



**Verified Carbon
Standard**

THREE GORGES NEW ENERGY JIUQUAN CO., LTD GUAZHOU 100MW SOLAR POWER PROJECT



ClimateBridge

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Three Gorges New Energy Jiuquan Co., Ltd Guazhou 100MW Solar Power Project (hereinafter referred to as "the project") is a newly built grid-connected solar photovoltaic power plant with installed capacity of 100.39¹ MWp, which is located in Solar Power Zone, Guazhou County, Jingyuan City, Gansu Province of China. Power generated by the project replaces part of electricity generated by fossil-fuel dominated Northwest Power Grid (NWPG), thus the project achieves GHG emission reductions.

The average annual power delivered to the grid by the project is expected to be 151,855 MWh in the first 10-year crediting period. During the first crediting period, the annual average GHG emission reductions are estimated to be 126,206 tCO₂e, while the total GHG emission reductions during the first 10-year crediting period are estimated to be 1,262,062 tCO₂e.

- The project started construction on 22/09/2013. All project equipment and facilities as described in the registered VCS PD have been correctly installed. Please refer to section 2.1 for details.
- The project started commissioning on 30/12/2013 and runs continuously since commissioning.
- This monitoring period covers the period from 01/07/2020 to 31/08/2021. The project operated in accordance with the registered VCS PD.
- Total GHG emission reduction achieved in this monitoring period is 151,995 tCO₂e.

1.2 Sectoral Scope and Project Type

Sectoral Scope 1: Energy industries (renewable - / non-renewable sources)

Project Type: Grid-connected renewable power generation

The project is not a grouped project.

¹ The total installed capacity of the Solar Photovoltaic Modules is 100.39 MW (=250W*294,315 + 255W*105,144), while the capacity of inverters and box transformers is 100MW.

1.3 Project Proponent

Organization name	Three Gorges New Energy Jiuquan Co., Ltd.
Contact person	Wang Hongye
Title	Department Director
Address	No.12, lane 2, Baiguang Road, Xicheng District, Beijing, China
Telephone	+86-21-23019950
Email	3542346576@qq.com

1.4 Other Entities Involved in the Project

Organization name	Climate Bridge (Shanghai) Ltd.
Role in the Project	Consultancy
Contact person	Gao Zhiwen
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, No.33 Fushan Road, Pudong New Area, Shanghai, China 200120
Telephone	+86-2162462036
Email	gao.zhiwen@climatebridge.com ; projects@climatebridge.com

1.5 Project Start Date

30/12/2013 (commissioning start date).

1.6 Project Crediting Period

The project adopts renewable crediting periods of 25 years (from 30/12/2013 to 29/12/2038), and the first 10-year crediting period is from 30/12/2013 to 29/12/2023 (both days included).

1.7 Project Location

The project is located in Solar Power Industry Zone, Guazhou County, Jingyuan City, Gansu Province of China. The coordinates of the project are:



Figure 1 The location of the Project

Latitude: 40° 36'21.40" - 40° 37'02.90" N

Longitude: 96° 24'6.30" - 96° 25'38.30" E.

1.8 Title and Reference of Methodology

ACM0002: "Grid-connected electricity generation from renewable sources" (Version 16.0);

The methodology also refers to:

"Tool to calculate the emission factor for an electricity system" (Version 04.0);.

More information concerning the above methodology and tools can be referred to:
<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

1.9 Participation under other GHG Programs

The project has been registered as VCS project with ref. No. of 1444, except for VCS, the project has neither been registered nor seeking registration under any other GHG programs.

1.10 Other Forms of Credit

The project proponent is not part of any emission trading program. The net GHG emission reductions from the project will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions.

Some periods of the project in this crediting period have registered and issued as international renewable energy certificates (I-REC), the information of I-REC is listed below: <http://www.irecstandard.org/>; Details of the project, monitoring periods and details of I-REC sought are listed below:

Details of the project		Monitoring periods for I-REC	Details of I-REC	
Project title	Device ID		Volumes (MWh)	Issue ID
Guazhou Solar	GUAZSOL1	01/09/2015~31/12/2015	27,654	PPENG-2016-0525-0434-37
Guazhou Solar	GUAZSOL1	01/01/2016~30/04/2016	32,351	PPENG-2016-0525-0448-09
Guazhou Solar	GUAZSOL1	01/05/2016~12/05/2016	3,564	PPENG-2017-0110-0231-58
Guazhou Solar	GUAZSOL1	01/01/2017~11/01/2017	2,826	PPENG-2017-0705-0901-32
Guazhou Solar	GUAZSOL1	12/01/2017~12/01/2017	221	PPENG-2017-0713-0155-07
Guazhou Solar	GUAZSOL1	01/01/2018~10/05/2018	47,598	PPENG-2018-1218-0812-57
Guazhou Solar	GUAZSOL1	01/01/2019~29/05/2019	49,374	PPENG-2019-0625-1341-19
Guazhou Solar	GUAZSOL1	30/05/2019~26/08/2019	39,337	PPENG-2019-0925-0630-45

All credits from 01/07/2020 to 31/08/2021 will be claimed under VCS program as VCUs for the project to avoid double counting.

1.11 Sustainable Development

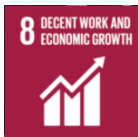
The project promotes local sustainable development through the following aspects:



During this monitoring period, 182,884.732 MWh of electricity from renewable sources were supplied to the power grid. Thus, the project achieved SDG 7 Affordable and Clean Energy².



The project achieved 151,995 tCO₂e emission reduction during this monitoring period. Thus, the project achieved SDG 13 Climate Action³.



Create employment opportunities during the project operation and construction, providing local residents with full and productive employment and decent work. Thus, the project achieved SDG 8 Decent Work and Economic Growth⁴.

2 SAFEGUARDS

² <https://sdgs.un.org/goals/goal7>

³ <https://sdgs.un.org/goals/goal13>

⁴ <https://sdgs.un.org/goals/goal8>

2.1 No Net Harm

In this monitoring period, no negative environmental impact and social economic impact are expected to result from the project activity. In fact, the project as a clean renewable energy project can reduce greenhouse gas emissions and the environmental pollution caused by fossil fuels consumption. Meanwhile, the implementation of the project will improve local socio-economic development through creating career opportunities and paying taxes.

2.2 Local Stakeholder Consultation

Local Stakeholder Consultation during the project preparation stage:

The project owner designed a questionnaire to collect the comments of relevant stakeholders in October 2013. The one-page questionnaire was designed with the following sections

- 1) Brief introduction of the project
- 2) Basic information of respondent
- 3) Major question issues
 - Whether the project will cause water pollution?
 - Whether the project will cause air pollution?
 - Whether the project will cause noise pollution?
 - Whether the project will impact on soil environment?
 - Whether the project will impact on the surrounding animals and plants?
 - Impact on the local residents' employment opportunities and income.
 - Impact on the local economic development.
 - Impact on the local power grid and NWPG.
 - Attitude on developing the project

30 questionnaires have been handed in total and all of them have been received successfully from the stakeholder representatives, respectively from the local government, and surrounding villages. The representatives covered different ages, different occupations and different education levels. most of the stakeholders interviewed expressed the project will benefit the local

environment, economy and social development, some of them thought there is no significant impact on those, and no negative impact were raised by stakeholders.

Local Stakeholder Consultation during the project implementation stage:

Communications with Local stakeholders are being carried out at periodic intervals. Key implementation schedules or changes of the project will be communicated to the local authority, who will inform the neighbourhood committee and the local residents, the comments and suggestions from residents will be collected by the local authority meanwhile. And the local government agencies and competent authorities will conduct spot checks on the implementation of the project from time to time and give suggestions on the involved rectification problems. There are no negative comments received for the project. In line with VCS requirements all the processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

2.3 AFOLU-Specific Safeguards

The project is a non-AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project generates electricity by using renewable solar photovoltaic (PV) power and delivers to the NWPG, replacing equivalent electricity generated by fossil fuel fired power plants connected to the NWPG and therefore reducing GHG emissions.

The total installed capacity of the Project is 100.39 MWp, which consists of 100 sets of power generation units (sub-systems). Each of the power generation unit is equipped with 2 inverters and one box transformer. The technical parameters of the main equipment installed for the project are shown in Table 1.

