

Geo-coordinates	Decimal degrees	Degree-minute-second
Latitude	23.90 N	23° 53' 59" N
Longitude	71.20 E	71° 12' 01" E

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

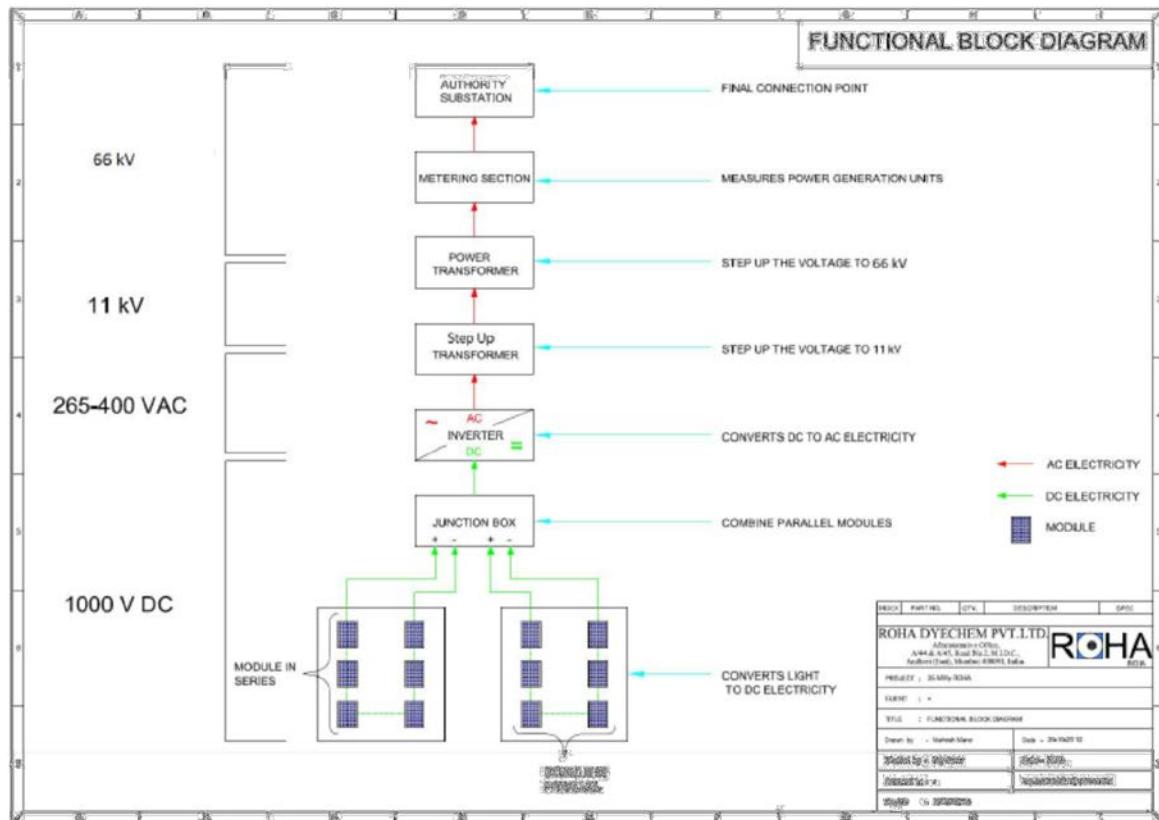
The project activity involves installation of 25 MW grid connected solar photovoltaic power plant. The PV system will mainly consists of PV modules, module mounting structures, inverters, regulators, monitoring devices etc. The thin film system will consist of 145 W (Nominal Power) Nexpower (NT/ AX series) Solar Thin film modules. The system shall consist of following equipments:

- Solar PV modules:**  
 172728 solar modules of nominal power capacity of 145 W( $\pm 5\%$ ) shall be installed in array configuration. Nine solar modules shall be connected in series to form one string. 19158 such strings will be in parallel, connected to 450 Array Junction Boxes (AJBs). Therefore the total power generation capacity of the modules installed at site translates to 25.04 MW (i.e. 25 MW).
- Module Mounting structure:**  
 There are 6400 mounting structures designed for each having a maximum of 27 modules. Some of the mounting structures are having less than 27 modules.
- Inverters :**  
 50 Nos of 500 kW Satcon make inverters shall be utilized in the project activity

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- **Data logging systems :**  
There are total of 4789.5 arrays shall be monitored by the WEM ( Wipro Energy Manager ) sub systems in cluster rooms and main master in the MRSS (Main Receiving Substation)
- **Transformers and Distribution Control Panels:**  
Transformers: 25 Nos of 1.25MVA Transformer, 1 No of 160KVA Auxiliary Transformer & 1 No of 27.5MVA Main transformer shall be utilized in the project.  
Control Panels: 3 Control Relay Panel (CRP), 1 On Load Tap Changer (OLTC) Panel, Capacitor bank Panel, 31 Cluster Panels (5 in each cluster room from segment 1 to 6 and 1 Panel in segment 7). 11 Panels in MRSS, 7 cluster room incomers and 1 main out going, 1 Auxiliary supply, 1 spare and 1 for APFC (Automatic Power Factor Control) Panel.

A schematic diagram of the project activity is presented below:



The project activity is expected to operate at a plant load factor of 18% exporting 38,543 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 36,731 tCO<sub>2</sub> per annum from the project activity. The project activity does not involve any technology transfer.

