



GANSU GANZHOU DISTRICT NANTAN PHASE I 50MWP SOLAR PHOTOVOLTAIC POWER PROJECT



Document Prepared by Climate Bridge (Shanghai) Ltd.

Project Title	Gansu Ganzhou District Nantan Phase I 50MWp Solar Photovoltaic Power Project
Version	2.0
Report ID	N/A
Date of Issue	11-August-2020
Project ID	1453
Monitoring Period	20-December-2018 to 30-June-2020 (the first and last days included)
Prepared By	Ms. Chen Genrong, Climate Bridge (Shanghai) Ltd.
Contact	Tel: +86 21 6246 2036 Email: Chen.genrong@climatebridge.com Address: Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China 200120 Website: www.climatebridge.com

CONTENTS

1	PROJECT DETAILS.....	3
1.1	Summary Description of the Implementation Status of the Project	3
1.2	Sectoral Scope and Project Type	3
1.3	Project Proponent	3
1.4	Other Entities Involved in the Project	4
1.5	Project Start Date	4
1.6	Project Crediting Period	4
1.7	Project Location	4
1.8	Title and Reference of Methodology	6
1.9	Participation under other GHG Programs.....	6
1.10	Other Forms of Credit.....	6
1.11	Sustainable Development.....	7
2	SAFEGUARDS.....	7
2.1	No Net Harm	7
2.2	Local Stakeholder Consultation	9
2.3	AFOLU-Specific Safeguards	10
3	IMPLEMENTATION STATUS	11
3.1	Implementation Status of the Project Activity	11
3.2	Deviations.....	12
3.3	Grouped Projects	12
4	DATA AND PARAMETERS.....	12
4.1	Data and Parameters Available at Validation	12
4.2	Data and Parameters Monitored.....	13
4.3	Monitoring Plan.....	15
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	17
5.1	Baseline Emissions	17
5.2	Project Emissions	19
5.3	Leakage.....	19
5.4	Net GHG Emission Reductions and Removals.....	19

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Gansu Ganzhou District Nantan Phase I 50MWp Solar Photovoltaic Power Project (hereafter simplified as “the project”) is a newly built grid-connected solar photovoltaic power plant with installed capacity of 50 MWp, which is located in southern area Ganzhou district, Zhangye City, Gansu Province, China. Power generated by the project replaces part of electricity generated by fossil-fuel dominated Northwest China Power Grid (NWCPG), thus the project achieves GHG emission reductions.

The project started construction on 25-August-2012. All project equipment and facilities as described in the registered VCS PD have been correctly installed. Please refer to section 3.1 for details.

The start date of commercial operation is 20-December-2012 and runs continuously since then.

This monitoring period covers the period from 20-December-2018 to 30-June-2020. The project operated in accordance with the registered VCS PD (version 02) and CDM PDD (version 02).

Total GHG emission reduction achieved in this monitoring period is 98,802 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.

1.3 Project Proponent

Organization name	Gansu Heihe Hydropower New Energy Development Co., Ltd.
Contact person	Du Yong
Title	Legal Representative
Address	Cross of Qingnian East Street in Ganzhou district, Zhangye City, Gansu Province, China
Telephone	0936-8226684
Email	hhsdyinlongxing@vip.163.com

1.4 Other Entities Involved in the Project

Organization name	Climate Bridge (Shanghai) Ltd.
Role in the Project	Consultant and VCU Buyer
Contact person	Gao Zhiwen
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China 200120
Telephone	+86-2162462036
Email	gao.zhiwen@climatebridge.com

1.5 Project Start Date

20-December-2012 (commercial operation started date)

1.6 Project Crediting Period

In the project description the crediting periods was 21 years (from 20-December-2012 to 19-December-2033), the first 7-year crediting period is from 20-December-2012 to 19-December-2019 (both days included).

The project is registered under VCS Standard V3, in which the crediting period is set as "a maximum of ten years which may be renewed at most twice.", meanwhile, "Projects registered under other GHG programs are not eligible for VCU issuance beyond the end of the total project crediting period under those programs". In the project situation, the project crediting period can be 21 years (from 20-December-2012 to 19-December-2033), and the first 10-year crediting period is from 20-December-2012 to 19-December-2022 (both days included).

1.7 Project Location

The Project is located in the southern area of Ganzhou District, Zhangye city, Gansu province, P. R. China. The geographical coordinate range of the Project are 100°11'42.58" - 100°13'48.48" east longitude and 38°50'11" - 38°51'00" north latitude.