Table 1: Parameters of the equipment installed by the project

Photovoltaic Modules	CS6P-250P	CS6P-255P
Manufacturer	Changshu Artes sunshine Power Technology Co., Ltd.	
Quantity	294,315	105,144
Rated maximum power (Wp)	250	255
Rated Power Voltage (V)	30.1	30.2
Rated Power Current (A)	8.30	8.43

Open circuit voltage (V)	37.2	37.4
Life time (years)	25	25
Decay rate in 25 years (%)	≤ 20	≤ 20
Conversion Efficiency (%)	15.54	15.54

Inverter	SG500MX	EP-0500-A
Manufacturer	Sungrow Power Supply Co., Ltd.	Wuxi Sineng New Energy Co. , Ltd
Quantity	98	102
Rated output Power (kW)	500	500
Rated output Voltage (V)	3 ~ 315	315
Rated output frequency (Hz)	50	50
Max. output current (A)	1,008	1,008

Box transformer	ZGS-Z.G-1000/38.5	YBF-1000/40.5	ZGSF11-Z.G-1000/35
Manufacturer	Ningbo Tian'an Transformer Co., Ltd.	Sunel Transformer Co., Ltd.	Jiangsu Huapeng Transformer Co., Ltd.
Quantity	40	30	30
Rated capacity (kVA)	1,000	1,000	1,000
Rated Voltage (V)	38,500±2×2.5/315/315	40,500	38,500±2×2.5/315/315

The electricity generated is transformed to 35kV by box transformers, connected to the onsite substation via 35kV lines, and then transformed to 110kV through the two main transformers before delivered to Bulongji 330kV Substation of the grid company and finally to NWPG.

The project started construction on 22/09/2013 and started commissioning on 30/12/2013. The project operated smoothly without any emergencies or special events that would impact the applicability of the applied methodology. No events that may impact the GHG emission reductions or removals and monitoring occurred during this monitoring period. The net electricity supplied

by the project during this monitoring period from 01/07/2020 to 31/08/2021 is 182,884.732 MWh. VCUs achieved for this monitoring period are 151,995 tCO₂e.

3.2 Deviations

3.2.1 Methodology Deviations

There is no deviation applied to this monitoring period.

3.2.2 Project Description Deviations

There is a project description deviation for coordinates of the project. In the registered PD, there was a type for the coordinates of the project as follows:

Latitude: 40° 36' 21.40" - 40° 37' 502.90" N

Longitude: 96° 24' 6.30" - 96° 25' 38.30" E

The correct coordinates of the project is as below:

Latitude: 40° 36' 21.40" - 40° 37' 02.90" N

Longitude: 96° 24' 6.30" - 96° 25' 38.30" E

3.3 Grouped Projects

The Project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ e/MWh
Description	Combined margin CO ₂ emission factor for Northwest Power Grid in year y
Source of data	China DNA
Value applied	0.8311
Justification of choice of data or description of measurement methods and procedures applied	2014 Baseline Emission Factors for Regional Power Grids in China issued by China DNA on 11/05/2015.
Purpose of Data	Calculation of baseline emissions

Comments	-
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4.2 Data and Parameters Monitored

Data / Parameter	EG_{facility,y}	
Data unit	MWh	
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y	
Source of data	Calculated	
Description of measurement methods and procedures to be applied	Calculated based on the electricity delivered to the grid by the project (EG _{export,y}) and the electricity imported from the grid by the project (EG _{import,y})	
Frequency of monitoring/recording	Measured continuously and recorded monthly	
Value monitored	Period	Value
	01/07/2020~31/12/2020	78,079.722
	01/01/2021~31/08/2021	104,805.010
	Total	182,884.732
Monitoring equipment	-	
QA/QC procedures to be applied	The quantity of electricity delivered to the grid by the project (EG _{export,y}) and the electricity imported from the grid by the project (EG _{import,y}) is crosschecked with electricity sales and purchase receipts.	
Purpose of the data	Calculation of baseline emissions	
Calculation method	$EG_{facility,y} = EG_{export,y} - EG_{import,y}$	
Comments	-	

