

Joint Crediting Mechanism Proposed Methodology Form

Cover sheet of the Proposed Methodology Form

Form for submitting the proposed methodology

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| Host Country | Mongolia |
| Name of the methodology proponents submitting this form | Saisan Co., Ltd. myclimate Japan Co., Ltd., Mitsubishi UFJ Morgan Stanley Securities, Co., Ltd. |
| Sectoral scope(s) to which the Proposed Methodology applies | 1. Energy Industries |
| Title of the proposed methodology, and version number | Grid connected mega-sola power electricity generation in Mongolia |
| List of documents to be attached to this form (please check): | <input type="checkbox"/> The attached draft JCM-PDD: <input checked="" type="checkbox"/> Additional information |
| Date of completion | |

History of the proposed methodology

| Version | Date | Contents revised |
|---------|------|------------------|
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| | | |

A. Title of the methodology

Grid connected mega-solar power electricity generation in Mongolia

B. Terms and definitions

| Terms | Definitions |
|-------------------------------|---|
| Solar power generation system | Solar power generating system uses photovoltaic cells to directly convert sunlight into electricity. A PV system usually consists of one or more modules connected to an inverter that changes the PV's DC electricity to alternating current (AC) electricity to be compatible with the electric grid. |

C. Summary of the methodology

| Items | Summary |
|---|--|
| <i>GHG emission reduction measures</i> | Electricity generated by solar power generation system will displace the fossil fuel intensive electricity in the grid. |
| <i>Calculation of reference emissions</i> | Reference emissions is calculated as the product of amount of net electricity supplied by the solar power generation system installed under the project activity and the CO ₂ emission factor of the grid the project power plant is connected to. |
| <i>Calculation of project emissions</i> | There are no project emissions except in the case there is additional electricity consumption from the grid for auxiliary equipment such as power conditioner, pyranometer, and air-conditioning for control building, etc. In case there is auxiliary electricity consumption on site due to project implementation, consumption will be monitored using the electricity bill from the grid company. Project emission will be calculated by multiplying electricity consumption (MWh) and emission factor of the grid. |
| <i>Monitoring parameters</i> | (i) Net electricity generated and supplied to the grid. (ii) Electricity consumed by the project activity |

D. Eligibility criteria

This methodology is applicable to projects that satisfy all of the following criteria.

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|-------------|---|
| Criterion 1 | The project activity is generation of mega-solar scale power (more than or equal to 1MW output) in Mongolia. |
| Criterion 2 | The project activity is the installation of a new solar power generation system at a site where there has been no mega-solar scale power generation system, or capacity addition to the existing solar power generation system. |
| Criterion 3 | The electricity generated by the project will be supplied to Altai-Uliastai Energy System in Mongolia to replace existing electricity generation. Auxiliary electricity consumption by the project, if there is any, will be supplied from Altai-Uliastai Energy System. |
| Criterion 4 | The solar power generation system installed in the project measures net electricity supplied to the grid. |
| Criterion 5 | <p>The solar cells in the system have obtained: (i) a certification of design qualifications and safety qualification set by the IEC (International Electrotechnical Commission), and/or (ii) have obtained any other national certifications that conforms to the IEC.</p> <p>The qualifications set by the IEC referred are as follows:</p> <ul style="list-style-type: none"> - Design qualification and type approval: IEC 61215 (silicon) , IEC 61646 (thin-film) , and IEC 62108 (CPV) - Safety qualification: IEC 61730-1 (construction) and IEC 61730-2 (testing) |
| Criterion 6 | The solar power generation system installed in the project includes power conditioner(s) with minimum conversion efficiency of 98%. |
| Criterion 7 | The solar power generation system installed in the project is equipped with remote monitoring system. The remote monitoring system emits warning in the event of operation failure. The project owner/participant located in the distance receives warning remotely and can quickly attend to the issues for trouble-shooting and recovery. |

E. Emission Sources and GHG types

| Reference emissions | |
|--|-----------------|
| Emission sources | GHG types |
| CO2 emissions from electricity generation in fossil fuel intensive grid electricity system that are displaced due to project activity. | CO ₂ |

| Project emissions | |
|---|-----------------|
| Emission sources | GHG types |
| CO2 emissions from electricity consumption from the grid on site due to project activity. | CO ₂ |

F. Establishment and calculation of reference emissions

F.1. Establishment of reference emissions

Reference emissions are calculated by multiplying the amount of net electricity supplied to the grid ($EG_{REF,p}$) and the emission factor of the grid ($EF_{CO_2,grid,p}$). Emission factor of the grid is conservatively fixed *ex ante* in the methodology to results in a net reduction of emissions.

F.2. Calculation of reference emissions

Reference emissions are calculated by the following equation:

$$RE_p = EG_{REF,p} \times EF_{CO_2,grid,p} \quad (1)$$

Where

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|--------------------|--|
| RE_p | Reference emissions during the period p [tCO ₂ /p] |
| $EG_{REF,p}$ | Net electricity supplied to the grid by the project during the period p [MWh/p] |
| $EF_{CO_2,grid,p}$ | Emission factor of the grid electricity displaced by the project [tCO ₂ /MWh] |

G. Calculation of project emissions

Project emissions are calculated by a sum of emissions as a result of auxiliary electricity consumption by the project.

$$PE_p = EC_{AUX,p} \times EF_{CO_2,grid,p} \quad (2)$$

Where

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|--------------------|---|
| PE_p | Project emissions during the period p [tCO ₂ /p] |
| $EC_{AUX,p}$ | Grid electricity consumed by the project during the period p (MWh/p) |
| $EF_{CO_2,grid,p}$ | Emission factor of the grid electricity consumed by the project [tCO ₂ /MWh] |

H. Calculation of emissions reductions

Emissions reduction is calculated by the following equation.

$$ER_p = RE_p - PE_p \quad (3)$$

Where

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|--------|---|
| PE_p | Emissions reduction during the period p [tCO ₂ /p] |
| RE_p | Reference emissions during the period p [tCO ₂ /p] |
| PE_p | Project emissions during the period p [tCO ₂ /p] |

I. Data and parameters fixed *ex ante*

The source of each data and parameter fixed *ex ante* is listed as below.

| Parameter | Description of data | Source |
|--------------------|---|----------------------------|
| $EF_{CO_2,grid,p}$ | Emission factor of the grid electricity displaced/consumed by the project (0.817tCO ₂ /MWh). | See Additional Information |