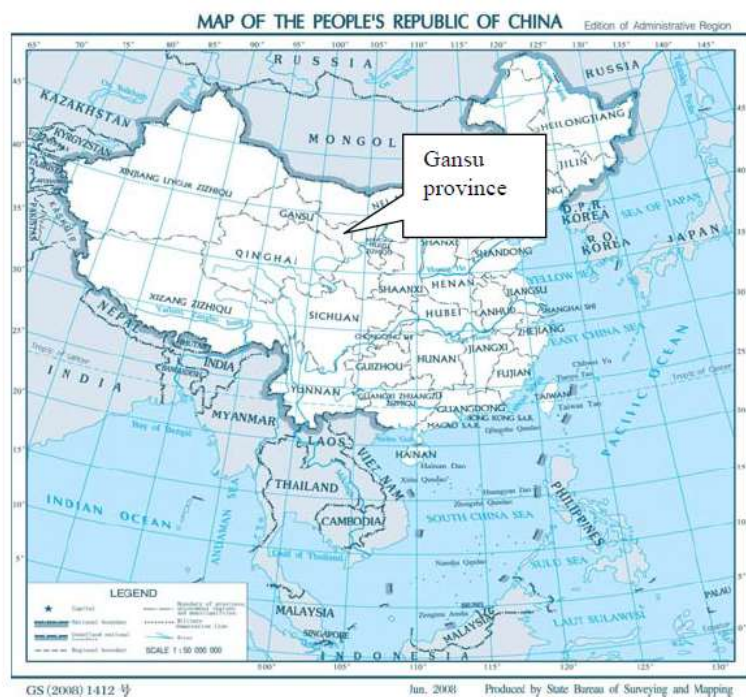


Figure 1 Location of Gansu Province in China

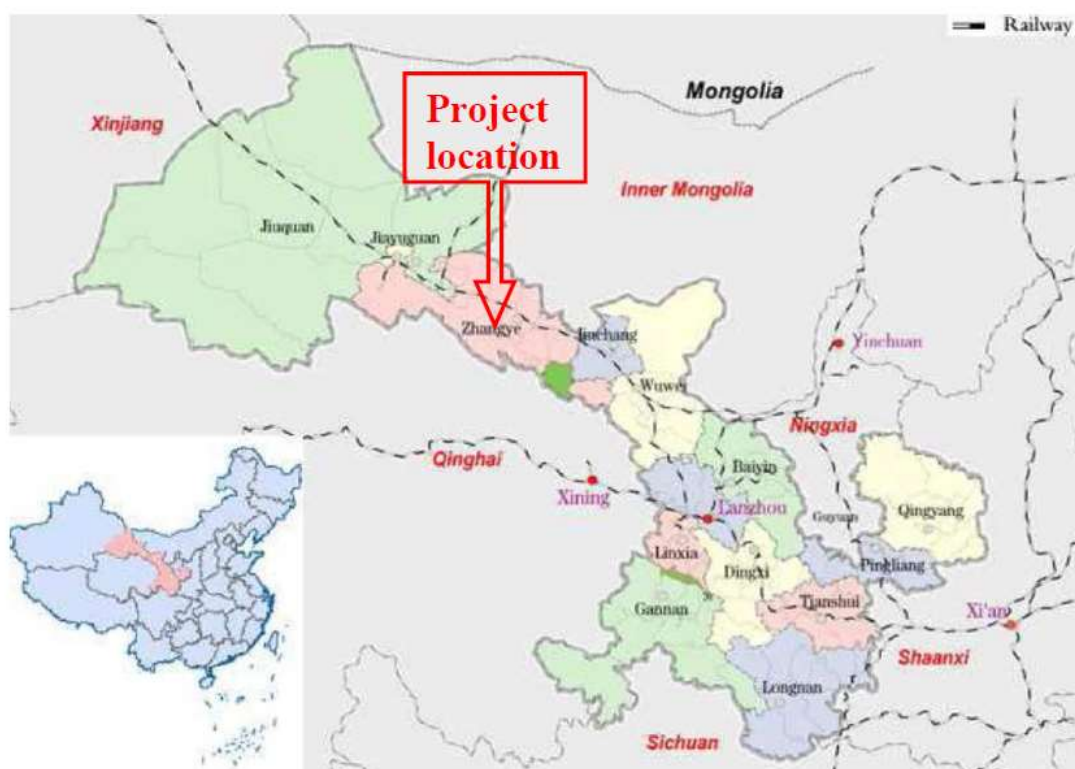


Figure 2 Location of the Project in Gansu Province

1.8 Title and Reference of Methodology

ACM0002: “Grid-connected electricity generation from renewable sources” (Version 13.0.0);