Data / Parameter	EG_{export,y}
Data unit	MWh

Description	Quantity of the electricity delivered to the grid by the project in year y								
Source of data	On-site measurement								
Description of measurement methods and procedures to be applied	Use calibrated electric meters. The accuracy of the meter(s) is 0.2s. The calibration was conducted annually subject to national standards.								
Frequency of monitoring/recording	Measured continuously and recorded monthly								
Value monitored	The actual quantity of the electricity delivered to the grid by the project is listed below: <table> <tr> <th>Period</th><th>Value</th></tr> <tr> <td>01/07/2020~31/12/2020</td><td>78,906.797</td></tr> <tr> <td>01/01/2021~31/08/2021</td><td>105,871.810</td></tr> <tr> <td>Total</td><td>184,778.607</td></tr> </table>	Period	Value	01/07/2020~31/12/2020	78,906.797	01/01/2021~31/08/2021	105,871.810	Total	184,778.607
Period	Value								
01/07/2020~31/12/2020	78,906.797								
01/01/2021~31/08/2021	105,871.810								
Total	184,778.607								
Monitoring equipment	Monitored by bidirectional electricity meter M1 Mode: WU.TE432q Serial number: 41600811 Accuracy: 0.2s Calibration frequency: Annually Date of calibration: 14/11/2019, 05/11/2020 Validity: 13/11/2020, 04/11/2021 Calibration entity name: Electric Energy Measurement Center, State Grid Gansu Electric Power Research Institute Date of meter reading: 0:00 on 1st day of every month								
QA/QC procedures to be applied	Meter is calibrated periodically by the third-party calibration entity. The data is crosschecked by the electricity sale receipts.								
Purpose of the data	Calculation of baseline emissions								
Calculation method	-								
Comments	-								

Data / Parameter	EG import, y
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Data unit	MWh								
Description	Quantity of the electricity imported from the grid by the project in year y								
Source of data	On-site measurement								
Description of measurement methods and procedures to be applied	Use calibrated electric meters. The accuracy of the meter(s) is 0.2s. The calibration is conducted annually subject to national standards.								
Frequency of monitoring/recording	Measured continuously and recorded monthly								
Value monitored	The actual quantity of the electricity imported from the grid by the project is listed below: <table> <tr> <th>Period</th><th>Value</th></tr> <tr> <td>01/07/2020~31/12/2020</td><td>827.075</td></tr> <tr> <td>01/01/2021~31/08/2021</td><td>1,066.800</td></tr> <tr> <td>Total</td><td>1,893.875</td></tr> </table>	Period	Value	01/07/2020~31/12/2020	827.075	01/01/2021~31/08/2021	1,066.800	Total	1,893.875
Period	Value								
01/07/2020~31/12/2020	827.075								
01/01/2021~31/08/2021	1,066.800								
Total	1,893.875								
Monitoring equipment	Monitored by bidirectional electricity meter M1 Mode: WU.TE432q Serial number: 41600811 Accuracy: 0.2s Calibration frequency: Annually Date of calibration: 14/11/2019, 05/11/2020 Validity: 13/11/2020, 04/11/2021 Calibration entity name: Electric Energy Measurement Center, State Grid Gansu Electric Power Research Institute Date of meter reading: Before October 2020, the time of meter reading is at 0:00 on 10th day of the month. In 2020 October and onwards, the time of meter reading is at 0:00 on 1st day of the month								
QA/QC procedures to be applied	Cross check measurement results with electricity purchase receipts								
Purpose of the data	Calculation of baseline emissions								
Calculation method	-								

Comments

-

4.3 Monitoring Plan

Operation and management structure

Overall responsibility for daily monitoring and reporting lies with the project owner. A monitoring group is established within the project company to carry out the monitoring work. The structure of the monitoring group is as follows:

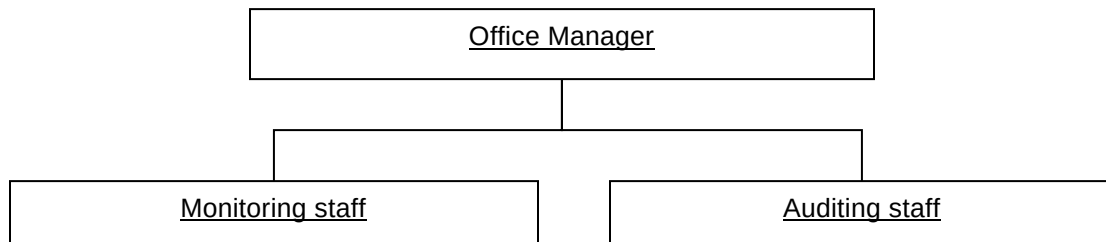


Figure 2 Organization structure of the monitoring team

The responsibilities of each role in the team structure are:

- Office manager has the overall management responsibility, especially supervising the implementation of the monitoring plan
- Monitoring staff measures the electricity imported to and exported from the project
- Auditing staff performs internal verification of the measurement, collects relevant receipts and calculates emission reductions
- Finally, general manager reviews the monitoring reports.

