



Gold Standard®
for the Global Goals

TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

PUBLICATION DATE 14.10.2020

VERSION v. 1.2

RELATED SUPPORT

– **TEMPLATE GUIDE Key Project Information & Project Design Document v.1.2**

This document contains the following Sections

Key Project Information

SECTION A – Description of project

SECTION B - Application of approved Gold Standard Methodology (ies) and/or demonstration of SDG Contributions

SECTION C – Duration and crediting period

SECTION D – Summary of Safeguarding Principles and Gender Sensitive Assessment

SECTION E – Outcome of Stakeholder Consultations

Appendix 1 – Safeguarding Principles Assessment (mandatory)

Appendix 2 - Contact information of Project participants (mandatory)

Appendix 3 - LUF Additional Information (project specific)

Appendix 3 - Summary of Approved Design Changes (project specific)

KEY PROJECT INFORMATION

GS ID of Project	2679
Title of Project	Ulan Phase II 10MWp Solar PV Project
Time of First Submission Date	24/10/2014
Date of Design Certification	05/12/2014
Version number of the PDD	2.1
Completion date of version	07/05/2022
Project Developer	Climate Bridge (Shanghai) Ltd.
Project Representative	Climate Bridge (Shanghai) Ltd.
Project Participants and any communities involved	Ulan Jinfeng New Energy Photovoltaic Power Generation Co., Ltd.
Host Country (ies)	China
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☒ Small Scale ☐ Large Scale
Other Requirements applied	N/A
Methodology (ies) applied and version number	AMS-I.D Grid connected renewable electricity generation (Version 18.0)
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular ☒ Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Targeted	SDG Impact Goals (defined in B.6)	Estimated Average	Annual Units Products	or
13 Climate Action (mandatory)	Emissions Reductions	12,550	VERs	
7 Ensure access to affordable, reliable, sustainable and modern energy for all (Affordable and Clean Energy)	MWh of renewable energy generated	16,103.7	MWh	
	Number of jobs created	6	/	
8 Promote inclusive and sustainable economic growth, employment and decent work for all (Decent Work and Economic Growth)	Number of trainings	Trainings on the technology and the monitoring of the plant operation, and the emergency and safety procedures. Training periodically (at least one time a year)	/	
	Average salary	Above the average salary level of power industry in Qinghai Province	RMB/year	

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

>>

Ulan Phase II 10MWp Solar PV Project (hereafter referred to as the Project) is located in Keke Town, Ulan County, Haixi Mongol and Tibetan Autonomous Prefecture, Qinghai Province, P. R. of China, invested by Ulan Jinfeng New Energy Photovoltaic Power Generation Co., Ltd.

The purpose of the Project is to install 41,440 pieces of the polycrystalline silicon solar cell modules with unit capacity of 250Wp to generate clean renewable electricity with zero emissions. The actual installed capacity of the Project is 10.36MWp. It is estimated that the feed-in electricity from the Project is approximately 16,103.7MWh per year. The electricity generated by the Project is supplied to Northwest China Power Grid (NWPG).

Prior to the implementation of the project activity, the electricity is supplied by the operation of grid-connected power plants and by the addition of new generation sources within the NWPG, which is the same as baseline scenario.

The project activity is a renewable energy project and achieves greenhouse gas (GHG) emission reductions by displacing power generation from those fossil fuel-fired power plants connected to the NWPG under the baseline scenario. The expected emission reductions in the second crediting period are 12,550t CO₂e/year.

The project started construction on 18/07/2013 and started commissioning on 20/12/2013. The project operated continuously since commissioning.

The Project clearly fits into the development priority of China. The Project not only supplies renewable electricity to grid, but also contributes to sustainable development of the local community and the host country by means of:

- Reducing the emission of other pollutants resulting from the power generation industry in China;

- Helping to stimulate the growth of the solar photovoltaic power industry and, encouraging and promoting the progress of technology advancement and commercial popularization of grid-connected clean renewable energy generation in China;
- Creating local employment opportunities during assembly and installation period of the photovoltaic modules and during the Project construction and operation period;
- Providing long-term working positions during the operation of the Project.

This project has been registered as GS project with ID of 2679. The first crediting period is from 20/12/2013 to 19/12/2020. The project is applying for crediting period renewal. The start date of the second crediting period will be from 20/12/2020.

A.1.1. 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 location and boundary are clearly defined in A.2. The project has not and will not claim in any other voluntary or compliance standards program except GS.
- The project is in compliance with applicable China's legal, environmental, ecological and social regulations.
- The legal ownership is demonstrated and listed in A.1.2.
- The project applies methodology AMS_I.D, Version 18.0 , which is an approved methodology under Gold Standard.
- The project type is power generation using Solar Energy which is an eligible project type as it is in accordance with 2.1.2 a) and 2.1.2 b) of the Eligible Project Types & Scope under Renewable Energy Activity Requirements.
- The project activity results in displacement of electricity from fossil fuel power stations while contributing to sustainable development of China. Hence, the project contributes to the Gold Standard Vision and Mission.
- Solar power is an approved project type and does not require 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 enhance or prolong such energy generation.

- The project does not involve any ODA financing. This project is not eligible of receiving ODA.

General Eligibility Criteria under Renewable Energy Activity Requirements

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

Project Location: The project is located in China. Thus, the project is eligible.

Project scale: The project activity is 10.36 MWp Solar Energy project and thus qualifies under small scale projects. The estimated annual emission reductions of the project activity is 12,550 tCO₂e in the second crediting period, which is greater than 10,000 tCO₂eq, above microscale threshold, which is considered as Non microscale project.

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

>>

The project owner (Ulan Jinfeng New Energy Photovoltaic Power Generation Co., Ltd.) has full and uncontested legal ownership of the emission reductions that are generated under this Gold Standard project, and has legal rights concerning changes in use of resources required to service the project. The legal ownership of the project can be demonstrated via the following documents:

1. Power Purchase Agreements signed in the name of project owner
2. Electricity receipts from NWPG

A.2. Location of project

>>

The Project is located in Keke Town, Ulan County, Haixi Mongol and Tibetan Autonomous Prefecture, Qinghai Province, P. R. of China, with central geographical coordinates of east longitude of 98°23'09'' and north latitude of 36°59'11''.

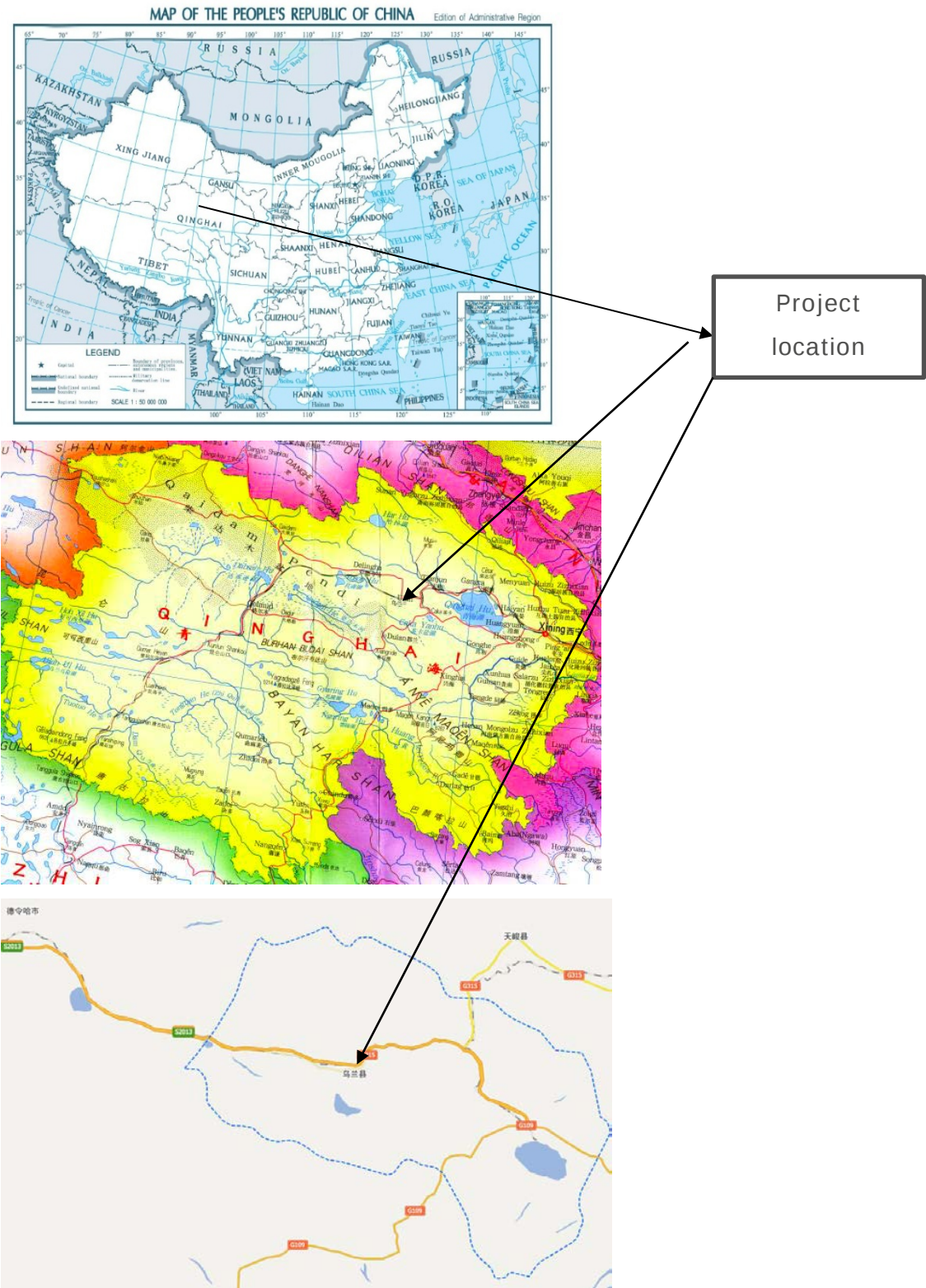


Figure 1 Geographical locations of the project

A.3. Technologies and/or measures

>>

The Project has installed 41,440 pieces of the polycrystalline silicon solar cell modules with unit capacity of 250Wp to generate clean renewable electricity with zero emissions. The actual installed capacity of the Project is 10.36MWp. It is estimated that the feed-in electricity from the Project is approximately 16,103.7MWh per year. The operation hours are 1,554.4h and the plant load factor (PLF) is 0.1774 based on the FSR of the Project.