## 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 energy, thereby 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

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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. 36,731 tCO<sub>2</sub> per annum due to implementation of project activity.
2. **SDG 7: Affordable and Clean Energy** : The project is expected to generate 38,543 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 25 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.

**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 Women<sup>1</sup>" 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 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.

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



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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.

**Response:** Since the project is applying retroactively for GS registration, a Stakeholder Feedback round shall be carried out at a later stage. However, a stakeholder consultation was conducted in line with CDM requirements on 30/06/2012 at the site location. The project representative explained 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 shared full support for the solar power project operations.

## 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 13.0

**Tools:** Tool for the demonstration and assessment of additionality 06.1.0  
<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.1.0.pdf>  
 Tool to calculate the emission factor for an electricity system 02.2.1  
<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

### B.2. Applicability of methodology

As per ACM0002 (Version 19.0, EB 100 Annex 6), "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 13.0, Sectoral Scope 1 for Greenfield projects as described below:

Applicability	Project activity vis-à-vis applicability Conditions
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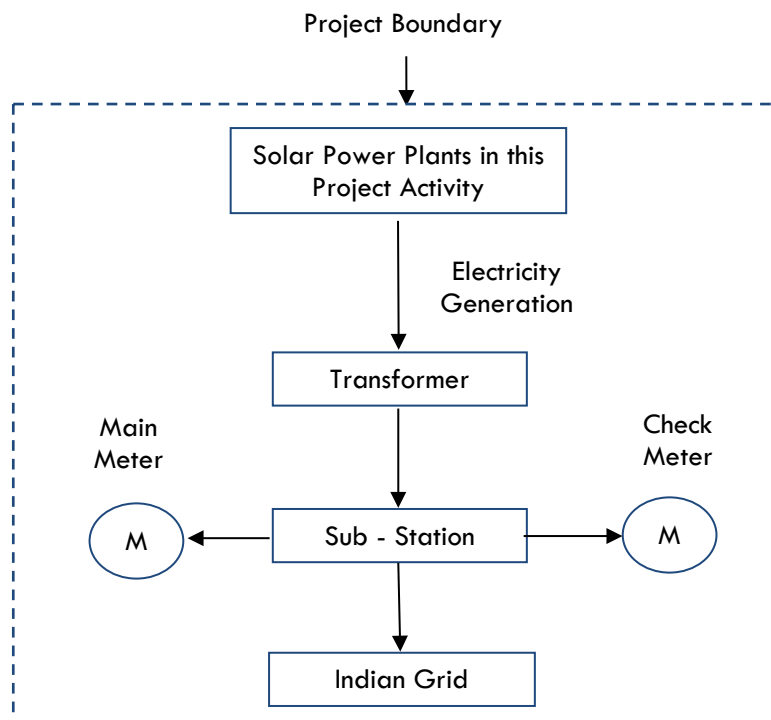
<p>This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <ul style="list-style-type: none"> <li>(a) Install a Greenfield power plant;</li> <li>(a) Involve a capacity addition to (an) existing plant(s);</li> <li>(b) Involve a retrofit of (an) existing operating plants/units;</li> <li>(c) Involve a rehabilitation of (an) existing plant(s)/unit(s); or</li> <li>(d) Involve a replacement of (an) existing plant(s)/unit(s).</li> </ul>	<p>The project activity is installation of a new grid connected solar power plant/ unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.</p>
<p>The methodology is applicable under the following conditions:</p> <ul style="list-style-type: none"> <li>(a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</li> <li>(b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal 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.</li> </ul>	<p>The proposed project activity is an installation of a new grid connected solar power plant/ unit and hence criteria under point (a) is met. The project does not involve any capacity additions, retrofits or replacements and therefore this criteria under point (b) is not applicable.</p>
<p>In case of hydro power plants, one of the following conditions shall apply:</p> <ul style="list-style-type: none"> <li>(a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</li> <li>(b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (3), is greater than 4 W/m<sup>2</sup>; or</li> <li>(c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m<sup>2</sup>; or</li> <li>(d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m<sup>2</sup>, all of the following conditions shall apply:             <ul style="list-style-type: none"> <li>(i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m<sup>2</sup>;</li> <li>(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</li> <li>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m<sup>2</sup> shall be:                 <ul style="list-style-type: none"> <li>a. Lower than or equal to 15 MW; and</li> <li>b. Less than 10 per cent of the total installed capacity of integrated hydro power project.</li> </ul> </li> </ul> </li> </ul>	<p>The proposed project activity is an installation of a new grid connected solar power plant/ unit and not Hydro power plant, therefore this criteria is not applicable for this project activity.</p>
<p>In the case of integrated hydro power projects, project proponent shall:</p> <ul style="list-style-type: none"> <li>• Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</li> <li>• Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to</li> </ul>	<p>The proposed project activity is an installation of a new grid connected solar power plant/ unit and not Hydro power plant, therefore this criteria is not applicable for this project activity.</p>

<p>be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.</p>	
<p>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 solar power project/ unit and does not involve switching from fossil fuel to renewable energy, therefore criterion described in point (a) is not relevant to the project activity.</p> <p>This is a solar 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 scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.</p>	<p>The project activity is a new grid connected solar power plant/ unit and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.</p>
<p><b>Applicability conditions of “Tool to calculate the emission factor for an electricity system”, - Version 2.2.1</b></p>	
<p>This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).</p>	<p>This condition is applicable. OM, BM and CM are estimated using the tool under section B.6.3 for calculating baseline emissions.</p>
<p>Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, 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.</p>	<p>Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.</p>
<p>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.</p>	<p>The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.</p>
<p>Under this tool, the value applied to the CO<sub>2</sub> emission factor of biofuels is zero.</p>	<p>The project activity is a grid connected solar power project/ unit and does not involve emission from biofuels. Therefore, this criterion is not applicable.</p>