The methodology also refers to:

“Tool for the demonstration and assessment of additionality” (Version 07.0.0);

“Tool to calculate the emission factor for an electricity system” (Version 03.0);

For more information regarding the methodology, please refer to the following website:
<http://cdm.unfccc.int/methodologies/PAmethodologies/approved>

1.9 Participation under other GHG Programs

The project has been registered as CDM project with UNFCCC ref. No. of 9667 on 27-June-2013. And there is no GHG credit claimed under this CDM project, for detail information please refer to the website: <https://cdm.unfccc.int/Projects/DB/China%20Quality1372055565.71/view>.

Except for CDM Program, the project does not reduce GHG emissions from activities that are included in an emission trading program or any other mechanism that includes GHG allowance trading.

1.10 Other Forms of Credit

Some periods of the project in this crediting period has registered and issued as international renewable energy certificates (I-REC) , the information of I-REC is listed below:
<https://evident.app/Public/ReportDevices/>; 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
Gansu Ganzhou District Nantan Solar Phase I	NANTAN01	2015/5/1~2015/7/12	11,140	PPENG-2016-0525-0545-32
Gansu Ganzhou District Nantan Solar Phase I	NANTAN01	2016/1/1~2016/2/1	3,676	PPENG-2016-0525-0608-57

The GHG emission reductions generated by the project from 20-December-2018 to 30-June-2020 will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions.

All credits from 20-December-2018 to 30-June-2020 will be claimed under VCS program as VCUs for the project to avoid double counting.

1.11 Sustainable Development

As a renewable solar power project, the Project will contribute to the region's sustainable development through the following ways:

- Creating short-term and long-term job opportunities in the project area during the project construction and operation;
- Displacing part of the electricity generated by coal-fired or other fossil fuel-fired power plants, and thus improving the local environment and reducing greenhouse gas (GHG) emissions.
- Promoting large-scale utilization of photovoltaic power.

2 SAFEGUARDS

2.1 No Net Harm

The project has no potential negative environmental and socio-economic impact.

The project will not cause significant impact on the environment and socio-economic as to the conclusion of the EIA. The conclusions of EIA are documented below:

1) Noise

The noise during construction period is sourced from different equipments, such as loader, excavator, concrete mixer, etc. Some effective measures are adopted, such as strengthen the maintenance of machinery to keep mechanical lubrication and reduce its operation noise; take temporary acoustic measures on high noise equipment and forbid night construction. There is no noise-sensitive target near the project site and the influence to local environment caused by noise produced on project site is insignificant.

The noise of the operation period comes from water pump running and transformer operation noise. Through acoustical insulation and distance decay, the noise can be reduced and reach the relevant standard. Therefore, it will bring little influence to the environment.

2) Air

The dust and soot during construction period is mainly generated by foundation excavation of PV panels and the transport vehicles. During the construction period, effective measures will be taken in order to prevent dust pollution. These measures will include spraying water regularly, sealing vehicles with tarpaulin, avoiding construction on windy days and piling up construction materials in the open air.

The dust and soot during operation period is mainly from the ingress and egress of vehicles; through timely sprinkler cleaning, greening measures as well as small traffic flow, there will be slight impact to the environment.

3) Waste water

Waste water during construction period mainly includes plant staffs' general domestic sewage, but its amount is small and comparatively scattering. As the project area is dry and lack of rain but with big evaporation capacity, the management measures taken by the project owner are as follows: splashing the cleaned domestic sewage for evaporating. Due to its small amount, it will not influence surface runoff and bring little influence to the environment.

During the operation period, sewage from human daily activities will be treated in a digestion tank before it is used for irrigating trees. The waste water from flushing the solar cells will also be collected and deposited and finally recycled for irrigation. So there will be slight impact to the environment.

4) Solid waste

Waste residue during the construction period is mainly the construction garbage (e.g. discarded building material and domestic garbage, etc.). Therefore, through balancing the earthwork excavation, the rest of earthwork could be fully used for backfill. The domestic garbage should be cleaned and sent to dump in time to reduce the impact to the surrounding environment.

Waste residue during operation period especially after the plant has been operated for over 10 years, due to renewal of solar cell module, it will generate a certain amount of wasted polycrystalline silicon battery. This part of garbage will be recycled by the manufacturer to realize the comprehensive utilization of resources which will not bring bad influence on the environment. Another part of garbage during operation period is also the domestic garbage. As the garbage is little due to the small number of staff, it just needs to be collected and sent to landfill, which will eliminate the impact to environment.