For the proposed project:

- The scenario existing prior to the implementation of the proposed project is that the quantity of net electricity generation by the Project would be generated by other grid-connected power plant or provided by newly added power sources in the NWPG.
- The baseline scenario is the same as the scenario existing prior to the start of implementation of the project activity.

The electricity generation supplied by the Project is sent through the 35kV line to the 110kV substation at the project site, and then delivered to the NWPG. The process flow chart of the Project please refers to Figure 2.

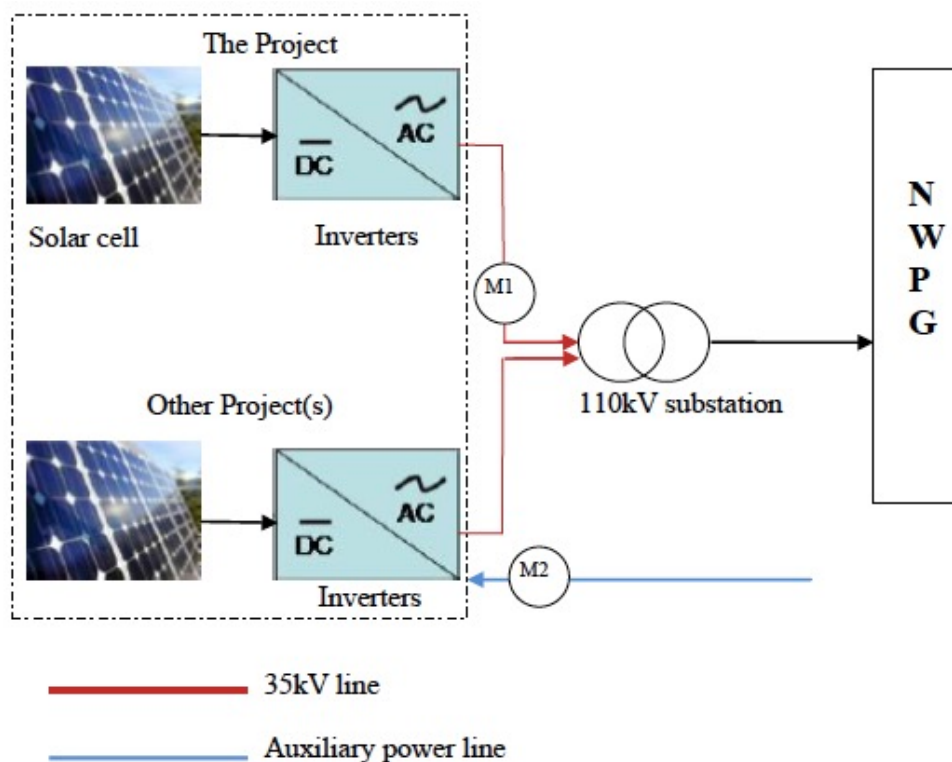


Figure 2. Flow chart of the Project

Meter	M1	M2
Function	Main meter	Main meter
Accuracy	No less than 0.5S (0.2S)	No less than 2.0 (0.5S)
Bi-direction or not	Yes	Yes
Purpose	Measure the quantity of the grid electricity export and import of the Project through 35 kV line.	Measure the total quantity of the grid electricity import of the Project and Other Project(s) through auxiliary power line.

The solar cell modules and inverters of the Project are supplied by domestic manufacturer, thus no technology transfer is involved. The key technical parameters are showed in Table 1 below.

Table 1 Major technical parameters of solar cell modules and inverters

Item		Unit	Data
Solar Sell module	type		JKM250P-60
	Number		41440
	Rated Max. Power	Wp	250
	Rated Voltage number	V	30.4
	Rated Current	A	8.23
	Open Circuit voltage	V	37.6
	Short Circuit current	A	8.81
	Lifetime	year	25
Inverter	Type		DS 500KTL
	Number		20
	Rated Output power	kW	500
	Rated Output frequency	HZ	50/60

A.4. Scale of the project

>>

The project is a small scale project utilizing solar power to generate electricity. The total installed capacity of the project is 10.36 MWp. This is small scale project as the capacity is smaller than stipulated limited of Type I for small scale project of 15 MW.

A.5. Funding sources of project

>>

The project is financed by the project owner.

There is no public funding from Annex 1 countries and no Official Development Assistance (ODA) involved in the project activity.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

>>

Approved methodology applied: AMS.I-D Grid connected renewable electricity generation (version 18.0)¹

The methodology was applied with the following tools:

- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (version 03.0.1)²
- Tool to calculate the emission factor for an electricity system (version 07.0)

Further information pertaining to the methodology can be obtained at:

<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

B.2. Applicability of methodology (ies)

>>

This project is applicable to AMS.I-D(V18.0), and the applicability analysis is as following table 2.

Table 2. Applicability analysis of 'AMS.I-D(V18.0)'

No	Applicability	This project	Applicable/Not Applicable
1	Typical project(s) : Construction and operation of a new power plant/unit or retrofit, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant that uses renewable energy sources and supplies electricity to the grid	Construct a new power plant	Applicable
	Type of GHG emissions mitigation action: Renewable energy. Displacement of electricity that would be provided to the grid by more-GHG-intensive means	Renewable energy Displacement of electricity that would be provided to the grid by	Applicable

¹

<http://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

²

<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf>

		more-GHG-intensive means	
2	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling	The project is a photovoltaic project, supplying electricity to national grid	Applicable
3	Illustration of respective situations under which each of the methodology (i.e. "AMS-I.D.: Grid connected renewable electricity generation", "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" and "AMS-I.A.: Electricity generation by the user) applies is included in the appendix	This project applied to AMS-I.D as the electricity is connected to national grid	Applicable
4	This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).	This project applies (a)	Applicable
5	Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; (b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m²; (c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m².	The is not hydro power project	Not applicable

6	If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	This project does not include non-renewable component	Not applicable
7	Combined heat and power (co-generation) systems are not eligible under this category.	There is no combined heat and power system in this project	applicable
8	In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct ¹ from the existing units.	This project does not involve capacity addition	N/A
9	In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	This project does not involve retrofit, rehabilitation or replacement	N/A
10	In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.	This is not landfill gas, waste gas, wastewater treatment and agro-industries project	N/A
11	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	This project does not include biomass	N/A

The criteria and assessment of "Tool to calculate the emission factor for an electricity system (version 07.0)" are in the following table 3.

Table 3. Applicability analysis of “Tool to calculate the emission factor for an electricity system (version 07.0)”

Criteria	Analysis
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The project generates electricity to national grid. This tool is used to calculate the OM, BM and CM. This is applicable
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 1: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project is not located in annex I country. Therefore, the tool is applicable.
Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The proposed project is a grid connected solar power project/ unit and does not involve emission from biofuels. Therefore, this criterion is not applicable.

Applicability conditions of “Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period (Version 03.0.1)” is shown in table 4.

Table 4. Applicability analysis of “Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period (v03.0.1)”

Criteria	Analysis
This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period	Applicable. The baseline is assessed by the procedure of this tool.

B.3. Project boundary

>>

According to the methodology AMS-I.D, 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.

According to 2019 Baseline Emission Factors for Regional Power Grids in China issued by the Ministry of Ecology and Environment of the People’s Republic of China, NWPG consists of Shanxi, Gansu, Qinghai, Ningxia, Xinjiang power grids.

Source	GHGs	Included?	Justification / Explanation
Baseline scenario	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂ Yes	Main emission source
		CH ₄ No	Minor emission source
		N ₂ O No	Minor emission source
Project scenario	Emission Sources of Project Activity	CO ₂ No	Excluded, as per AMS-I.D
		CH ₄ No	Excluded, as per AMS-I.D
		N ₂ O No	Excluded, as per AMS-I.D

B.4. Establishment and description of baseline scenario

>>

According to AMS.I-D(V18.0), the baseline scenario is that the 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 into the grid.

The baseline emissions are the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y ($EG_{PJ,y}$) multiplied by the grid emission factor.

For the second crediting period, the continued validity of the original baseline should be assessed.

According to the Methodological Tool “*Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period*” (version 03.0.1), the stepwise procedure as follows should be adopted to assess the continued validity of the baseline and to update the baseline:

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

There are no new national and/or sectoral policies that could affect the baseline scenario during the renewal of the crediting period. No national and/or sectoral policies mandate production of electricity from renewable sources. Although national policies favor the development of renewable energy sources, fossil fuel fired power generation accounts for 76.0%, 76.0%, 73.4%, 70.4% and 69.3% of total generation of the NWPG in 2015-2019 respectively according to the latest China Energy Statistical Yearbook 2020. Hence in the absence of the project activity electricity would still have been generated in the existing fossil fuel power plants or by the addition of new fossil fuel power plants connected to the NWPG.

Step 1.2: Assess the impact of circumstances

Firstly, the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment;

Secondly, the mainly investment environment or market characteristics especially the feed-in tariff, the policy in terms of market access permit have no significant change

which would impacts the current baseline. The current practice for the baseline emissions is still the GHG emitted by NWPG: the equivalent electricity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources within the NWPG;

Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which the renewal is requested.