### B.3. Project boundary

Project boundary has ascertained using ACM0002 (Version 13.0, EB 67, Annex 13) - “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 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 <sub>2</sub>	Yes	Main emission source
		CH <sub>4</sub>	No	Minor emission source
		N <sub>2</sub> O	No	Minor emission source
Project scenario	Greenfield Solar Power Project Activity	CO <sub>2</sub>	No	No CO <sub>2</sub> emissions are emitted from the project activity
		CH <sub>4</sub>	No	No, Project Activity does not emit CH <sub>4</sub>
		N <sub>2</sub> O	No	No, Project Activity does not emit N <sub>2</sub> O

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

As per the approved consolidated Methodology ACM0002 (Version 13.0, EB 67, Annex 13) “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 2.2.1.

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The project activity involves setting up of solar plant to harness the power generation from solar radiations to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

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 2.2.1. 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
$EF_{grid,CM,y}$	0.953 tCO <sub>2</sub> /MWh	Combined margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO <sub>2</sub> Emission Database, Version 07 published by Central Electricity Authority (CEA), Government of India. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf</a>
$EF_{grid,OM,y}$	0.984 tCO <sub>2</sub> /MWh	Operating margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the last 3 year (2015-16, 2016-17, and 2017-18) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 07, published by Central Electricity Authority (CEA), Government of India. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf</a>
$EF_{grid,BM,y}$	0.859 tCO <sub>2</sub> /MWh	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y	Baseline CO <sub>2</sub> Emission Database, Version 07, published by Central Electricity Authority (CEA), Government of India. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf</a>

## 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 CDM project generates power using solar energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 13.0, EB 67, Annex 13).

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.

However the project is retroactive and is registered under CDM; hence additional. For Additionality, CDM registered PDD can be referred.<sup>2</sup>

2

<https://cdm.unfccc.int/filestorage/m/e/GCK82AJ3RLM9BXIOV60S5HPYDETN7.pdf/Final%20PDD.pdf?t=a018cHh0YWtyfDDN7TaTcUzqngqLYblbzKj>

## B.6. Sustainable Development Goals (SDG) outcomes

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

Item	Goals and Targets	Indicators
<b>SDG 7: Affordable and Clean Energy</b>	<b>7.2:</b> By 2030, increase substantially the share of renewable energy in the global energy mix	<b>7.2.1:</b> Renewable energy share in the total final energy consumption
	<b>Target:</b> 38,543 MWh per annum	
<b>SDG 8: Decent Work and Economic Growth</b>	<b>8.6:</b> 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	<b>8.6.1:</b> Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
	<b>Target:</b> <ul style="list-style-type: none"> <li>• Training: 1 nos annually</li> <li>• Employment of 15 staff</li> </ul>	
<b>SDG 13: Climate Action</b>	<b>13.2:</b> Integrate climate change measures into national policies, strategies and planning	<b>13.2.1:</b> 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)
	<b>Target:</b> 36,731 tCO <sub>2</sub> per annum	

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

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 38,543 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 above) 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 36,731 tCO<sub>2</sub> per annum.

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As per the approved consolidated Methodology ACM0002 (Version 13.0, EB 67, Annex 13), Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

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

$BE_y$  = Baseline emissions in year  $y$  (t CO<sub>2</sub>/yr)

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

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

$EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year  $y$  calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO<sub>2</sub>/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 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)

$EG_{facility,y}$  = 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 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)**



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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 low cost / must run (% of net generation) <sup>13</sup>					
Year	2006-07	2007-08	2008-09	2009-10	2010-11
Northern grid	18.5%	19.0%	17.4%	15.9%	17.6%
Average of last five years (Northern grid)		<b>17.7%</b>			

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.

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

Where:

- $EF_{grid,OMsimple,y}$  : 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)  
 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 generation<sup>3</sup> respectively for the recent three years:

Simple Operating Margin Emission Factors (t CO2/MWh) (incl. Imports)			
	2008-09	2009-10	2010-11
Indian Grid	1.007	0.978	0.971

Net Generation in Operating Margin (GWh) (incl. imports)			
	2008-09	2009-10	2010-11
Indian Grid	421,802.63	458,043.08	476,986.72

Therefore the 3 years net generation weighted OM average for Indian grid comes out to be 0.984 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:

$EF_{EL,m,y}$	: CO <sub>2</sub> emission factor of power unit $m$ in year $y$ (tCO <sub>2</sub> /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)
$EF_{CO_2,i,y}$	: CO <sub>2</sub> emission factor of fossil fuel type $i$ in year $y$ (tCO <sub>2</sub> /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 CO <sub>2</sub> emission factor in year $y$ (tCO <sub>2</sub> /MWh)
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit $m$ in year $y$ (MWh)
$EF_{EL,m,y}$	CO <sub>2</sub> emission factor of power unit $m$ in year $y$ (tCO <sub>2</sub> /MWh)
$m$	Power units included in the build margin
$y$	Most recent historical year for which power generation data is available

The CO<sub>2</sub> 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 2010-2011 is 0.859 tCO<sub>2</sub>/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 <sub>2</sub> emission factor in year $y$ (t CO <sub>2</sub> /MWh)
$EF_{grid,OM,y}$	= Operating margin CO <sub>2</sub> emission factor in year $y$ (t CO <sub>2</sub> /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 0.953 tCO<sub>2</sub>e/MWh.