Monitoring equipment and installation

The electricity generated by the project is transformed to 110kV through the onsite 110kV substation before connected to the Bulongji Substation of NWPG through 110kV transmission line. And two bi-directional meters M1 and M2 with accuracy of 0.2s are installed to monitor the electricity delivered to the grid by the project ($EG_{export,y}$) and the electricity imported from the grid by the project ($EG_{import,y}$). Meter M2 is installed at the Bulongji substation, and meter M1 is installed at the onsite 110kV substation. Meter M1 is owned, operated and maintained by the project owner and meter M2 is owned, operated and maintained by the grid company. Therefore M1 is determined as the monitoring meter for monitoring $EG_{import,y}$ and $EG_{export,y}$. The readings from meter M1 will be cross-checked by the reading from meter M2 in the forms of sales and purchase receipts which are provided by the grid company. The conservative value for $EG_{import,y}$ and $EG_{export,y}$ between meter M1 readings and sales and purchase receipts is used for ER calculation. The total electricity delivered to the grid by the project is calculated as follows:

$$EG_{facility,y} = EG_{export,y} - EG_{import,y}$$

During this monitoring period, meter M1 runs continuously with no malfunctioning.

The power line diagram of the project is shown as follows:

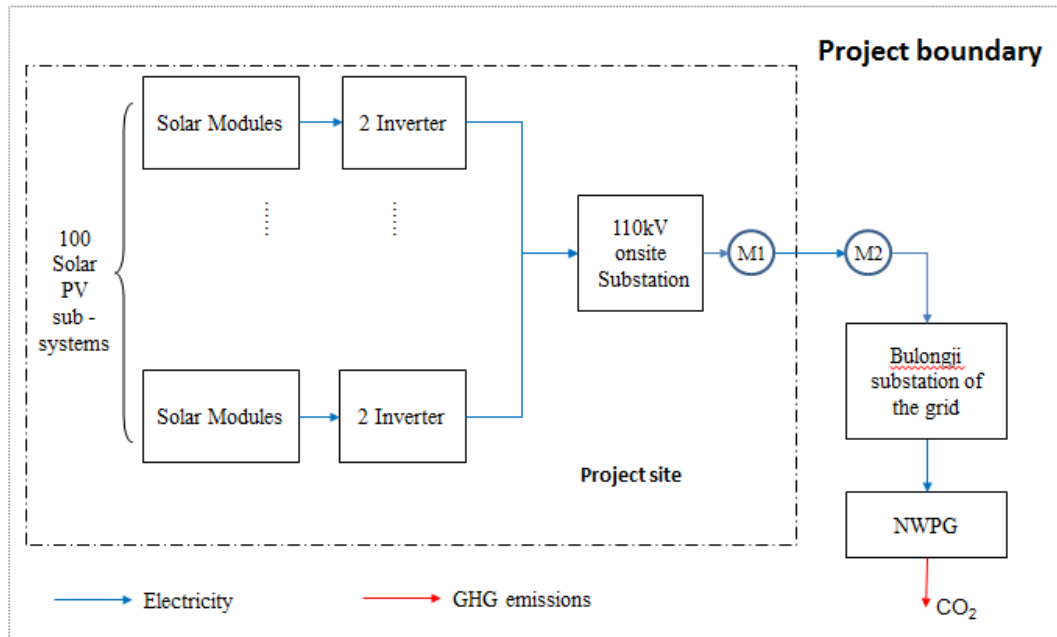


Figure 3 Power line diagram of the monitoring system

1) Data collection system

The procedures of data recording and collecting are listed below:

- The project owner reads meter M1 every month and then submits the reading results to the grid company for crosscheck with meter readings of meter M2. Upon agreement on the electricity readings from both parties, the project owner provides the grid company sale receipt for $EG_{export,y}$ and the power grid issues the project owner receipt for $EG_{import,y}$.
- The project owner files the meter readings of M1 in the monthly report. The monthly report is archived and used to calculate emission reductions.
- The project owner collects and keeps on file maintenance records, meter calibration documents.

2) Quality assurance and quality control (QA/QC)

QA/QC practice involves:

- The metering equipment is calibrated and checked annually for accuracy.