The current baseline scenario is the continuation of the current practice. In the absence of the project, the electricity would have been supplied by NWPG, and it will not request an investment by the project proponent or third party. So, this step is not applicable.

Step 1.4: Assessment of the validity of the data and parameters

Since there are some parameters, which were determined at the start of the first crediting period and not monitored during the first crediting period, are not valid anymore, therefore, the current baseline emissions needs to be updated for the second crediting period according to this tool.

Before the time of requesting renewal of the crediting period, the China DNA has issued the latest Notice “2019 Baseline Emission Factors for Regional Power Grids in China” on 29/12/2020, so the emission factor of NWPG is updated for the second crediting period according to this Notice.

In summary, the emission factor of NWPG and all values have been updated to the latest data for the second crediting period according to this Notice.

Application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline is valid for the second crediting period but data and parameters needs to be updated. Therefore step 2 is used.

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline

The baseline emissions for the second crediting period have been updated, without reassessing the baseline scenario, based on the latest approved version of the methodology AMS-I.D(version 18.0) . More details for the updated baseline emissions for the second crediting period can be seen in section B.6

Step 2.2: Update the data and parameters

As mentioned in step 1.4 above, all parameters regarding the grid emission factor calculation have been updated for this second crediting period. More details can be seen in section 4.

B.5. Demonstration of additionality

This section has been assessed and validated in the first crediting period.

B.5.1. Prior Consideration

>>

The project started on 17/07/2013, which is the signing date of the Engineering, Procurement and Construction (EPC) contract (except for solar PV cell modules). The project submitted documents to GS for preliminary review on 31/12/2013.

B.5.2. Ongoing Financial Need

>>

Compared with the revenue realised from Gold Standard certification, the cost of validation, verification and certification are relatively fixed and limited. The project can achieve sustainable management. Up to now, the project has been verified once in the first crediting period, and a total of 40,098 tons of GS VERs have been issued and 39,759 tons of GS VERs have been retired. Currently, the inventory of GS VERs is still large, but the current revenue of GS VERs can fully cover the development cost. Carbon revenues derived from Gold Standard certification have been playing a very important role in helping PO to contribute to SDGs, e.g. preserving 6 jobs and providing renewable electricity.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact
		Indicator (Proposed or SDG Indicator)
13 Climate Action (mandatory)	N/A	Emissions Reductions
7 Affordable and Clean Energy	Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	MWh of renewable energy generated
8 Decent Work and Economic Growth	Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Number of jobs created
		Average salary (above the average salary level of power industry in Qinghai Province)
		Trainings (at least one time a year)

B.6.1. Explanation of methodological choices/approaches for estimating the SDG Impact

>>

SDGs	Method
SDG 7 Affordable and Clean Energy	Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix Indicator: MWh of renewable energy generated Monitoring Parameter: $EG_{PJ, facility, y}$ Quantity of net electricity generation supplied by the project plant/unit to the grid in year y. The net electricity generation supplied to the grid is the difference between the measured quantities of the grid electricity export and import Monitoring Method: Electricity meters Calculation Method: $EG_{PJ, facility, y} = EG_{exported, y} - EG_{imported, y}$ $EG_{exported, y}$ The quantity of the grid electricity export $EG_{imported, y}$ The quantity of the grid electricity import

SDG 8 Decent Work and Economic Growth	Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Indicator: Number of jobs created; number of trainings provided to the employees per year; average salary of the employees Monitoring Parameter: Quantitative employment and income generation; Quality of employment Monitoring Method: Training Attendance sheets, Employee Records, Salary Record of the employees Calculation Method: N/A
SDG 13 Climate Action	Indicator: Emissions Reductions Monitoring Parameter: ER_y emission reductions in year y and monitoring parameters under SDG7 Monitoring Method: Electricity meters Calculation Method: Details as below.

For SDG 13, the applied methodology AMS-I.D (version 18.0) is applied in the project in the following four steps:

1. Project Emission

As per AMS-I.D, the project emission for most renewable energy (including solar farm) project activities is zero ($PE_y = 0$).

2. Baseline Emission

As per AMS-I.D, baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (tCO_2/yr)

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

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

As the project is a greenfield project, $EG_{PJ} = EG_{PJ,facility,y}$

Emission Factor

The Baseline Emission Factor is calculated as a Combined Margin, using the weighted average of the operating margin and build margin.

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

$EF_{grid,OM,y}$ Operating Margin Emission Factor (tCO₂e/MWh)

$EF_{grid,BM,y}$ Build margin emission factor (tCO₂e/MWh)

W_{OM} Weighting of operating margin emissions factor

W_{BM} Weighting of build margin emissions factor

Based on above equation, the operating margin emission factor ($EF_{grid,OM,y}$) of NWPG is 0.8922 tCO₂e/MWh and the build margin emission factor ($EF_{grid,BM,y}$) is 0.4407 tCO₂e/MWh. The defaults weights for solar power are used as specified in the emission factor tool: $W_{OM} = 0.75$; $W_{BM} = 0.25$. The result of the Baseline Emission Factor ($EF_{grid,CM,y}$) calculation is 0.779325 tCO₂e/MWh. The calculations are presented in Appendix III.

Calculation of $EG_{PJ,y}$

As 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 following applies:

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

Where:

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

$$EG_{PJ, facility, y} = EG_{exported, y} - EG_{imported, y}$$

Where:

$EG_{exported, y}$ The quantity of the grid electricity export (MWh)

$EG_{imported, y}$ The quantity of the grid electricity import (MWh)

3. Leakage

According to AMS-I.D, no leakage emissions are considered.

4. Emission reductions

Emission reductions of the project are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

B.6.2. Data and parameters fixed ex ante

SDG13

Data/parameter	$EF_{grid, OM, y}$
Unit	tCO ₂ /MWh
Description	Simple operating margin CO ₂ emission factor in year y
Source of data	"2019 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA ³
Value(s) applied	0.8922
Choice of data or Measurement methods and procedures	Official public data from NDRC

³ https://www.mee.gov.cn/ywgz/ycqhbh/wsqtz/202012/t20201229_815386.shtml

Purpose of data	Calculation of baseline emissions
Additional comment	/

Data/parameter	$EF_{grid,BM,y}$
Unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor in year y
Source of data	“2019 Baseline Emission Factors for Regional Power Grids in China” issued by China DNA 4
Value(s) applied	0.4407
Choice of data or Measurement methods and procedures	Official public data from NDRC
Purpose of data	Calculation of baseline emissions
Additional comment	/

Data/parameter	W_{OM}
Unit	%
Description	Weighting of operating margin emissions factor
Source of data	“Tool to calculate the emission factor for an electricity system” (Version 07.0)
Value(s) applied	75
Choice of data or Measurement methods and procedures	Based on the requirements of “Tool to calculate the emission factor for an electricity system” (Version 07.0)

⁴ https://www.mee.gov.cn/ywgz/ydqhbh/wsqtgz/202012/t20201229_815386.shtml

Purpose of data	Calculation of baseline emissions
Additional comment	/

Data/parameter	W_{BM}
Unit	%
Description	Weighting of build margin emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value(s) applied	25
Choice of data or Measurement methods and procedures	Based on the requirements of "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of data	Calculation of baseline emissions
Additional comment	/

B.6.3. Ex ante estimation of SDG Impact

>>

SDGs	Ex ante estimation of outcomes
SDG 7 Affordable and Clean Energy	The net generation supplied by the project to the grid is estimated to be 16,103.7 MWh/yr, which could replace the equivalent electricity from fossil fuel based grid.
SDG 8 Decent Work and Economic Growth	The project provides 6 employment opportunities for women and men. The project provides healthy working environment and trainings periodically (at least one time a year) for the employees on the technology and the monitoring of the plant operation, and the emergency and safety procedures, etc. The average salary is above the average salary level of power industry in Qinghai Province).

SDG 13 Climate Action	The project will directly contribute by reducing 12,550 tons of CO ₂ equivalent every year. The estimation is as below.
-----------------------	---

Project Emissions

In accordance to AMS-I.D (version 18.0), the project emission for most renewable energy (including solar power) project activities is zero (PE_y=0).

Leakage

Based on AMS-I.D(version 18.0),there is no need of leakage calculation or monitoring for this kind of activity, thus leakage is considered to be zero (0 tCO₂e).

Baseline Emissions

Based on AMS-I.D(version 18.0), baseline emissions (BE_y) include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the proposed project activity, which is calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (tCO₂/yr)

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

EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

According to Section B.6.1, the final result for calculating this project's emission reduction is the following:

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

The result of emission reduction:

EG _{PJ,facility,y}	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	16,103.7	MWh/year
EF _{grid,CM,y}	Combined margin CO ₂ emission factor	0.779325	tCO ₂ e/MWh
ER _y	Emission reductions annually	12,550	tCO ₂ e/year

B.6.4. Summary of ex ante estimates of each SDG Impact

SDG13

Year	Baseline estimate	Project estimate	Net benefit
Year 1	12,550tCO ₂ e	0	12,550tCO ₂ e
Year 2	12,550tCO ₂ e	0	12,550tCO ₂ e
Year 3	12,550tCO ₂ e	0	12,550tCO ₂ e
Year 4	12,550tCO ₂ e	0	12,550tCO ₂ e
Year 5	12,550tCO ₂ e	0	12,550tCO ₂ e
Year 6	12,550tCO ₂ e	0	12,550tCO ₂ e
Year 7	12,550tCO ₂ e	0	12,550tCO ₂ e
Total (20/12/2020 – 19/12/2027)	87,850tCO₂e	0	87,850tCO₂e
Total number of crediting years	7		
Annual average over the crediting period	12,550tCO ₂ e	0	12,550tCO ₂ e

SDG7

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	16,103.7 MWh	16,103.7 MWh
Year 2	0	16,103.7 MWh	16,103.7 MWh
Year 3	0	16,103.7 MWh	16,103.7 MWh
Year 4	0	16,103.7 MWh	16,103.7 MWh
Year 5	0	16,103.7 MWh	16,103.7 MWh
Year 6	0	16,103.7 MWh	16,103.7 MWh

Year 7	0	16,103.7 MWh	16,103.7 MWh
Total (20/12/2020 – 19/12/2027)	0	112,725.9 MWh	112,725.9 MWh
Total number of crediting years	7		
Annual average over the crediting period	0	16,103.7 MWh	16,103.7 MWh

SDG8

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0 job, 0 salary, 0 training	6 job opportunities. The salary is above the average salary level of power industry in Qinghai Province. At least 1 time of training on the technology and the monitoring of the plant operation, and the emergency and safety procedures.	6 job opportunities. The salary is above the average salary level of power industry in Qinghai Province. At least 1 time of training on the technology and the monitoring of the plant operation, and the emergency and safety procedures.
Year 2	0 job, 0 salary, 0 training		
Year 3	0 job, 0 salary, 0 training		
Year 4	0 job, 0 salary, 0 training		
Year 5	0 job, 0 salary, 0 training		
Year 6	0 job, 0 salary, 0 training		
Year 7	0 job, 0 salary, 0 training		
Total number of crediting years	7 (20/12/2020 – 19/12/2027)		
Annual average over the crediting period	0 job, 0 salary, 0 training	6 job opportunities. The salary is above the average salary level of power industry in Qinghai Province.	6 job opportunities. The salary is above the average salary level of power industry in Qinghai Province.