## Project Emission

As per the ACM0002 ver-1 3.0, Project Emission for most renewable energy power generation project activities, PE<sub>y</sub> = 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<sub>y</sub> = Project emissions in year y (tCO<sub>2</sub>e/yr)

PE<sub>FF,y</sub> = Project emissions from fossil fuel consumption in year y (tCO<sub>2</sub>/yr)

PE<sub>GP,y</sub> = Project emissions from the operation of geothermal power plants due to the release of non condensable gases in year y (tCO<sub>2</sub>e/yr)

PE<sub>HP,y</sub> = Project emissions from water reservoirs of hydro power plants in year y (tCO<sub>2</sub>e/yr).

The project activity involves the generation of electricity from the installation of solar projects. Hence, as per ACM0002, Version 19.0, there is no project emission for solar 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 <sub>OM,y</sub>
Unit	tCO <sub>2</sub> e/MWh
Description	Operating Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 14, Dec 2018 <sup>3</sup>
Value(s) applied	0.984
Choice of data or Measurement methods and procedures	The data are obtained from “CO <sub>2</sub> Baseline Database for Indian Power Sector” version 7.0, 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 <sub>BM,y</sub>
Unit	tCO <sub>2</sub> e/MWh
Description	Build Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 7
Value(s) applied	0.859

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<b>Choice of data or Measurement methods and procedures</b>	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 7.0, published by the Central Electricity Authority, Ministry of Power, Government of India. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf</a>
<b>Purpose of data</b>	The data is used to calculate baseline emission reductions.
<b>Additional comment</b>	This parameter is fixed ex-ante for the entire crediting period.

<b>Relevant SDG Indicator</b>	<b>SDG13 : Climate Action</b>
<b>Data/parameter</b>	EF <sub>CM, y</sub>
<b>Unit</b>	tCO <sub>2</sub> e/MWh
<b>Description</b>	Combined Margin Emission Factor of Indian Grid
<b>Source of data</b>	Calculated from CEA database, Version 07 <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver7.pdf</a>
<b>Value(s) applied</b>	0.953
<b>Choice of data or Measurement methods and procedures</b>	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 7.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
<b>Purpose of data</b>	The data is used to calculate baseline emission reductions.
<b>Additional comment</b>	-

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

>> (Provide a transparent ex ante calculation of baseline and project outcomes (or, where applicable, direct calculation of net benefit) during the crediting period, applying all relevant equations provided in the selected methodology(ies) or as per proposed approach. For data or parameters available before design certification, use values contained in the table in section B.6.3 above. For data/parameters not available before design certification and monitored during the crediting period, use estimates contained in the table in section B.7.1 below)

SDG 7: Affordable and Clean Energy - Project expected to generate 38,543 MWh clean energy every year

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 36,731 tCO<sub>2</sub> per annum.

### Calculation of Outcome for SDG13 : Climate Action

#### Baseline emissions

The baseline emissions are the product of electrical energy baseline EG<sub>PJ,y</sub> expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

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

Where,

EG<sub>PJ,y</sub> = Total quantity of net electricity delivered to the Indian grid.

EF<sub>grid,CM,y</sub> = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year y  
= 0.9652 t CO<sub>2</sub>/MWh.

Project Participant	Capacity	PLF (%)	Generated Power (MWh/year)	Baseline Emission Factor (tCO <sub>2</sub> /MWh)	Baseline emissions (tCO <sub>2</sub> / year)
Roha Dyechem Pvt. Ltd.	25 MW	18%	38,543	0.953	36,731

$$BE_y = 38,543 * 0.953 \text{ t CO}_2/\text{year} = 36,731 \text{ tCO}_2/\text{year}$$

## Project emissions

$$PE_y = 0$$

## Leakage

No leakage emissions are applicable.

## Emission reductions

$$ER_y = BE_y - PE_y = 36,731 - 0 = 36,731 \text{ tCO}_2/\text{year}$$

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

#### SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0 MWh	39,321 MWh	39,321 MWh
Year 2	0 MWh	38928 MWh	38928 MWh
Year 3	0 MWh	38539 MWh	38539 MWh
Year 4	0 MWh	38154 MWh	38154 MWh
Year 5	0 MWh	37772 MWh	37772 MWh
<b>Total</b>	0 MWh	192,714 MWh	192,714 MWh
<b>Total number of crediting years</b>			
<b>Annual average over the crediting period</b>	0 MWh	38,543 MWh	38,543 MWh

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 energy project, therefore the Affordable and Clean Energy produced by the project is 239,771 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
<b>Total</b>	0 Training, 0 Jobs	5 Trainings, 15 Jobs	5 Trainings, 15 Jobs
<b>Total number of crediting years</b>			
<b>Annual average over the crediting period</b>	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 and 15 jobs.