- Calibration is carried out by qualified parties with the records supplied to the project owner, and the calibration ensured sufficient accuracy so that any error resulting from such equipment did not exceed the allowable error of full-scale rating.
- When M1 is out of work, M2 is used for measurement, and no emission reduction is claimed when both M1 and M2 are out of work.

All data collected as part of monitoring is archived electronically. All information is stored by the technology department of the project owner and all the materials have physical copies for backup. And all data including calibration records is kept until 2 years after the end of the crediting period, or the last issuance of VCU, whichever is later.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline Emissions (BE_y) is determined by multiplying net electricity generation supplied by the project plant to the grid ($EG_{\text{facility},y}$) during the monitoring period by Emission Factor ($EF_{\text{grid},\text{CM},y}$) of NWPG.

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

where

BE_y : Baseline emissions of the NWPG during monitoring period

$EF_{\text{grid},\text{CM},y}$: Emission factor of the NWPG during monitoring period

$EG_{\text{facility},y}$: Quantity of net electricity generation supplied by the project plant to the grid in year y

As stated in Section 3.1, the grid emission factor $EF_{\text{grid},\text{cm},y}$ of the project during this crediting period is 0.8311 tCO₂e/MWh, The monthly electricity data and baseline emission are listed in the table 2 and table 3.

Table 2 The monthly electricity data for $EG_{export,y}$ and $EG_{import,y}$

Monitoring period ⁵	$EG_{export,y}$ MWh			$EG_{import,y}$ MWh			$EG_{facility,y}$ MWh
	Measured by the main meter	Electricity data in Sales Receipts	Data for Calculation	Measured by the main meter	Electricity data in Purchase Receipts ⁶	Data for Calculation	$EG_{export,y} - EG_{import,y}$
	A	B	C=min(A, B)	D	E	F=max(D, E)	G=C-F
01/07/2020-31/07/2020	13,714.800	13,583.847	13,583.847	106.100	107.516 ⁷	107.516	13,476.331
01/08/2020-31/08/2020	14,998.100	14,859.240	14,859.240	116.000	117.452	117.452	14,741.788
01/09/2020-30/09/2020	14,602.400	14,464.340	14,464.340	119.200	125.307	125.307	14,339.033
01/10/2020-31/10/2020	13,560.500	13,425.940	13,425.940	138.200	133.725	138.200	13,287.740
01/11/2020-30/11/2020	11,170.900	11,062.810	11,062.810	154.100	154.000	154.100	10,908.710
01/12/2020-31/12/2020	11,626.900	11,510.620	11,510.620	184.500	176.000	184.500	11,326.120
Subtotal in 2020	79,673.600	78,906.797	78,906.797	818.100	814.000	827.075	78,079.722
01/01/2021-31/01/2021	12,519.100	12,394.030	12,394.030	183.300	176.000	183.300	12,210.730
01/02/2021-28/02/2021	10,994.900	10,888.570	10,888.570	149.300	154.000	154.000	10,734.570

⁵ According to power purchase agreement, the time of meter reading for $EG_{export,y}$ with the power company is at 0:00 on first day of every month. For $EG_{import,y}$, before October 2020, the time of meter reading is at 0:00 on 10th day of the month. In 2020 October and onwards, the time of meter reading is at 0:00 on first day of the month. All the records are approved by both parties.

⁶ The reading of imported electricity on grid company side in July, August and September was on the 10th day of every month. So, the value of these months and October in this column is calculated based on the actual sale receipts.

⁷ According to the purchase receipt, the imported electricity during the period from 11/06/2021~10/07/2021 is 99 MWh, that from 11/07/2021~10/08/2021 is 110 MWh, so the imported electricity in July (01/07/2021~31/07/2021) is calculated as 107.516MWh, i.e 99MWh/30days*10days+110MWh/31days*21days = 107.516MWh. The imported electricity of August, September and October is calculated under the same method, please refer to ER calculation sheet for details.