		At least 1 time of training on the technology and the monitoring of the plant operation, and the emergency and safety procedures.	At least 1 time of training on the technology and the monitoring of the plant operation, and the emergency and safety procedures.
--	--	---	---

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 13

Data / Parameter	ER_y
Unit	tCO ₂ /yr
Description	Emission reduction in year y
Source of data	Calculated
Value(s) applied	12,550
Measurement methods and procedures	The ex-post emission reduction is calculated according to the registered PDD description.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	Demonstration of SDG 13
Additional comment	/

SDG 7

Data / Parameter	$EG_{PJ, facility, y}$
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Measured by electricity meters.

Value(s) applied	16,103.7																			
Measurement methods and procedures	Directly measured by electricity meters M1 at the 35kV line of the Project and electricity meter M2 at the auxiliary power line. <table border="1"> <tr> <td>Electricity meter</td><td>M1</td><td>M2</td></tr> <tr> <td>Type</td><td>DTSD341</td><td>DSSD331</td></tr> <tr> <td>Serial Number</td><td>01300651</td><td>06011369</td></tr> <tr> <td>Accuracy</td><td>0.2S</td><td>0.5S</td></tr> <tr> <td>Latest calibration date</td><td>12/11/2021</td><td>12/11/2021</td></tr> <tr> <td>Validity</td><td>11/11/2022</td><td>11/11/2022</td></tr> </table> The following parameters shall be measured: (i) The quantity of the grid electricity export ($EG_{\text{exported},y}$ measured by M1); and (ii) The quantity of the grid electricity import ($EG_{\text{imported},y}$ measured by M1 and M2⁵). The project owner is responsible for the monitoring activities.		Electricity meter	M1	M2	Type	DTSD341	DSSD331	Serial Number	01300651	06011369	Accuracy	0.2S	0.5S	Latest calibration date	12/11/2021	12/11/2021	Validity	11/11/2022	11/11/2022
Electricity meter	M1	M2																		
Type	DTSD341	DSSD331																		
Serial Number	01300651	06011369																		
Accuracy	0.2S	0.5S																		
Latest calibration date	12/11/2021	12/11/2021																		
Validity	11/11/2022	11/11/2022																		
Monitoring frequency	Continuous measurement and at least monthly recorded.																			
QA/QC procedures	Measurement results will be cross checked by the records for sold/purchased electricity. The electricity meters will be calibrated periodically.																			
Purpose of data	Calculation of baseline emissions																			
Additional comment	/																			

SDG 8

Data / Parameter	Quality of employment
Unit	/

⁵ The meters M2 recorded the total quantity of the grid electricity import by the Project and other Project(s) through auxiliary power line, for conservativeness, the total quantity of the grid electricity import was deducted for calculating the net electricity generation supplied to grid by the Project.

Description	The project organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures, etc.
Source of data	Training records
Value(s) applied	The employee are trained periodically (at least one time a year)
Measurement methods and procedures	Training records
Monitoring frequency	Each monitoring period
QA/QC procedures	/
Purpose of data	Demonstration of SDG 8
Additional comment	/

Data / Parameter	Quantitative employment and income generation
Unit	Persons
Description	Number of permanent and skilled jobs provided in the operations of the project and their salary levels.
Source of data	HR records or report
Value(s) applied	6 job opportunities The salary is above the average salary level of power industry in Qinghai Province
Measurement methods and procedures	HR records.
Monitoring frequency	Each monitoring period
QA/QC procedures	Salary provided to employees is as per the standard of China Three Gorges Renewable Group, which is higher than the average salary level of power industry in Gansu Province. During each verification, the salary of employees will be compared with the average salary level of power industry

	in Gansu Province to ensure that the salary provided to the employees is as per the local standards.
Purpose of data	Demonstration of SDG 8
Additional comment	/

Safeguarding principle 9

Data / Parameter	Water Quality and Quantity
Unit	N/A
Description	The wastewater during operation period will be collected and treated through septic-tank, or used as greening water.
Source of data	
Value(s) applied	N/A
Measurement methods and procedures	Check the wastewater treatment facility and interview with the local residents.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	Demonstration of Safeguarding principle 9
Additional comment	/

Data / Parameter	Air quality
Unit	tSO ₂ , tNO _x
Description	Indirect parameter of “Total clean and renewable electricity supplied by the project” is measured in order to calculate the concentrations of SO ₂ and NO _x , as multiplied by default national emission factor from the Chinese government
Source of data	Measured by electricity meters.
Value(s) applied	SO ₂ emission reduction: 2.3g/KWh*16103.7MWh=37.038t

	NO₂ emission reduction: $2.6\text{g/KWh} \times 16103.7\text{MWh} = 41.869\text{t}$
Measurement methods and procedures	Directly measured by electricity meters and crosschecked with sales records. Right now, there is no available public data on average atmospheric pollutant emissions per kWh of electricity associated with the largely fossil fuel-based grid electricity in NWPG. Therefore, the average data for China is used. The SO₂ emission factor is 2.3g/kWh for sulphur fossil fuel-based power plants. The NO_x emission factor is 2.6 g/kWh for fossil fuel-based power plants⁶
Monitoring frequency	The electricity will be continuously measured and at least monthly recorded
QA/QC procedures	Cross check measurement results with records for sold electricity. The electricity meters are calibrated as stated in B.7.2.
Purpose of data	Demonstration of Safeguarding principle 9
Additional comment	/

Data / Parameter	Other pollutants
Unit	N/A
Description	Domestic solid waste will be collected together and periodically transferred to the local waste disposal plant for further treatment. The wasted equipment, such as the solar cell panel, will be collected together and transferred to the manufacturer.
Source of data	Monitored by the project owner
Value(s) applied	N/A

⁶ <http://news.bjx.com.cn/html/20120606/364987.shtml>

Measurement methods and procedures	Check the domestic solid waste collecting device, the wasted equipment collecting place and interview with local residents.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	Demonstration of Safeguarding principle 9
Additional comment	/

B.7.2. Sampling plan

>>

N/A

B.7.3. Other elements of monitoring plan

>>

Since the baseline emission factor of the project is determined ex ante, the electricity delivered by the project to the NWPG and the electricity imported from NWPG by the project are defined as the key data to be monitored. The monitoring plan is drafted to focus on monitoring the net electricity generation by the project.

Management Structure of the Monitoring Plan

For details regarding the management structure of the monitoring plan, please refer to Figure 3.