## SDG13 : Climate Action

Year	Baseline estimate	Project estimate	Net benefit
Year 1	37,473 tCO2	0 tCO2	37,473 tCO2
Year 2	37098 tCO2	0 tCO2	37098 tCO2
Year 3	36727 tCO2	0 tCO2	36727 tCO2
Year 4	36360 tCO2	0 tCO2	36360 tCO2
Year 5	35996 tCO2	0 tCO2	35996 tCO2
<b>Total</b>	<b>183654 tCO2</b>	<b>0 tCO2</b>	<b>183654 tCO2</b>
<b>Total number of crediting years</b>			
<b>Annual average over the crediting period</b>	<b>36,731 tCO2</b>	<b>0 tCO2</b>	<b>36,731 tCO2</b>

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 36,731 tCO2 per year. Since the project is solar 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	38,543 MWh
Measurement methods and procedures	<p>The net energy exported to the grid is measured every month using calibrated energy meter by the State Electricity Board authorities in the presence of the project implementer. The meter/s shall be jointly inspected, and sealed by authorised representatives of the company and the state utility.</p> <p><u>Measuring procedure:</u> Will be measured by an export-import energy meter. The net electricity exported by the project plant would be calculated by deducting the amount of imported electricity from the total amount of exported electricity.</p> <p><u>Accuracy class of energy meter:</u> 0.2S</p> <p><u>Entity responsible:</u> RDPL</p>
Monitoring frequency	Monthly
QA/QC procedures	The meters will be calibrated once in every 3 years by an independent testing laboratory. Calibration records will be maintained at the plant. Data would be cross-verified against sold electricity figure in the joint meter reading statement issued by the Gujarat Urja Vikas Nigam Limited (GUVNL). It is to be noted that the meter in question shall be in control and supervision of GUVNL and shall be calibrated only as and when GUVNL so desires. The metering system comprises of main and check meter. In the event that the main metering system is not in service due to maintenance, repair or testing, the reading shall be obtained from the check meter.
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.



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Relevant SDG Indicator	SDG 8.5.1: Decent Work and Economic Growth
Data / Parameter	<ul style="list-style-type: none"> <li>Quantitative employment,</li> <li>Quality of employment</li> <li>Income generation</li> </ul>
Unit	<ul style="list-style-type: none"> <li>Number(Trainings)</li> <li>Number (employees)</li> <li>INR (salary)</li> </ul>
Description	<ul style="list-style-type: none"> <li>Number of Trainings provided to employees &amp; O&amp;M staff</li> <li>Number of project employees with Number of male/female, permanent/temporary, age and person with disabilities.</li> <li>Salary given to the employees of the project.</li> </ul> <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 &amp; workshops will be given to the O&amp;M staff are:</p> <ul style="list-style-type: none"> <li>HSE Training Record</li> <li>Soft Skill Training</li> </ul> <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"> <li>Training Attendance sheets.</li> <li>Employee Records</li> <li>Salary slip of the employees</li> </ul>
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	tCO2
Description	Reduction in CO2 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 "CO2 Baseline Database for Indian Power Sector" version 7.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	36,731 tCO2 emission reductions estimated per annum
Measurement methods and procedures	Calculated from CEA database and Energy Generation
Monitoring frequency	The meters will be calibrated once in every 3 years by an independent testing laboratory.

<b>QA/QC procedures</b>	Calibration records will be maintained at the plant. Data would be cross-verified against sold electricity figure in the joint meter reading statement issued by the Gujarat Urja Vikas Nigam Limited (GUVNL). It is to be noted that the meter in question shall be in control and supervision of GUVNL and shall be calibrated only as and when GUVNL so desires. The metering system comprises of main and check meter. In the event that the main metering system is not in service due to maintenance, repair or testing, the reading shall be obtained from the check meter.
<b>Purpose of data</b>	Calculation of baseline emissions
<b>Additional comment</b>	The data will be archived for crediting period+2 years

## 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 solar power project/ unit being implemented in Gujarat, 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 CDM monitoring team will composed the following staff:

POSITION	REPORT TO:
Operators	Technical Engineer
Technical Engineer	Technical Manager
Technical Manager	Project Owner
CDM monitoring project manager	Project Owner

- The allocation of responsibility to ensure compliance with the monitoring requirement of the methodology is given here below:

#	Tasks description	Operator(s)	Technical Engineer	Technical manager	Project manager
<b><u>MONITORING ACTIVITY</u></b>					
1	Recording of monitored data	✓	✓		
<b><u>QUALITY ASSURANCE &amp; QUALITY CONTROL</u></b>					
2	Verification of data monitored (consistency and completeness)		✓	✓	

3	Ensuring adequate training of staff			✓	✓
4	Ensuring adequate maintenance		✓	✓	
	Ensuring calibration of monitoring instruments		✓	✓	✓
5	Data archiving: ensuring adequate storage of data monitored			✓	✓
	Identification of non- conformance and corrective/preventive			✓	✓
7	Emergency procedures		✓	✓	
<b><u>CALCULATION OF GHG EMISSION REDUCTIONS AND REPORTING</u></b>					
9	Processing of data and calculation of emission reductions				✓
10	Monitoring report: management review of monitoring report			✓	✓

**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 Uncertainty:** Any loss of data in between due to non availability of metering system would not be considered in the calculation of emission reduction.

## SECTION C. Duration and crediting period

### C.1. Duration of project

#### C.1.1. Start date of project

Date of signing of supplies contract: 28/02/2011

#### C.1.2. Expected operational lifetime of project

25 years

### C.2. Crediting period of project

#### C.2.1. Start date of crediting period

31/12/2019, or two years prior to the date of Project Design Certification, whichever is later.