01/03/2021-31/03/2021	10,140.500	10,042.450	10,042.450	148.200	165.000	165.000	9,877.450
01/04/2021-30/04/2021	14,169.600	14,034.240	14,034.240	119.800	121.000	121.000	13,913.240
01/05/2021-31/05/2021	15,648.100	15,498.670	15,498.670	108.200	110.000	110.000	15,388.670
01/06/2021-30/06/2021	13,569.400	13,440.570	13,440.570	113.500	110.000	113.500	13,327.070
01/07/2021-31/07/2021	14,225.200	14,090.120	14,090.120	117.200	121.000	121.000	13,969.120
01/08/2021-31/08/2021	15,635.000	15,483.160	15,483.160	98.200	99.000	99.000	15,384.160
Subtotal in 2021	106,901.800	105,871.810	105,871.810	1,037.700	1,056.000	1,066.800	104,805.010
Total (01/07/2020-31/08/2021)	186,575.400	184,778.607	184,778.607	1,855.800	1,870.000	1,893.875	182,884.732

Table 3 Baseline Emissions during this monitoring period

Time Period	EG _{export,y} (MWh)	EG _{import,y} (MWh)	EG _{facility,y} (MWh)	EF _{grid,CM,y} (tCO ₂ e/MWh)	BE _y (tCO ₂ e)
					BE _y =EG _{facility,y} * EF _{grid,CM,y}
01/07/2020~31/12/2020	78,906.797	827.075	78,079.722	0.8311	64,892
01/01/2021~31/08/2021	105,871.810	1,066.800	104,805.010	0.8311	87,103
Total	184,778.607	1,893.875	182,884.732	0.8311	151,995

5.2 Project Emissions

The project is a renewable energy project, therefore, according to methodology ACM0002, there is no emission for the project, PE_y=0.

5.3 Leakage

According to methodology ACM0002, project leakage is not considered.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01/07/2020~31/12/2020	64,892	0	0	64,892
01/01/2021~31/08/2021	87,103	0	0	87,103
Total	151,995	0	0	151,995

Comparison of actual emission reductions with estimates during validation

The emission reductions of 151,995 tCO₂e achieved in this monitoring period are about 5.36%⁸ higher than the estimated value 144,265 tCO₂e⁹ which is calculated in line with the registered PD, the main reason is that it covers two peak sunshine periods in this monitoring period, which

⁸ (151,995 tCO₂e - 144,265 tCO₂e) / 144,265 tCO₂e = 5.36%

⁹ As per the registered PD, the annual emission reduction from 30/12/2019 to 29/12/2020 and 30/12/2020 to 29/12/2021 are respectively 124,229 tCO₂e and 122,893 tCO₂e, thus the estimated emission reduction in the monitoring period (covering 427 days) is 144,265 tCO₂e, i.e., 144,265 tCO₂e = 124,229 tCO₂e * 182days/366days + 122,893 tCO₂e * 245days/365days.

is from July to August in 2020 and June to August in 2021, thus it is reasonable that the amount of emission reduction is higher than the estimated value. Besides, even if the emission reduction is increased by 5.36% compared with the registered PD, which is still lower than 7.92% if the amount of average annual electricity for sale increased that the project IRR will reach benchmark set in the PD. Thirdly, taking the former monitoring periods into consideration, till now¹⁰, the project has achieved 638,673 tCO₂e¹¹ emission reductions from 30/12/2013 to 31/08/2021, which is 15.64%¹² lower than the estimated reduction of 757,063 tCO₂e¹³ in the PD. For all the reasons above, the excess of the emission reduction in the monitoring period won't affect the additionality of this project.

¹⁰ Including 4 monitoring periods from the project operation: 30/12/2013 to 29/08/2015, 30/08/2015 to 31/12/2017, 01/01/2018 to 30/06/2020 and 01/07/2020 to 31/08/2021.

¹¹ This project has achieved 174,793 tCO₂e in the 1st monitoring period, 132,027 tCO₂e in the 2nd monitoring period and 179,858 tCO₂e in the 3rd monitoring period. With the emission reduction in this monitoring period, the total amount of emission reduction so far is 638,679 tCO₂e.

¹² $(638,673 \text{ tCO}_2\text{e} - 757,063 \text{ tCO}_2\text{e}) / 757,063 \text{ tCO}_2\text{e} = -15.64\%$

¹³ This project has registered and issued as international renewable energy certificates (I-REC) in the 2nd and 3rd monitoring period. When excluding all the periods under I-REC, the estimated emissions reduction in the 1st, 2nd, 3rd and 4th monitoring period are 219,129 tCO₂e, 206,517 tCO₂e, 187,152 tCO₂e and 144,265 tCO₂e. The total amount of estimated emission reduction would be 757,063 tCO₂e.