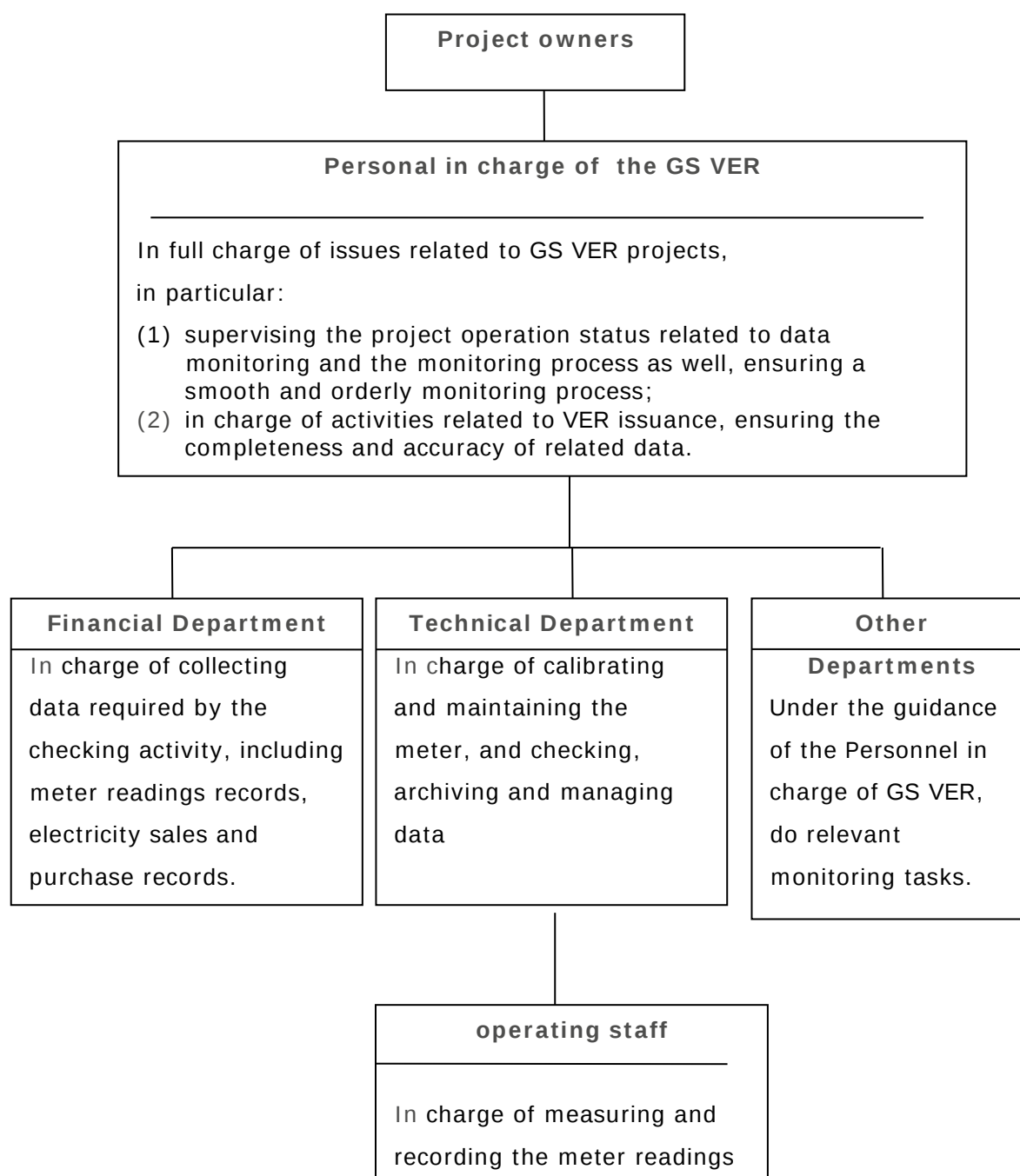


Figure 3. Management Structure of Monitoring Plan

Monitoring Measures

The quantity of net electricity generation supplied to the grid will be measured by the electricity meter M1 installed at the 35kV line of the Project and electricity meter M2 installed at the auxiliary power line, please refer to figure below. The quantity of net electricity generation supplied to the grid will be double checked by the records of electricity purchase and sale.

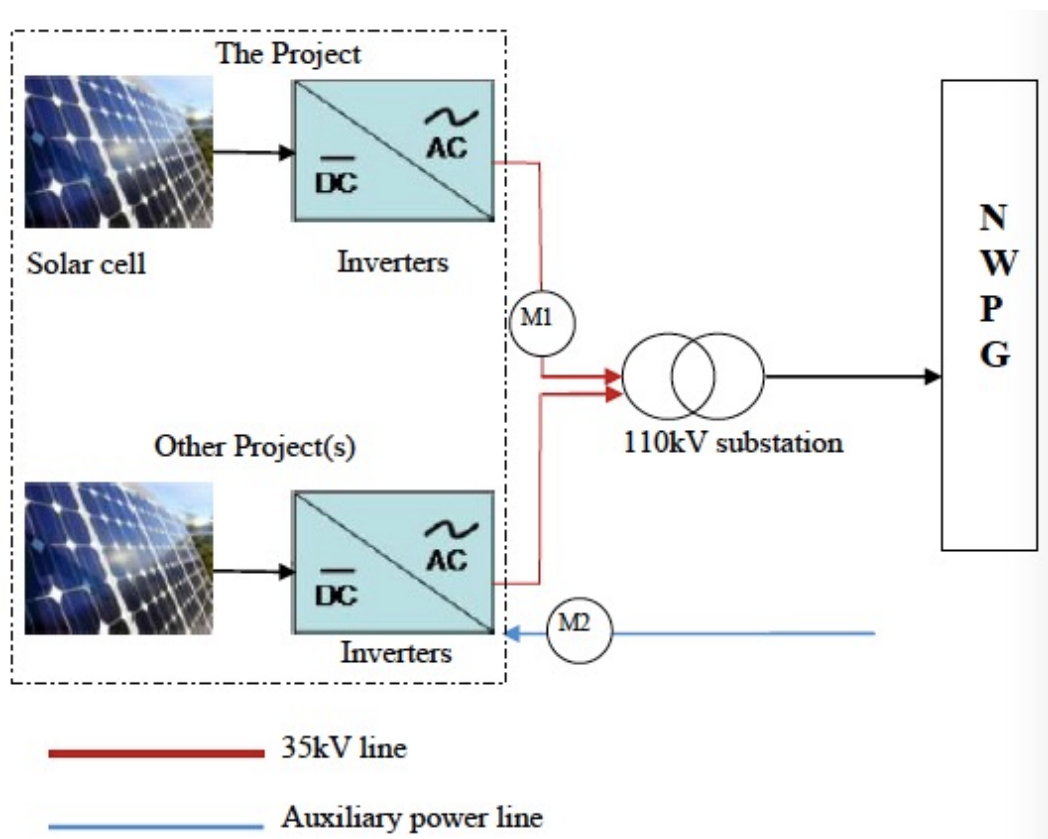


Figure 4. Line scheme of metering system

Installation of monitoring devices

The electricity meters of the Project will be installed according to national standard. Before the operation of the Project, the project owner and the local grid company will check and accept those electricity meters as per the Technical Administrative Code of Electric Energy Metering.

Calibration of Meters & Metering

The regular calibration and on-site verification should be implemented as per the related standards and rules to ensure the accuracy of electricity meters. Electricity meters should be calibrated annually. When the measurement error of electricity meter is larger than the permitted error or the electricity meter must be repaired because of a malfunction, the electricity will be determined as per the Power Purchase Agreement signed between the project owner and the local grid company. For calibration entity, it shall be conducted by a qualified metrical third party organization co-authorized by both the project owner and the grid company.

Emergency Treatment

For M1: The records of electricity sales and purchase will be used to cross-check the readings of the meter M1 as long as the error in the meter M1 is within the permissible limits. However, when the meter has the malfunction or the breakdown, the net electricity supplied to the grid will be determined according to the stipulation of the PPA, the emission reductions during this period will be considered as 0tCO₂e.

For M2:

As per the appendix I of Project standard, if M2 is functioned improperly or out of order, the imported electricity will be estimated by assuming that equipment consuming the imported electricity operated at maximum capacity for the full period of the missing data, and the estimate shall include an addition of 10% to account for transmission and distribution losses.

Quality Assurance and Quality Control

The quality assurance and quality control procedures consist of data recording, maintaining, archiving.

The quality assurance and quality control procedures should be improved according to the real operating conditions during the project operation period.

Data Management System

Specific staff will be appointed by the project owner to take on the overall responsibility for monitoring greenhouse gas emission reductions and keeping all the data collected as part of monitoring. Data shall be kept and archived electronically for two years after the end of the last crediting period or the last issuance of VERs, whichever occurs later.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of project

>>

The project started on 17/07/2013, which is the signing date of the Engineering, Procurement and Construction (EPC) contract (except for solar PV cell modules).

C.1.2. Expected operational lifetime of project

>>

25 years and 0 months

C.2. Crediting period of project

C.2.1. Start date of crediting period

>>

The start date of second crediting period is 20/12/2020. The first crediting period is from 20/12/2013 to 19/12/2020.

C.2.2. Total length of crediting period

>>

Seven years for the 2nd crediting period.

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in [Appendix 1](#), ongoing monitoring is summarized below.

Principles	Mitigation Measures added to the Monitoring Plan
Principle 9.4	Refer to B.7.1 Air Quality
Principle 9.4	Refer to B.7.1 Water quality and quantity
Principle 9.1	Refer to B.7.1 Other pollutants
Principle 2.2, 6.1	Refer to B.7.1 Quantitative employment and income generation
Principle 6.1	Refer to B.7.1 Quality of employment

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The project is a renewable energy project and it does not discriminate among gender. The project does not adversely impact women or men. During the project implementation, the project provides employment opportunities equally to men and women. During the local stakeholder feedback round meeting on 24/07/2014, both men and women are included. For the stakeholder interviews in previous monitoring periods and verifications, both men and women were involved as well. In the project design and implementation, fair chance and gender equality to access the source, information and to reflect their opinions is taken as a main consideration by the project owner.
---	---

Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	The project is aligned with the labor policies which does not discriminate on gender ⁷ . The project also abides the rules of equality accordingly and does not involve and is not complicit in any form of discrimination. Specifically regarding the gender equality, detailed enforcement rules are regulated in ' <i>Law of the People's Republic of China on the Protection of Women's Rights</i> ' ⁸ and in case of lawsuit occurrence, legal aid could be provided as per this law.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	No. There are no gaps in development outcomes that males and females experience in the areas of human endowment, formal employment, ownership and control of assets and voice and agency in China. Relevant laws and regulations have guaranteed equal rights for men and woman in China. And for the project, there're no design and implementation gaps relevant to the Project goals and key issues such as safety, security, employment and entrepreneurship that affect men and women differently. Therefore, Expert is not required for the Gender Safeguarding Principles & Requirements for the project.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	No. Local stakeholder consultation process of the project has ensured equal and effective participation of women and men. No Gender discrimination occurred during Stakeholder Consultation. Therefore, Expert is not required to assist with Gender issues at the Stakeholder Consultation of the project.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

According to the area impacted by the Project, local villagers around the project site are identified as the stakeholders of the Project.

In the process of crediting period renewal application, the project information is public on local villages by bulletin and oral notice to local stakeholders for 2-month-feedback round (from 28/09/2020 to 27/11/2020). The non-technical summary are sent to global stakeholders for 2-month-feedback round (from 17/12/2020 to 16/02/2021). The following picture shows the invitation process.