5) Ecological environment

The proposed project is located in a barren and desolate area with sparse vegetation, exposed to dust and high soil erosion. The construction may exacerbate this erosion, but the impact on the ecological environment can be reduced through some preventive and restorative measures, such as minimizing the construction area, replanting drought-proof vegetation, etc. The outmost layer of the solar cell module of the proposed project use the special tempered low radiation glass, thus it will not bring obvious light pollution.

Electromagnetic radiation of the project operation is comparatively low and is far from the residential area which will not bring negative influence to residents' health and surrounding radio electrical equipment.

In conclusion, the project activity does not have any major adverse impacts on the environment during its construction and operation. The proposed project is definitely an environment-friendly method for power generation. Meanwhile, the implementation of the project will improve local socio-economic development through creating career opportunities and paying taxes.

2.2 Local Stakeholder Consultation

1) Local Stakeholder Consultation during the project preparation stage:

In order to invite stakeholders' comments, during 15-August-2012~16-August-2012, representatives from the project owner conducted a survey among local officials, villagers and residents living in the project area by means of questionnaires. The questionnaires are related to the project's impacts on the local environment, as well as on the region's social and economic development. 30 questionnaires were sent out and all of them were returned. The following table is the information of the respondents.

Item		Number	Percentage (%)
Total collected questionnaires		30	100
Gender	Male	25	83.3%
	Female	5	16.7%
	Junior Middle School and below	15	50%
	High School	5	16.7%
	College and above	10	33.3%
Age	20~50	28	93.3%
	More than 50	2	6.7%
Occupation	Peasant	20	66.7%
	Government officials	8	26.7%
	Others	2	6.6%

The respondents are representative in terms of age, occupation and education, so their attitude towards the impacts of the project can therefore be seen as a comprehensive reflection of the attitudes of the residents possibly affected by the project.

The results of the survey are presented in the following table:

Item	Response (%)		
1. How much do you know about PV Power generation project?	A lot	A little	Nothing
	73.3	20	6.7
2. What do you think the project's impacts	Positive	Negative	No impact

on the local electricity supply will be?	96.7	0	3.3
3. What do you think the project's impacts on the local employment will be?	Positive	Negative	No Impact
	86.7	0	13.3
4. What do you think about the impacts of the project on the current environment?	Positive	Negative	No Impact
	6.7	0	93.3
5. What do you think the project's impact on the local economy will be?	Promoting	Abating	No change
	86.7	0	13.3
6. What's your attitude towards the project?	Positive	Negative	Indifferent
	100	0	0
7. Are you supportive for developing the proposed project as a VCS project?	Positive	Negative	Indifferent
	100	0	0

The survey shows that the local people support and agree with the construction of the project. They believe that the project will have a positive impact on the local economic development and their living conditions, without having negative impacts on the environment and the ecosystem.

2) Local Stakeholder Consultation during the project implementation stage:

Communications with local stakeholders are being carried out at periodic intervals on 22-October-2015 and 10-August-2018. Key implementation schedules or changes of the project will be communicated to the local authority, who will inform the neighborhood 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. 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. There are no negative comments received for the project during this monitoring period.

2.3 AFOLU-Specific Safeguards

N/A

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The proposed project generates electricity from solar energy using photovoltaic technology. The key components of the proposed project consist of polycrystalline silicon modules (70,000 sets with each rated power of 290W and 105,000 sets with each rated power of 285W), DC/AC (Direct Current/Alternating Current) inverters (each with rated power of 500kW) and box-type transformers (with transmission voltage of 35kV). The DC electricity is transformed to AC power by inverters and then boosted up to 35kV by box-type transformers, merged and transformed to 110kV by the onsite main transformer and then delivered to the Heihe 110kV substation and finally to NWCPG. The main technical parameters of the proposed project are shown in the following table:

Equipment	Parameters	Unit	Value	Module	Quantity
Solar Modules	Rated power	Wp	290	JKM- 290P-72	70,000
	Operating voltage	V	36.4		
	Operating current	A	7.97		
	Lifetime	year	25		
	Rated power	Wp	285	JKM285P-72	105,000
	Operating voltage	V	36		
	Operating current	A	7.92		
	Lifetime	year	25		
Inverter	Rated power	kW	500	SG500KTL	80
	AC voltage	V	270		
	DC current	A	1,176		
	Lifetime	year	25		
	Rated power	kW	500	EHE- N500KTL	20
	AC voltage	V	270		
	DC current	A	1,070		
	Lifetime	year	25		

It is demonstrated by the design institute that the annual average operating hours of the proposed project is 1,422 hours, correspondingly the plant load factor (PLF) is 16.23%, and the operational lifetime of the project is 25 years.