#### C.2.2. Total length of crediting period

5 years

### 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)
3.1 Human Rights	<p>1. The Project Developer 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>2. The Project shall not discriminate with regards to participation and inclusion.</p>	No	<p>1. During construction and operation of the project the project proponent respected all the human rights. The project is not in any kind of conflict with the livelihood of local people.</p> <p>Project proponent had conducted stakeholder's consultation and sought their opinion.</p> <p>2. The project will not employ any personnel based on gender, race, religion, sexual orientation or any other basis. As the Constitution of the host country prohibits discrimination on the basis of a person's race, sex, religion, place of birth, or social status.</p> <p>The host country has signed the Convention 100 (equal remuneration) and convention 111 (discrimination in employment /occupation) under the ILO Declaration on Fundamental Principles and rights<sup>4</sup>.</p>	Not Required
3.2 Gender Equality and Women's Rights	<p>The Project shall complete the following gender assessment questions in order to inform Requirements, below:</p> <p>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?</p>	No	<p>1. The project does not decrease women's access to or control of resources.</p>	Not Required

<sup>4</sup> <http://www.mfcindia.org/main/bgpapers/bgpapers2013/am/bgpap2013c.pdf>

	<p>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)?</p> <p>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)?</p> <p>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)?</p> <p>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?</p> <p>6. Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full</p>		<p>2. No, there is no possibility of adverse effect.</p> <p>3. No, the Project does not consider gender roles and in fact actively engages both women and men. Community meetings are scheduled considering participation by both Men and Women.</p> <p>4. The project does not discriminate on basis of gender, caste or religion.</p> <p>5. No the Project was not designed to increase women's workload nor add care responsibilities.</p> <p>6. There is no place for discrimination against women in this Project. The project does nto discriminate on basis of gender, caste or religion.</p>	
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	<p>participation in design and implementation or access to opportunities and benefits?</p> <p>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?</p> <p>8. Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?</p> <p>The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women.</p> <p>1. 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>2. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.</p> <p>3. Restriction of women's rights or access to resources (natural or economic).</p> <p>4. Recognise women's ownership rights regardless of</p>		<p>7. The Project will not limit women's ability regarding natural resources. The project being solar power project thus does not have any major impact on natural resources of the region.</p> <p>8. No the Project will not expose women and girls to further risks or hazards.</p> <p>The project proponent has a grievance cell which would look into complaints.</p> <p>1. There is no such risk for the project. Participation in the project is 100% voluntary. The project proponent has a grievance cell which would look into complaints.</p> <p>2. The project does not involve in slavery, imprisonment or coercion of women and girls.</p> <p>3. The Project will not restrict women's rights or access regarding natural resources. The project proponent does not discriminate on gender, caste, religion etc.</p> <p>4. Marital status is completely irrelevant to the Project. The project proponent does not</p>	
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	<p>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>Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work, specifically:</p> <ol style="list-style-type: none"> <li>1. 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.</li> <li>2. Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.</li> <li>3. Ensure that these conditions do not limit the access of women or men, as the case may be, to Project participation and benefits.</li> </ol> <p>The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks.</p>		<p>discriminate on gender, caste, religion etc.</p> <p>Yes, the Project has equal opportunity for women and men to contribute both in volunteer and working positions</p> <ol style="list-style-type: none"> <li>1. The project proponent has a stipulated CSR policy, Appointment Policy, Domestic travel policy, Leave Policy and Timekeeping/ Attendance Policy that takes into account participation by both men and women. Further, the CSR projects designed are implemented for equal participation of both men and women.</li> <li>2. There is no limit on the access to Project participation and benefits from either of these conditions.</li> <li>3. There are no such conditions that limit the access of women or men for participation.</li> </ol> <p>The project is aligned to India's strategy for elimination of all discrimination. India ratified the International Convention on the Elimination of All Forms of Racial Discrimination on 03/12/1968 with certain reservation<sup>5</sup>.</p>	
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<sup>5</sup> [http://nhrc.nic.in/documents/india\\_ratification\\_status.pdf](http://nhrc.nic.in/documents/india_ratification_status.pdf)

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3.3 Community Health, Safety and Working Conditions	The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community.	No	The project is in compliance with all relevant local and national laws. The Project does not threaten human health or environment and does not adversely affect the health of the workers and the community.	Not Required
3.4.1 Sites of Cultural and Historical Heritage	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)?	No	The project does not alter, damage or remove any cultural heritage. As per the list of cultural heritage sites in India by UNESCO <sup>6</sup> , it is clear that the project site is not a cultural heritage site.	Not Required
3.4.2 Forced Eviction and Displacement	Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project does not involve and is not complicit in involuntary resettlement of peoples in any way.  The Project Developer has also obtained all necessary clearances from nodal agencies and NOCs from all the Gram Panchayats for establishing the project.	Not Required
3.4.3 Land Tenure and Other Rights	1. Does the Project require any change to land tenure arrangements and/or other rights?  2. For Projects involving land-use tenure, are there any uncertainties with regards land tenure, access rights, usage rights or land ownership?	No	1. The project has all the legal, customary rights on the land and does not require any change to land tenure arrangements. The proponent has also obtained necessary clearances from nodal agencies for establishing the plant.  2. This is not applicable as the project does not require any change to land tenure arrangements.	
3.4.4 Indigenous Peoples	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?	No	The project is a solar power project and it is not located on land/territory claimed by any indigenous peoples.	Not Required
3.5 Corruption	The Project shall not involve, be complicit in or inadvertently contribute to or	No	The proponent confirms that there is no corruption involved in the project activity. The host country has strict laws <sup>7</sup> and robust	Not Required