⁷ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

⁸ http://www.gov.cn/banshi/2005-05/26/content_980.htm

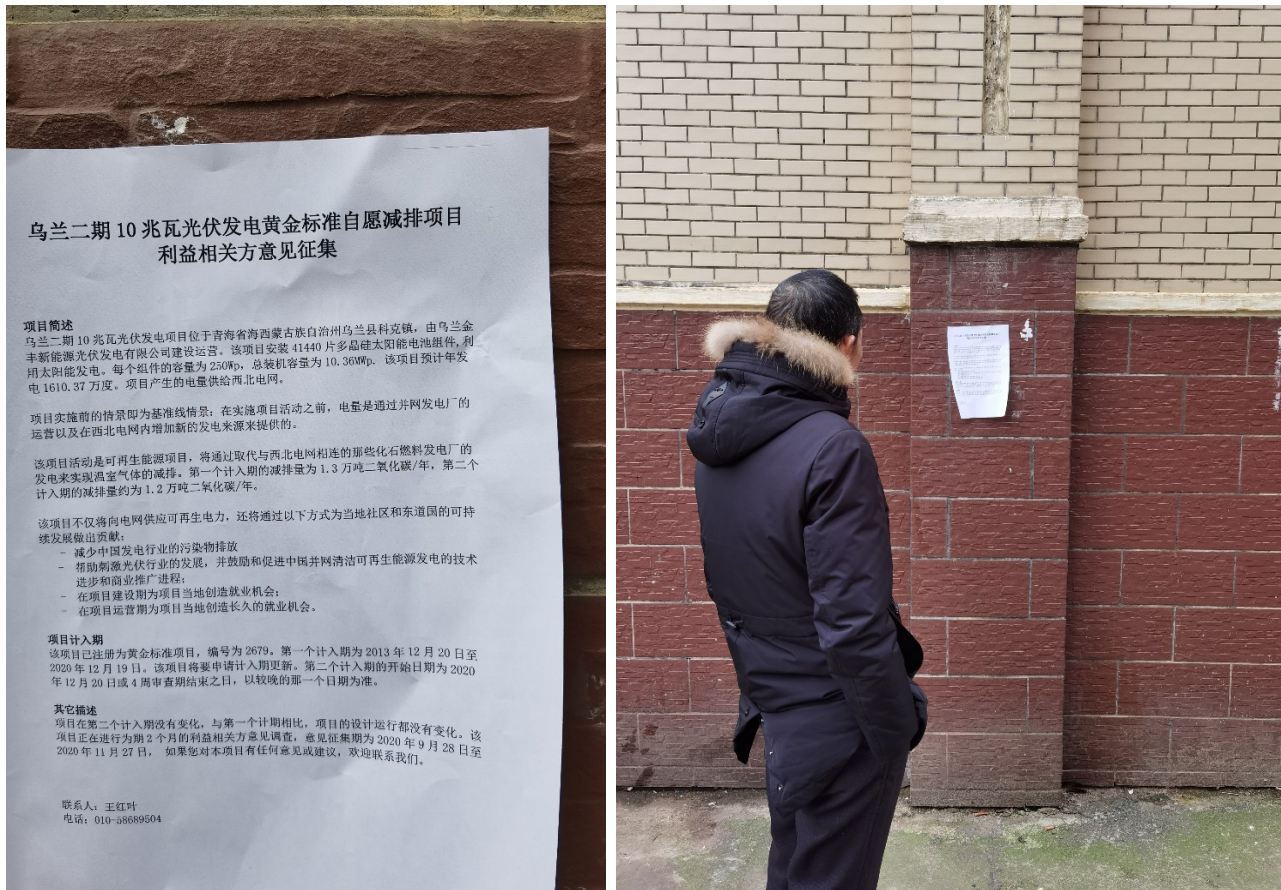


Figure 4. Invitation notice bulletin to local stakeholders for 2-month-feedback round

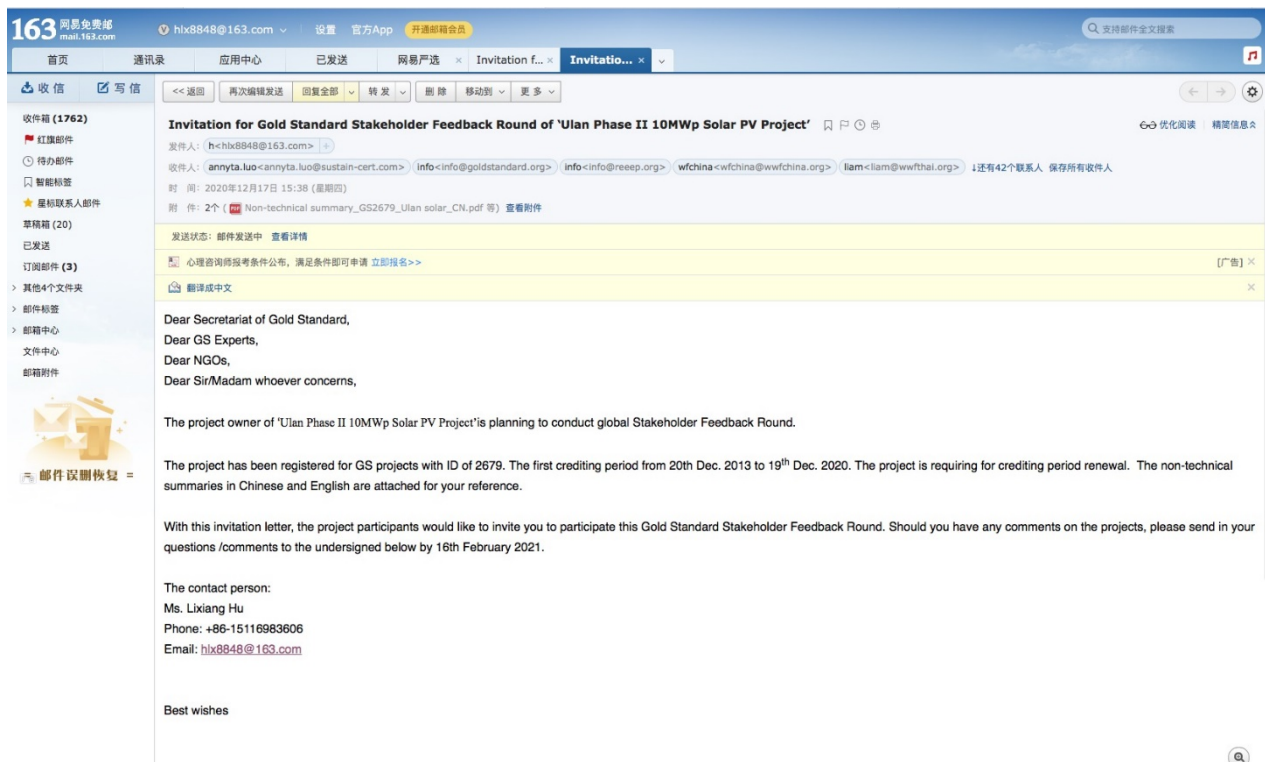


Figure 5. Invitation letter to global stakeholders for 2-month-feedback round

After the 2-month long stakeholder consultation round, no comments were received from the local stakeholder regarding to the documents or other related influence of the project activity.

Till now, no comments were received from global stakeholders.

E.1. Summary of stakeholder mitigation measures

>>

In the process of crediting period renewal, no comments were received during the Stakeholder feedback round in 2020, no mitigation measures were proposed.

Also, during the first crediting period, no grievances from stakeholders were received.

E.2. Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Input / Grievance Expression Process Book (mandatory)	Grievance expression book in local villages, kept by the leader of the villages, detailed as follows: Xishagou Village, Mr. Long Gang
GS Contact (mandatory)	help@goldstandard.org Telephone access +86-15343615822 (for project owner, plant chief) +86-10-5868-9628 (for project owner, headquarter) +86 158 1052 7065 (for GS expert) Local stakeholders can call the working staff of the project owner and GS expert to express their comments, suggestion and complaint.
Other	Internet/email access wang_hongye@ctgpc.com.cn (for project owner, headquarter) annyta.luo@sustain-cert.com (for GS expert) Local stakeholders can send email to the project owner and GS expert to express their comments, suggestion and complaint.

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Assessment Questions / Requirements	Justification of Relevance (Yes / potentially / no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
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 2. The Project shall not discriminate with regards to participation and inclusion	No	The project respects internationally proclaimed human rights. China has its own legislation in place prohibiting the violation of human rights principle and it actively enforces the compliance of such principle. China has ratified two UN human rights treaties-the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social, and Cultural Rights. China has published relevant regulations and practice into line with the	N/A

		treaties, such as Labor Contract Law⁹. 1. This project does not discriminate with regards to participation and inclusion. The project abides the rules of equality accordingly and does not involve and is not complicit in any form of discrimination. Specifically regarding the gender equality, detailed enforcement rules are regulated in 'Women's Rights Protection Law'¹¹ to provide support and benefits to women.	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women 2. Projects shall apply the principles of non-discrimination, equal	No	1. As a project combined of positive environmental, economic, and sustainable development benefits, the project is to generate clean electricity from the solar sources to replace fossil fuel power. The project abides the	

⁹ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

¹¹ http://www.gov.cn/banshi/2005-05/26/content_980.htm

treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)		rules of equality accordingly and does not involve and is not complicit in any form of discrimination. Specifically regarding the gender equality, detailed enforcement rules are regulated in 'Women's Rights Protection Law ¹² ' to provide support and benefits to women. 2. Qualified local residents, both men and women, are recruited to work for the project. During stakeholders' consultation process, comments were collected from the local people, including both men and women. The details can be seen in registered passport. During previous monitoring periods, stakeholder interviews were conducted to collect comments about impacts of the project from the local people, including both men and women. The details can be seen in previous verification report.	
--	--	--	--