The project started commissioning on 20-December-2012. 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.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviations.

3.2.2 Project Description Deviations

A change of project crediting period is requested.

In the project description the crediting periods was 21 years (from 20-December-2012 to 19-December-2033), the first 7-year crediting period is from 20-December-2012 to 19-December-2019 (both days included).

The project is registered under VCS Standard V3, in which the crediting period is set as “a maximum of ten years which may be renewed at most twice.”, meanwhile, “Projects registered under other GHG programs are not eligible for VCU issuance beyond the end of the total project crediting period under those programs”. In the project situation, the project crediting period can be 21 years (from 20-December-2012 to 19-December-2033), and the first 10-year crediting period is from 20-December-2012 to 19-December-2022 (both days included).

3.3 Grouped Projects

The project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation¹

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ e/MWh
Description	Combined margin CO ₂ emission factor for Northwest China Power Grid in year y.
Source of data	$EF_{grid,CM,y} = 0.75 \times EF_{grid,OM,y} + 0.25 \times EF_{grid,BM,y}$ Where: $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ are from NDRC (China's DNA)

¹The ex ante fixed data and parameters listed in CDM PDD are used for the calculation of EF, thus only EF is listed in MR.

	$EF_{grid,OM,y}=0.9913 \text{ tCO}_2\text{e/MWh}$ $EF_{grid,BM,y}=0.5398 \text{ tCO}_2\text{e/MWh}$
Value applied	0.8784
Justification of choice of data or description of measurement methods and procedures applied	2012 Baseline Emission Factors for Regional Power Grids in China issued by China DNA on 15-October-2012.
Purpose of Data	Calculation of baseline emissions
Comments	-Applicable to the first 10 years crediting period, and will be renewed at the second crediting period.

4.2 Data and Parameters Monitored

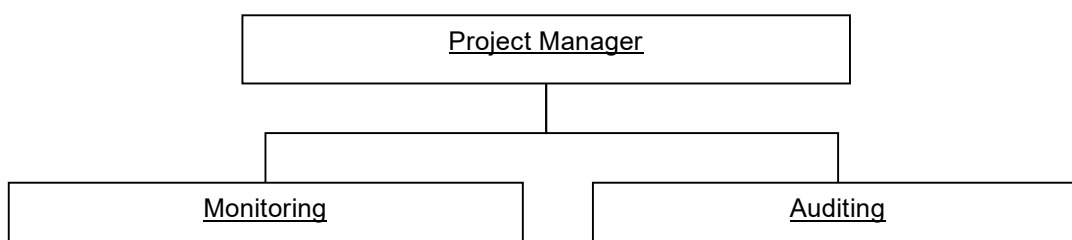
Data / Parameter	$EG_{facility,y}$										
Data unit	MWh										
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y										
Source of data	Calculated										
Description of measurement methods and procedures to be applied	Calculated based on the quantity of electricity supplied by the project to the grid ($EG_{export,y}$) and the quantity of electricity delivered to the project from the grid ($EG_{import,y}$)										
Frequency of monitoring/recording	Measured continuously and recorded monthly										
Value monitored	The $EG_{facility,y}$ is listed below: <table border="1"> <thead> <tr> <th>Period</th><th>Value</th></tr> </thead> <tbody> <tr> <td>20-December-2018~31-December-2018</td><td>1,607.340</td></tr> <tr> <td>01-January-2019~31-December-2019</td><td>72,407.404</td></tr> <tr> <td>01-January-2020~30-June-2020</td><td>38,467.102</td></tr> <tr> <td>Total</td><td>112,481.846</td></tr> </tbody> </table>	Period	Value	20-December-2018~31-December-2018	1,607.340	01-January-2019~31-December-2019	72,407.404	01-January-2020~30-June-2020	38,467.102	Total	112,481.846
Period	Value										
20-December-2018~31-December-2018	1,607.340										
01-January-2019~31-December-2019	72,407.404										
01-January-2020~30-June-2020	38,467.102										
Total	112,481.846										
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	$EG_{facility,y} = EG_{export,y} - EG_{import,y}$ where $EG_{export,y}$ and $EG_{import,y}$ are measured continuously and recorded monthly. The $EG_{export,y}$ is listed below: <table border="1"> <thead> <tr> <th>Period</th><th>Value</th></tr> </thead> <tbody> <tr> <td>20-December-2018~31-December-2018</td><td>1,658.760</td></tr> <tr> <td>01-January-2019~31-December-2019</td><td>73,516.540</td></tr> <tr> <td>01-January-2020~30-June-2020</td><td>39,057.456</td></tr> <tr> <td>Total</td><td>114,232.756</td></tr> </tbody> </table> The $EG_{import,y}$ is listed below: <table border="1"> <thead> <tr> <th>Period</th><th>Value</th></tr> </thead> <tbody> <tr> <td>20-December-2018~31-December-2018</td><td>51.420</td></tr> <tr> <td>01-January-2019~31-December-2019</td><td>1,109.136</td></tr> <tr> <td>01-January-2020~30-June-2020</td><td>590.354</td></tr> <tr> <td>Total</td><td>1,750.910</td></tr> </tbody> </table> $EG_{export,y}$ and $EG_{import,y}$ are measured by bidirectional electricity meter M1 and M2 Mode: MK6E Serial number: 210140205 (M1), 210140204 (M2) Accuracy: 0.2s Calibration frequency: Annually Date of calibration: 15-October-2018, 15-October-2019 Validity: 14-October-2019, 14-October-2020 Calibration entity name: Gansu Electric Power Company Energy Measurement Center. Meters are calibrated periodically by the third party calibration entity. $EG_{export,y}$ and $EG_{import,y}$ are crosschecked by the electricity sales and purchase receipts.	Period	Value	20-December-2018~31-December-2018	1,658.760	01-January-2019~31-December-2019	73,516.540	01-January-2020~30-June-2020	39,057.456	Total	114,232.756	Period	Value	20-December-2018~31-December-2018	51.420	01-January-2019~31-December-2019	1,109.136	01-January-2020~30-June-2020	590.354	Total	1,750.910
Period	Value																				
20-December-2018~31-December-2018	1,658.760																				
01-January-2019~31-December-2019	73,516.540																				
01-January-2020~30-June-2020	39,057.456																				
Total	114,232.756																				
Period	Value																				
20-December-2018~31-December-2018	51.420																				
01-January-2019~31-December-2019	1,109.136																				
01-January-2020~30-June-2020	590.354																				
Total	1,750.910																				
Comments	-																				