<sup>6</sup> <http://whc.unesco.org/en/statesparties/in>

<sup>7</sup> <http://cbi.nic.in/>

	reinforce corruption or corrupt Projects.		arrangements to prevent such activities.	
3.6.1 Labour Rights	<p>1. The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. Where these are contradictory and a breach of one or other cannot be avoided, then guidance shall be sought from Gold Standard.</p> <p>2. Workers shall be able to establish and join labour organisations.</p> <p>3. Working agreements with all individual workers shall be documented and implemented. These shall at minimum comprise:            (a) Working hours (must not exceed 48 hours per week on a regular basis), AND            (b) Duties and tasks, AND            (c) Remuneration (must include provision for payment of</p>	No	<p>1. The proponent assures that there was no bonded or forced labor during construction and operation of the project activity. Uniform policy was implemented for all employees.</p> <p>The host country has robust laws in place prohibiting forced and compulsory labor<sup>8</sup>.</p> <p>2. The proponent confirms that all the fundamental rights of the employees will be respected.</p> <p>The rights of industrial trade unions and their members have been protected by law in India since 1926 by The Trade Unions Act, 1926<sup>9</sup>.</p> <p>3. Working agreements with all individual workers are documented and implemented.</p>	Not Required

<sup>8</sup> <http://labour.nic.in/content/>

<sup>9</sup> <http://ncw.nic.in/acts/TheTradeUnionsAct1926.pdf>

	<p>overtime), AND (d) Modalities on health insurance, AND (e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND Provision for annual leave of not less than 10 days per year, not including sick and casual leave.</p> <p>4. The Project Developer shall justify that the employment model applied is locally and culturally appropriate.</p> <p>5. Child labour, as defined by the ILO Minimum Age Convention is not allowed. The Project Developer shall use adequate and verifiable mechanisms for age verification in recruitment procedures. Exceptions are children for work on their families' property as long as:</p> <p>(a) Their compulsory schooling (minimum of 6 schooling years) is not hindered, AND</p> <p>(b) The tasks they perform do not harm their physical and mental development, AND</p> <p>(c) The opinions and recommendations of an Expert Stakeholder shall be sought and demonstrated as being included in the Project design.</p>		<p>4. The Project Developer ensures that local workers/employees are preferred, to the extent possible, for employment during construction as well as operation phase of the project ensuring skill development in the local populace.</p> <p>5. Child labor is strictly prohibited in the country<sup>10</sup>. The proponent assures that no child labor will be employed during construction and operation of the plant.</p> <p>The project proponent has a set mechanism to ensure the age of all the temporary/ permanent employees during the life time of the project.</p>	
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<sup>10</sup> [http://www.indianchild.com/child\\_labour\\_law\\_in\\_india.htm](http://www.indianchild.com/child_labour_law_in_india.htm)

	6. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.		6. The Project Developer has an active HSE team which ensures that all employees are given appropriate equipment and training. The same is properly documented and appropriate measures taken in case of emergencies.	
3.6.2 Negative Economic Consequences	<p>1. The Project Developer shall demonstrate the financial sustainability of the Projects implemented, also including those that will occur beyond the Project Certification period.</p> <p>2. The Projects shall consider economic impacts and demonstrate a consideration of potential risks to the local economy and how these have been taken into account in Project design, implementation, operation and after the Project. Particular focus shall be given to vulnerable and marginalised social groups in targeted communities and that benefits are socially-inclusive and sustainable.</p>	No	<p>1. Financial Sustainability of the project has been discussed under Section B.5 above. The calculations are for the entire life of the project.</p> <p>2. There are no negative economic impacts or potential risks to the local economy due to the project activity.</p>	Not Required
4.1.1 Emissions	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project is a solar power project and does not lead to any greenhouse gas emissions in project scenario.	Not Required
4.1.2 Energy Supply	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass)	No	The project is connected to the grid, as well as being a solar power project it will be a net provider of power to the local grid.	Not Required

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	that provides for other local users?			
4.2.1 Impact on natural water patterns and flow	Will the Project affect the natural or pre-existing pattern of watercourses, groundwater and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project being a solar power project will not have any such impacts.	Not Required
4.2.2 Erosion and/or water body stability	<p>1. 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>2. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?</p>	No	<p>1. No the Project activity has no effect on soil conditions because it has no waste coming out.</p> <p>2. The project area is not susceptible to excessive erosion or water body instability.</p>	Not Required
4.3.1 Landscape modification and soil	Does the Project involve the use of land and soil for production of crops or other products?	No	The project does not involve the use of land and soil for production of crops or other products.	Not Required
4.3.2 Vulnerability to Natural Disaster	Will the Project be susceptible to or lead to increased vulnerability to solar, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The Project will not be susceptible to or lead to increased vulnerability to solar, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	Not Required
4.3.3 Genetic Resources	Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	The project does not have any impact by used of GMOs.	Not Required
4.3.4 Release of pollutants	Could the Project potentially result in the release of pollutants to the environment?	No	The project being a solar power project does not lead to release of any pollutants. The report on "Developmental Impacts and Sustainable Governance Aspects	Not Required