¹² http://www.gov.cn/banshi/2005-05/26/content_980.htm

		3. The project abides the rules of equality accordingly. Regarding the gender equality, detailed enforcement rules are regulated in 'Labor Contract Law' and Women's Rights Protection Law. 4. No expert required.	
Principle 3. Community Health, Safety and Working Conditions			
1. 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's purpose is to supply electricity from the solar energy to replace fossil fuel power. Instead of exposure to health risks, it is beneficial to local people. In case of on-site monitoring and device maintenance, the project owner provides safety protection equipment. Since solar panels do not generate any type of pollutants, employees are not exposed to unsafe or unhealthy environment.	N/A
Principle 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?	No	According to the EIA reports, the Project area does not include sites, structures, or objects with historical, cultural, artistic, traditional or	N/A

		religious values or intangible forms of culture.	
Principle 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	As described in the EIA reports, the Project is constructed distanced to residential area, thus the Project does not require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial).	No
Principle 4.3 Land Tenure and Other Rights			
Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	The project area belongs the waste land of keke Town, Jiuquan City. There is no need of resettlement. The land application for the project construction has been approved by Local Department of Land and Resources. There are no uncertainties related to land tenure arrangements and access rights, usage rights or land ownership. The project owner has paid the compensation fee to local area. Thus, there are no uncertainties related to land tenure arrangements and access rights, usage rights or land ownership.	N/A
Principle 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	According to the EIA reports, no indigenous peoples present in or within the area of influence of the Project.	N/A
Principle 5. Corruption			
The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	The project is owned by a private equity company, and there is no governmental subsidy to the project. Therefore, the project does not involve and is not complicit in corruption and is not prone to entrusted power abuse nor corruption. Moreover, China was ranked 41 out of 100 countries surveyed in Transparency International's Worldwide Corruption Perceptions Index ¹³ .	N/A
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	No	1. The Project complies with national labour and occupational health and safety laws, obligations under international law, and the principles and standards embodied in the International Labour Organization (ILO) fundamental	N/A

¹³ <https://www.transparency.org/en/countries/china>

2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: 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 overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)		conventions. Labour rights are protected in the Labour Contract Law¹⁴. The project fully respects the employees' rights in accordance with all labour related laws endorsed within China. Law compliance is subject to government's inspection and ruling. 2. The rights to unionize, bargain collectively are highly protected by Labor Contract Law¹⁵. The project fully respects the employees' rights in accordance with all labour related laws endorsed within China. Law compliance is subject to government's inspection and ruling. 3. Working agreements between the company and individual workers are documented and implemented including working hours, duties and tasks, remuneration, modalities on health insurance, modalities on termination of contract, provision for annual	
---	--	--	--

¹⁴ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

¹⁵ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

5. 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		leave, etc. The employment model applied is locally and culturally appropriate. 4. China has published protection laws on the minors¹⁶. Employment regulations are described in this Law. The Project requires skilled employees to operate, maintain, and manage the solar energy project, as opposed to manufacturing industries, which may require abundant low-skilled labour. Therefore, the project does not employ and is not complicit in any form of child labour. According to the Employee employment contract, it could be confirmed that the Project does not employ any child labour. 5. All equipment in the Project are operated properly according to the work procedures and safety regulation rules. The Project organizes employee training with topics on technical, environmental/safety code, and	
--	--	--	--

¹⁶ http://www.npc.gov.cn/zgrdw/npc/zfjc/zfjcelys/2014-05/08/content_1862530.htm

		operational/maintenance procedures. The Project has established guard again and response procedure, which also regulates the documentation and reporting of accidents and incidents. Thus, the Project owner ensures the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.	
Principle 6.2 Negative Economic Consequences			
Does the project cause negative economic consequences during and after project implementation?	No	The project could supply job opportunities to local people, which is good to local economy. As the Project's purpose is to supply energy from the solar energy, there is no potential risks of the project to the local economy.	N/A
Principle 7. Climate and Energy			
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The Project will reduce the emission of 12,550 tCO ₂ e compared to the Baseline Scenario as it replaces	N/A

		electricity generated from fossil fuel fired power plants with zero emissions electricity from the solar farms.	
Principle 7.2 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) that provides for other local users?	No	The Project's purpose is to supply energy from the solar energy. It may use some electricity from the national grid when the equipment are in maintenance. It does not use energy from a local grid or power supply or fuel resource that provides for other local users.	N/A
Principle 8. Water			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The Project's purpose is to supply energy from the solar energy. According to the EIA report, the impact of the Project on the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) is negligible.	N/A
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	The Project's purpose is to supply energy from the solar energy. Therefore, the impact of the Project on	N/A

		the erosion and/or water body stability is negligible.	
Principle 9. Environment, ecology and land use			
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	The project is a solar power project. And the project uses waste land. It does not involve the use of land and soil for production of crops or other products. In fact, the project brings landscape benefits. The open space between the photovoltaic module arrays has been replanted.	N/A
Principle 9.2 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's purpose is to supply energy from the solar energy. Therefore, the Project is not susceptible to and does not lead to increased vulnerability to solar, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	N/A
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified	No	The Project's purpose is to supply energy from the solar energy.	N/A

organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?		Therefore, the Project is not negatively impacted by the use of GMOs.	
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	The Project's purpose is to supply energy from the solar energy. Therefore, the Project does not potentially result in release of pollutants to the environment. As a solar power project, the project actually reduces SO _x , NO _x and TSP emissions deriving from the electricity generated in the grid-connected fossil fuel fired power plants.	N/A
Principle 9.5 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's purpose is to supply energy from the solar energy. Therefore, the Project does not involve the manufacture, trade, release, and/or use of hazardous and non-hazardous chemicals and/or materials.	N/A
Principle 9.6 Pesticides & Fertilisers			

Will the Project involve the application of pesticides and/or fertilisers?	No	The project is a solar power project. Therefore, the Project does not involve the application of pesticides and/or fertilizers.	N/A
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The project is a solar power project. It does not involve the harvesting of forests.	N/A
Principle 9.8 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's purpose is to supply energy from the solar energy. Therefore, the Project does not modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	N/A
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The Project's purpose is to supply energy from the solar energy. Therefore, the Project does not involve animal husbandry.	N/A
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats,	No	The project is a solar power project. According to the EIA reports, it does not physically affect or alter largely	N/A

landscapes, key biodiversity areas or sites identified?		intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified.	
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	According to the EIA report, there are no endangered species identified as potentially being present within the Project boundary (including those that may route through the area), and the project would not potentially impact other areas where endangered species may be present through transboundary affects.	N/A

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	Ulan Jinfeng New Energy Photovoltaic Power Generation Co., Ltd.
Registration number with relevant authority	/
Street/P.O. Box	/
Building	/
City	Xishagou Village, Keke Town, Ulan County, Haixi Mongol and Tibetan Autonomous Prefecture
State/Region	Qinghai Province
Postcode	817100
Country	China
Telephone	+86-(0) 10-5868 9628
E-mail	wang_hongye@ctgpc.com.cn
Website	/
Contact person	Wang Hongye
Title	Manager
Salutation	Ms.
Last name	Wang
Middle name	/
First name	Hongye
Department	/
Mobile	/
Direct tel.	/
Personal e-mail	/

Organization name	Climate Bridge (Shanghai) Ltd.
Registration number with relevant authority	91310120563113084C
Street/P.O. Box	33 Fushan Road, Pudong New Area
Building	Block B, Level 24, Jiangong Mansion
City	Shanghai
State/Region	/
Postcode	200120
Country	China
Telephone	+86 21 6246 2036
E-mail	projects@climatebridge.com
Website	www.climatebridge.com
Contact person	Zhiwen Gao
Title	General Manager
Salutation	Mr
Last name	Gao
Middle name	/
First name	Zhiwen
Department	/
Mobile	/
Direct tel.	/
Personal e-mail	gao.zhiwen@climatebridge.com

APPENDIX 3-FURTHER BACKGROUND INFORMATION ON EX ANTE CALCULATION OF EMISSION REDUCTIONS

According to the “Tool to calculate the emission factor for an electricity system”, six steps shall be applied for calculating the emission factor:

STEP 1. Identify the relevant electric system

For determining the electricity emission factors, identify the relevant project electricity system. The DNA has published a delineation of the project electricity system and connected electricity systems, therefore these delineations are used in accordance with the Tool:

- The project electricity system is the North West Power Grid (NWPG), consisting of six provincial grids: Shanxi, Gansu, Qinghai, Ningxia, Xinjiang power grids.

For the purpose of this tool, the reference system is the project electricity system. Hence electricity transfers from a connected electricity system to the project electricity system are defined as electricity imports while electricity transfers from the project electricity system to connected electricity systems are defined as electricity exports.

For the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system, except where recent or likely future additions to the transmission capacity enable significant increases in imported electricity. In such cases, the transmission capacity may be considered a build margin source.

There are no recent or likely future additions to transmission capacity that would enable significant increases in imported electricity; the data that imports are relatively small and have not changed significantly in the period covered. Therefore, the transmission capacity is not considered a build margin source.

For the purpose of determining the operating margin emission factor, use one of the following options to determine the CO₂ emission factor(s) for net electricity imports

from a connected electricity system:

- (a) 0 tCO₂/MWh; or
- (b) The weighted average operating margin (OM) emission rate of the exporting grid, determined as described in Step 4 (d) below; or
- (c) The simple operating margin emission rate of the exporting grid, determined as described in Step 4 (a), if the conditions for this method, as described in Step 3 below, apply to the exporting grid; or
- (d) The simple adjusted operating margin emission rate of the exporting grid, determined as described in Step 4 (b) below.

There are no imports from Annex-I country (ies).

Electricity exports should not be subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

Electricity exports from the project electricity system to the connected electricity system are not subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

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

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

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

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

Following the calculations of the DNA, and the statistical data available, Option I is chosen.

STEP 3. Select a method to determine the operating margin (OM)

According to the tool, the calculation of the operating margin emission factor ($EF_{\text{grid,OM},y}$) 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

According to the Tool, 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.

This criterion is met and therefore the project participants chose to use the simple OM method (option a).