4.3 Monitoring Plan

1) Operation and management structure of monitoring

In order to obtain reliable monitoring data, the project developer will establish a monitoring management structure. Clear responsibilities will be assigned to all staff involved in the project. A project manager will be appointed who will have the overall responsibilities of monitoring the project. The measurement of the electricity exports and imports will be carried out by the monitoring officers. In addition, the project developer will designate internal verifiers who will be responsible for the internal verification of the measurement, the collection of electricity receipts and invoices, and the calculation of the emission reductions. The structure of the monitoring group is as follows:



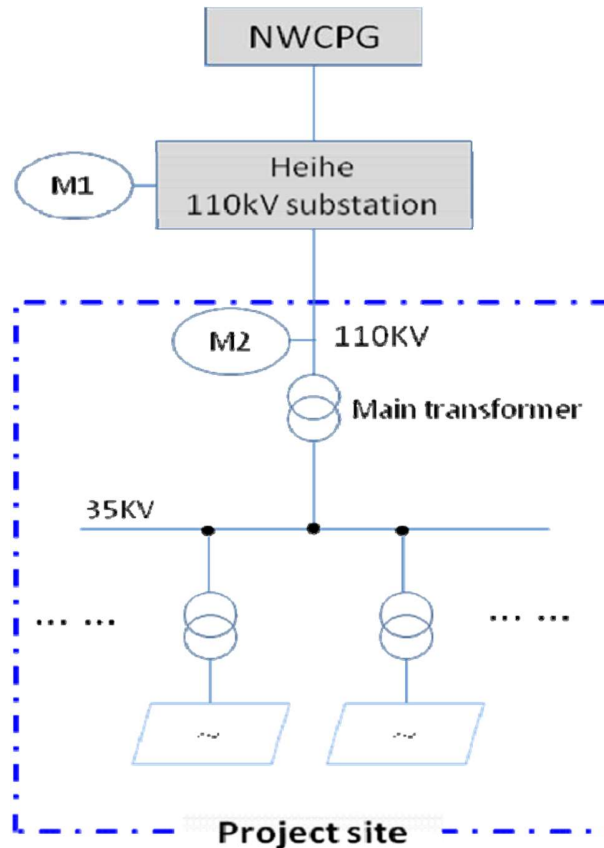
The responsibilities of different roles in operation and management structure are described as below:

Role	Responsibility
Project manager	- Coordinate with external consultant to design and execute the monitoring plan - Supervise the Monitoring section to ensure a timely, adequate and accurate data - recording - Ensure the enforcement of QA/QC plan performed by the Audit section - Collect monitoring data, documents of settlement (transaction records and/or notes) issued by the grid company - Calculate emission reductions and make regular summary following requirements as VCS projects - Work with external consultant to prepare the monitoring report
Monitoring section	- Collect, record and archive the monitoring data - Maintain the monitoring meters
Audit section	- Perform the routine QA/QC procedure to ensure data accuracy - Ensure timely calibration of the monitoring meters

2) Monitoring equipment and installation

The quantity of electricity exported to the grid and electricity imported from the grid by the proposed project needs to be monitored. The electricity voltage is transformed to 35Kv by box-type transformers, merged and transformed to 110kV by the onsite main transformer and then delivered to the Heihe 110kV substation and finally to NWCPG.

Shown in the following figure, the monitoring system includes a main meter (M1) installed at Heihe 110kV substation and a backup meter (M2) installed at the project site. The meters are bidirectional and are installed in accordance with the national standard 'Electricity meter installation technical management code' (DL/T448-2016). The accuracy of the meters is 0.2S.



3) Data collection and management

The project owner and the local power grid company read the meters and record the data on a monthly basis. The monitored data is archived electronically each month. The project owner also needs to keep and periodically back up the copies of electricity sales and purchase receipts provided by the power grid company for cross-check.

All written documents, such as diagrams and reports, should be stored and made available to the verifier, so that the reliability of the information may be checked. All data should be archived for 2 years after the end of the last crediting period.

4) Quality assurance and quality control

The meters should be installed in accordance with the relevant national and industrial regulations. Prior to the project operation, the project owner and the grid company should check the meters according to the relevant national and industrial regulations. The meters

should be calibrated annually by an independent qualified calibration entity in accordance with the relevant national and industrial regulations. Data and records will be checked prior to being recorded and archived, and possible errors should be identified at this step. In case the main meter operates abnormally, the readings from the backup meter will be adopted. If both the main and back-up meters are out of order, the data monitored within this certain period shall not be counted. Emission reduction during malfunction periods will be calculated conservatively.

Training on monitoring has been provided to the relevant staff in order to guarantee the implementation of the monitoring plan.

5) Monitoring results and verification

The verification of the monitoring results of the project activity is required for each monitoring period. The monitoring results will be compiled in a monitoring report that will serve as a basis for project verification in each crediting year.

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 ($EG_{facility,y}$) during the monitoring period by Emission Factor ($EF_{grid,CM,y}$) of NWCPG.

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

where

BE_y : Baseline emissions of the NWCPG during monitoring period

$EF_{grid,CM,y}$: Combined margin CO₂ emission factor for Northwest China Power Grid in year y

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

As stated in Section 4.1, the grid emission factor $EF_{grid,CM,y}$ of the project during this crediting period is 0.8784 tCO₂e/MWh, the monthly electricity data for $EG_{export,y}$ and $EG_{import,y}$ and baseline emissions for the monitoring period are listed as follows:

Table 1 The monthly electricity data for $EG_{export,y}$ and $EG_{import,y}$

Monitoring period ²	$EG_{export,y}$ MWh			$EG_{import,y}$ MWh			$EG_{facility,y}$ MWh
	Measured by the main meter	Electricity data in Electricity Transaction Note	Data for Calculation	Measured by the main meter	Electricity data in Electricity Transaction Note	Data for Calculation	
	A	B	C=min(A,B)	D	E	F=max(D,E)	
20-Dec-2018~31-Dec-2018	1,658.760	1,658.760	1,658.760	51.420	51.420	51.420	1,607.340
Subtotal	1,658.760	1,658.760	1,658.760	51.420	51.420	51.420	1,607.340
01-Jan-2019~31-Jan-2019	6,027.941	6,027.941	6,027.941	141.532	141.532	141.532	5,886.409
01-Feb-2019~28-Feb-2019	4,643.744	4,643.744	4,643.744	126.852	126.852	126.852	4,516.892
01-Mar-2019~31-Mar-2019	7,138.255	7,138.255	7,138.255	96.932	96.932	96.932	7,041.323
01-Apr-2019~30-Apr-2019	7,007.184	7,007.184	7,007.184	81.500	81.500	81.500	6,925.684
01-May-2019~31-May-2019	6,555.117	6,555.117	6,555.117	65.324	65.324	65.324	6,489.793
01-Jun-2019~30-Jun-2019	5,384.140	5,384.140	5,384.140	62.712	62.712	62.712	5,321.428
01-Jul-2019~31-Jul-2019	7,178.190	7,178.190	7,178.190	61.360	61.360	61.360	7,116.830
01-Aug-2019~31-Aug-2019	6,935.766	6,935.766	6,935.766	67.992	67.992	67.992	6,867.774
01-Sep-2019~30-Sep-2019	4,947.778	4,947.778	4,947.778	77.232	77.232	77.232	4,870.546
01-Oct-2019~31-Oct-2019	5,969.008	5,969.008	5,969.008	78.536	78.536	78.536	5,890.472
01-Nov-2019~30-Nov-2019	6,077.713	6,077.713	6,077.713	114.748	114.748	114.748	5,962.965
01-Dec-2019~31-Dec-2019	5,651.704	5,651.704	5,651.704	134.416	134.416	134.416	5,517.288