			of Renewable Energy Projects” prepared by MNRE dated September 2013 <sup>11</sup> clearly mentions that Solar farms operations do not result in direct air pollution, noise pollution.	
4.3.5 Hazardous and Non-hazardous Waste	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project during operational phase uses various type of oil/lubricants, grease which are classified as hazardous. These waste are handled in line with hazardous waste management rules and are disposed off accordingly.	Not Required
4.3.6 Pesticides and fertilizers	Will the Project involve the application of pesticides and/or fertilisers?	No	The Project will not involve the application of pesticides and/or fertilisers.	Not Required
4.3.7 Harvesting of forests	Will the Project involve the harvesting of forests?	No	The Project does not involve the harvesting of forests.	Not Required
4.3.8 Food	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The Project does not have any impact on the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	Not Required
4.3.9 Animal Husbandry	Will the Project involve animal husbandry?	No	The Project will not involve animal husbandry.	Not Required
4.3.10 High Conservation Value Areas and Critical Habitats	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	Being Solar project, it does not affect or alter largely intact or HCV ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified.	Not Required
4.3.11 Endangered Species	1. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? 2. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	1. There are no endangered species identified as potentially being present within the Project boundary.  2. The Project does not impact other areas where endangered species may be present through transboundary affects.	Not Required

<sup>11</sup> <http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf>

## SECTION E. Local stakeholder consultation

### E.1. Solicitation of comments from stakeholders

The Local Stakeholder Meetings were organized for local stakeholder consultation and informed local stakeholder regarding the meeting. The following are the stakeholders for the project activity:

- Local community
- Local village administration
- Technology suppliers
- Local vendors

The project proponent has invited comments and feedbacks of the local stakeholders by posting an advertisement in one local and one national newspaper: Business Standard (English) and Gujarat Today (Gujarati) on 21/06/2012. The stakeholders have been invited to share their feedback in person (in a meeting held at project site at Charanka Village, Santalpur, Patan, Gujarat on 30/06/2012 at 2:30 PM).

The highlights of the meeting are described below:

- The meeting commenced with a welcome address by Mr. Shrikisan Bhutada (Representative of Roha Dyechem Pvt. Ltd.)
- Mr. Neeraj Modi (Representative of Roha Dyechem Pvt. Ltd.) informed about the organization and gave a description about its vision.
- Mr. Neeraj Modi explained the purpose of the project activity and how the proposed project activity involving solar energy can help in the reduction of green house gas emissions from conventional fossil fuel based power generation and turn in reduction of global warming.
- Mr. Viral Dudhrejiya (Representative of Roha Dyechem Pvt. Ltd.) apprised the stakeholders about global warming and its consequences. He explained how global warming is affecting the day to day life of human in form of flood, draught, food security, crop pattern changing and energy security etc. and how developing countries like India is facing these problems and how this can be reduced. In this regard Roha Dyechem Pvt. Ltd. has come forward to sustainable future.
- Participants were invited to express their views towards the end of the meeting. Some participants raised queries towards the project operation and those were answered satisfactorily.
- Mr. Shrikisan Bhutada concluded the meeting and thanked the participants for attending the meeting and for their valuable feedback and support for the project activity.

They were also explained about the benefits of the solar power projects like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labours.

The Minutes of LSH meeting and Feedback round along with List of Attendees, copy of Public Notice, invitations etc. will be submitted to the DOE.

### E.2. Summary of comments received

The representative of project participant explained about the power generation process from this proposed solar power Plant and emphasised on the positive impacts that this project would leave on the local community via:

Q1: The project will use solar light for energy generation, would there be pollution from the plant?

A1: Mr. Neeraj Modi answered:



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For the project, the solar energy is renewable source of energy for pollution free electricity generation. Without the use of solar energy for electricity generation, that equal amount of electricity would have been generated by the fossil fuel based power plants in the regional grid.

Q2: I know for power plants, water is required. Is there water requirement for this project?

A2: Mr. Neeraj Modi answered:

No, water is not required in this technology based power projects. This shows the water saving opportunity for the region, which would be used during electricity generation by conventional power plants.

Q3: I'm not sure whether the project will have noise problem. Would you please have some introduction of the problem?

A3: Mr. Viral Dudhrejiya answered:

There are no such moving parts in this type of technology based power plants, thus there is no noise problem from this power project, at all.

Q4: Will this project fetch the employment opportunities to the local residents?

A4: Mr. Neeraj Modi answered:

Yes, this project would generate employment opportunities in the region. Moreover this may attract more companies, to invest in such kind of clean energy generation projects, in this region along with employment opportunities.

### **E.3. Report on consideration of comments received**

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

## Appendix 1. Contact information of project participants

<b>Organization name</b>	Roha Dyechem Pvt. Ltd.
<b>Registration number with relevant authority</b>	U40100DL2011PTC228318
<b>Street/P.O. Box</b>	Road No.2 Andheri East
<b>Building</b>	A-44 and 45, MIDC
<b>City</b>	Mumbai
<b>State/Region</b>	Maharashtra
<b>Postcode</b>	400093
<b>Country</b>	India
<b>Telephone</b>	+91 (22) 4077 3333
<b>Fax</b>	+91 (22) 2830 2531
<b>E-mail</b>	<a href="mailto:sachin.chavan@rohagroup.com">sachin.chavan@rohagroup.com</a>
<b>Website</b>	<a href="http://www.rohadyechem.com">http://www.rohadyechem.com</a>
<b>Contact person</b>	Mr. Sachin Chavan
<b>Title</b>	Renewable Energy Head
<b>Salutation</b>	Mr.
<b>Last name</b>	Chavan
<b>Middle name</b>	-
<b>First name</b>	Sachin
<b>Department</b>	-
<b>Mobile</b>	9930 512 990
<b>Direct fax</b>	
<b>Direct tel.</b>	-
<b>Personal e-mail</b>	

### 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