The Simple OM emissions factor can be calculated using either ex-ante or ex-post data vintages. The project participants have chosen to use the ex-ante option, and $EF_{grid,OM,y}$ is fixed for the duration of the first crediting period.

Ex ante option: If the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.

STEP 4. Calculate the operating margin emission factor according to the selected method

- (a) Simple OM

The Simple Operating Margin emission factor $EF_{grid,OM,y}$ is defined as the generation-weighted average emissions per unit net electricity generation (tCO₂/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. Two options can be selected to calculate the simple OM:

Option A: Based on the net electricity generation and a CO₂ emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Option B can only be used if:

- (a) The necessary data for Option A is not available; and
- (b) Only nuclear and renewable power generation are considered as low-cost / must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and
- (c) Off-grid power plants are not included in the calculation (i.e. if Option I has been chosen in Step 2).

The criteria for Option B are met, as (a) the necessary data for Option A is not available as indicated in the calculations of the DNA, (b) only nuclear and renewable power generation are considered as low-cost / must-run power sources and the quantity of electricity supplied to the grid by these sources is known, and (c) Option I is chosen in Step 2.

Option B – Calculation based on total fuel consumption and electricity generation of the system

According to the Tool, where Option B is used, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_y} \quad (4)$$

where

$EF_{grid,OMsimple,y}$ is the simple operating margin CO₂ emission factor in year y (tCO₂/MWh)

$FC_{i,y}$ is the amount of fossil fuel type i consumed in the project electricity system in year y (mass or volume unit)

$NCV_{i,y}$ is the net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)

$EF_{CO_2,i,y}$ is the CO₂ emission factor of fossil fuel type i in year y (tCO₂/GJ)

EG_y is the net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year y (MWh)

i is all fossil fuel types combusted in power sources in the project electricity system in year y

y , when using the ex-ante option, is the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation.

On the basis of the data available, the three-year average operating margin emission factor is calculated by the DNA as a full-generation-weighted average of the emission factors.

$$EF_{\text{grid,OMsimIpe},y} = 0.8922 \text{ tCO}_2/\text{MWh} \quad (5)$$

STEP 5. Calculate the build margin (BM) emission factor

In terms of vintage of data, project participants can choose between one of the following two options:

- (a) Option 1:** for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. The option does not require monitoring the emission factor during the crediting period.
- (b) Option 2:** For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emission factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 is selected to calculate the build margin emission factor for the proposed project.

In accordance to the calculation method proposed by the Chinese NDRC¹⁷ which was approved by CDM EB¹⁸, since it is impossible to separate the different generation technology capacities based on coal, oil or gas fuel etc from the generic term “thermal power” in the present energy statistics, the following calculation measures is taken: First, according to the energy statistics of the selected period in which approximately 20% capacity has been added to the grid, the ratio of CO₂ emissions produced by solid, liquid, and gas fuel consumption for power generation is determined; then this ratio is multiplied by the respective emission factors based on commercially available best practice technology in terms of efficiency. Finally, this emission factor for thermal power is multiplied with the ratio of thermal power identified within the approximation for the latest 20% (close but not lower than 20%) of installed capacity addition to the grid. The result is the BM emission factor of the grid. The sample group of power units chosen to calculate the build margin is therefore the set of power capacity additions in the electricity system that comprise 20% of the system capacity (in MW) that have been built most recently¹⁹. In terms of vintage of data, Option 1 is chosen.

BM emission factor of the grid is calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (6)$$

Where:

$EF_{grid,BM,y}$ is the Build margin CO₂ emission factor in year y (t CO₂/MWh);

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

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

m is the power units included in the build margin;

y is the most recent historical year for which power generation data is available

¹⁷ The build margin calculations is derived from the "Bulletin on the baseline emission factor of the Chinese Electricity Grid", which has been published by the Chinese DNA (Office of National Coordination Committee on Climate Change) on 20/10/2011.

¹⁸ This is in accordance with the request for guidance: Application of AM0005 and AMS-I.D in China, a letter from DNV to the Executive Board, dated 07/10/2005, available online at: <http://cdm.unfccc.int/UserManagement/FileStorage/6POIAMGYOEDOTKW25TA20EHEKPR4DM>. This approach has been applied by many registered CDM projects using methodology ACM0002 so far.

¹⁹ Note: According to the Tool to calculate the emission factor for an electricity system "If 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation."

The CO₂ emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in step 4 (a) for the simple OM, using options A1, A2 or A3, using for y the most recent historical year for which power generation data is available, and using for m the power units included in the build margin.

Due to the limited availability of data on individual power units, the DNA uses the deviation above to calculate the build margin emission factor and the CO₂ emission factor of thermal power units as follows.

The added generation capacity is taken instead of generation in formula (5) above, as with the determination of the group of plant included in the build margin. Therefore, the calculation following the deviation is as follows:

$$EF_{grid,BM,y} = \sum m (CAP_{m,y} \times EF_{EL,m,y}) / \sum m CAP_{m,y} = \sum m Share_{CAP,m,y} \times EF_{EL,m,y} \quad (7)$$

Where:

$EF_{grid,BM,y}$ is the build margin CO₂ emission factor in year y (tCO₂/MWh)

$CAP_{m,y}$ is the added generation capacity by plant type m in year y (MW)

$EF_{EL,m,y}$ is the CO₂ emission factor of plant type m in year y (tCO₂/MWh)

$Share_{CAP,m,y}$ is the share of added generation capacity by plant type m in year y (%)

m is the plant type included in the build margin (thermal, hydro, nuclear, other)

y is the most recent historical year for which electricity generation data is available

The CO₂ emission factor of plant types other than thermal power plants is taken as zero. The CO₂ emission factor of thermal power plants is the weighted average emission factor of the best thermal power plant technologies commercially available in China, as required by the approved deviation, using option A2.

Using the equation of option A2, the CO₂ emission factor of advanced (best commercially available) power plants using fuel type i can be calculated as follows:

$$EF_{m,Adv,y} = EF_{CO2,m,y} \times 3.6 / \eta_{m,y}. \quad (8)$$

Where:

$EF_{m,Adv,y}$ is the CO₂ emission factor of advanced power plants using fuel m in year y (tCO₂/MWh)

$EF_{CO_2,m,y}$ is the average CO₂ emission factor of fuel type m in year y (tCO₂/GJ)

$\eta_{m,y}$ is the average net energy conversion efficiency of advanced power plants using fuel type m in year y (%)

m is the fuel type of thermal plant (coal/solid, oil/liquid, gas)

y is the relevant year as per the data vintage chosen

The weighted average CO₂ emission factor of thermal power plants is weighted on the basis of the emissions from each of these fuel types in the latest year for which data is available, and using the average net energy conversion efficiency for each fuel type of the best technologies commercially available in China.

$$EF_{thermal,y} = \sum m (EF_{m,Adv,y} \times \lambda_{m,y}) \quad (9)$$

Where:

$EF_{thermal,y}$ is the weighted average CO₂ emission factor of thermal power plants in year y (tCO₂/MWh)

$EF_{m,Adv,y}$ is the CO₂ emission factor of advanced power plants using fuel type m in year y (tCO₂/MWh)

$\lambda_{m,y}$ is the share of emissions of fuel type m in year y (%)

m is the fuel type of thermal plant (coal/solid, oil/liquid, gas)

y is the relevant year as per the data vintage chosen

The build margin emission factor is calculated by the DNA using this methodology:

$$EF_{grid,BM,y} = 0.4407 \text{ tCO}_2 / \text{MWh}. \quad (10)$$

STEP 6. Calculate the combined margin (CM) emission factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

The weighted average CM method (option a) should be used as the preferred option.

The simplified CM method (option b) can only be used if:

- The project activity is located in a Least Developed Country (LDC) or in a country with less than 10 registered projects at the starting date of validation; and
- The data requirements for the application of step 5 above cannot be met.

Option a is the preferred option. Option b cannot be used as the project activity does not take place in an LDC or in a country with less than 10 registered CDM projects. Therefore, option a is chosen.

(a) Weighted average CM

The combined margin emissions factor is calculated as follows:

$$EF_{\text{grid,CM},y} = w_{\text{OM}} \times EF_{\text{grid,OM},y} + w_{\text{BM}} \times EF_{\text{grid,BM},y} \quad (11)$$

Where

$EF_{\text{grid,BM},y}$ is the build margin CO₂ emission factor in year y (tCO₂/MWh)

$EF_{\text{grid,OM},y}$ is the operating margin CO₂ emission factor in year y (tCO₂/MWh)

w_{OM} is the weighting of operating margin emissions factor (%)

w_{BM} is the weighting of build margin emissions factor (%).

The default weights are used, i.e. for the solar farm projects in the first crediting period and the subsequent crediting period, $w_{\text{OM}} = 0.75$ and $w_{\text{BM}} = 0.25$.

On the basis of these weights for the second crediting period, the combined margin emission factor is calculated, and are fixed ex-ante for the duration of the second crediting period as follows:

	CO ₂ emission factor (tCO ₂ /MWh)	Weighting
Operating Margin Emissions Factor ($EF_{\text{grid,OM},y}$)	0.8922	0.75
Build Margin Emissions Factor ($EF_{\text{grid,BM},y}$)	0.4407	0.25
Baseline Emissions Factor ($EF_{\text{grid,CM},y}$)	0.779325	

$$EF_{\text{grid,CM},y} = 0.779325 \text{ tCO}_2/\text{MWh}$$

APPENDIX 4-SUMMARY OF APPROVED DESIGN CHANGES

No post registration design changes.

Revision History

Version	Date	Remarks
1.2	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Gender sensitive requirements added Prior consideration (1 yr rule) and Ongoing Financial Need added Safeguard Principles Assessment as annex and a new section to include applicable safeguards for clarity Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1.0	10 July 2017	Initial adoption