² According to power purchase agreement, the time of meter reading for $EG_{export,y}$ and $EG_{import,y}$ with the power company is at 24:00 of the last day of every month. The electricity for the period from 20-Dec-2018 to 31-Dec-2018 is from the statement by the project owner based on the daily meter reading data.

Subtotal	73,516.540	73,516.540	73,516.540	1,109.136	1,109.136	1,109.136	72,407.404
01-Jan-2020~31-Jan-2020	6,172.110	6,172.110	6,172.110	139.356	139.356	139.356	6,032.754
02-Feb-2020~29-Feb-2020	5,423.210	5,423.210	5,423.210	132.772	132.772	132.772	5,290.438
01-Mar-2020~31-Mar-2020	6,436.033	6,436.033	6,436.033	104.406	104.406	104.406	6,331.627
01-Apr-2020~30-Apr-2020	7,752.408	7,752.408	7,752.408	88.432	88.432	88.432	7,663.976
01-May-2020~31-May-2020	6,633.419	6,633.419	6,633.419	69.336	69.336	69.336	6,564.083
01-Jun-2020~30-Jun-2020	6,640.276	6,640.276	6,640.276	56.052	56.052	56.052	6,584.224
Subtotal	39,057.456	39,057.456	39,057.456	590.354	590.354	590.354	38,467.102
Total (20-Dec-2018~30-Jun-2020)	114,232.756	114,232.756	114,232.756	1,750.910	1,750.910	1,750.910	112,481.846

Table 2 Calculation of the baseline emission

Time Period	EG _{export,y} MWh	EG _{import,y} MWh	EG _{facility,y} MWh	BE _y tCO ₂ e
20-December-2018~31-December-2018	1,658.760	51.420	1,607.340	1,411
01-January-2019~31-December-2019	73,516.540	1,109.136	72,407.404	63,602
01-January-2020~30-June-2020	39,057.456	590.354	38,467.102	33,789
Total	114,232.756	1,750.910	112,481.846	98,802

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)
------	---	--	--	--

20-December-2018~31-December-2018	1,411	0	0	1,411
01-January-2019~31-December-2019	63,602	0	0	63,602
01-January-2020~30-June-2020	33,789	0	0	33,789
Total	98,802	0	0	98,802

Comparison of actual emission reductions with estimates during validation:

The emission reductions of 98,802 tCO₂e achieved in this monitoring period (20-December-2012 to 30-June-2020) are about 1.75%³ less than the estimated value 100,566 tCO₂e⁴ which is calculated in line with the registered PD (version 02), which is in the normal fluctuation range.

³ $(98,802 \text{ tCO}_2\text{e} - 100,566 \text{ tCO}_2\text{e}) / 100,566 \text{ tCO}_2\text{e} = -1.75\%$

⁴ As per the registered PD, the emission reduction is 65,795 tCO₂e in the 7th operation year (from 20-December-2018 to 19-December-2019). And from the registered CDM PDD (version 02), the emission reduction is 32,621 tCO₂e from 01-January-2020 to 30-June-2020. Thus, the estimated emission reduction from 20-December-2019 to 30-June-2020 (covering 194 days) is 34,771 tCO₂e $(32,621 \text{ tCO}_2\text{e} * 194 \text{ days} / 182 \text{ days})$. Thus, the estimated emission reduction in the monitoring period (covering 559 days) is 100,566 tCO₂e, ie. $100,566 \text{ tCO}_2\text{e} = 65,795 \text{ tCO}_2\text{e} + 34,771 \text{ tCO}_2\text{e}$.