



**Verified Carbon
Standard**

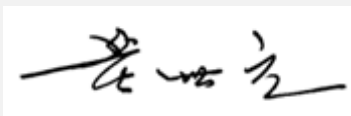
GROUPED CONNECT SOLAR PV POWER GENERATION PROJECT IN CHINA



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Summary:

China Classification Society Certification Co. Ltd. (CCSC), commissioned by Climate Bridge (Shanghai) Ltd., has performed the second periodic verification of Grouped Connect Solar PV Power Generation Project in China (hereafter referred to as “the grouped project”) covering the monitoring period from 01-January-2019 to 28-February-2022, on the basis of requirements of VCS Version 4.

The grouped project developed in 30 provinces of China, is a grouped connect solar PV power generation project, aims to generate electricity by using renewable solar PV energy to the grid. The initial seven instances of the grouped project displace electricity generated from Northwest China Power Grid (NWPG). The grouped project can reduce GHG emissions by using renewable solar PV energy to the grid and replacing equivalent electricity generated by fossil fuel fired power plants connected to the State Grid or China Southern Power Grid.

The grouped project started operation on 23-January-2013 and the initial seven project instances are the CPA of the Grid Connect Solar PV Power Generation Plant Programme (PoA 8868) under CDM, which were included into the PoA on 04-February-2015. After conduct the grouped project validation under VCS program, the grouped project was allocated with VCS ID 1461.

The objective of the verification is to have an independent review ex-post determination by a VVB (Validation and Verification Body) of the monitored GHG emission reductions that have occurred as a result of the implementation of the grouped project during a defined monitoring period.

CCSC appointed a qualified verification team in accordance with internal procedures to perform the verification. During the verification, 2 Clarification Requests (CLs), no Corrective Action Request (CAR) and no forward action request (FAR) were raised.

There are no restrictions of uncertainty with the verification.

As a result of this verification, the verification team confirms that:

- All operations of the grouped project are implemented and installed as planned and described in the validated Project Description;
- The registered monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM0002 (version 16.0) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.
- The implementation of monitoring follows the registered monitoring plan.
- The monitoring system is in place and functional;
- The installed equipment for measuring parameters required for calculating emission reductions are calibrated appropriately.

Based on the information observed and evaluated, the verification team confirms that the emission reductions are correctly calculated in the MR (version 02 dated 25-June-2022).

In conclusion, it is CCSC’s opinion that the grouped project “Grouped Connect Solar PV Power Generation Project in China”, as described in the MR (version 02 dated 25-June-2022), meets all relevant requirements for VCS and all relevant host Party criteria. Hence, CCSC is able to certify that the emission reductions from the grouped project during the monitoring period from 01-January-2019 to 28-February-2022 amount to 946,107 tCO₂e and requests issuance of the equivalent VCUs.

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1 INTRODUCTION

1.1 Objective

Climate Bridge (Shanghai) Ltd., has commissioned CCSC to verify and provide a verification statement of the emission reductions of the Grouped Connect Solar PV Power Generation Project in China (hereafter referred to as “the grouped project”) for the monitoring period from 01-January-2019 to 28-February-2022, based on requirement of VCS Standard (version 4.2)/16/ as well as criteria to provide for consistent project operations, monitoring and reporting.

CCSC as the validation/verification body (VVB) of the grouped project has been accredited as a DOE by UNFCCC and meets the competence requirements as set out in ISO 14065:2020.

Verification of emission reductions from a project activity is the independent review and ex post determination by VVB of the monitored reductions in GHG emissions during the reported monitoring period. The objectives of verification are to:

- a) Ensure that the grouped project has been implemented and operated as per the VCS project description (VCS-PD) /3/ and that all physical features (technology, project equipment, and monitoring and metering equipment) of the grouped project are in place;
- b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of Registration and Issuance Process /20/ and in accordance with the additional requirements stated by the VERRA;
- c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology /17/;
- d) Evaluate the data recorded and stored as per the monitoring methodology /17/.

1.2 Scope and Criteria

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the CCSC. The verification scope covers the relevant documents (e.g. the VCS-PD /3/, the monitoring plan, the VCS monitoring report (VCS-MR) /1//5/, the emission reduction calculation spreadsheet /2//6/, supporting documents available to the verifier and information collected through performing interviews and during the on-site and remote assessment, VERRA's requirements publicly available, relevant rules, including the host country legislation, etc.) to be independently reviewed, the grouped project geographical locations to be visited, the related project local stakeholders to be interviewed with, and processes that are necessary to acquire objective evidence for the evaluation of the grouped project compliance to the VCS requirements and associated interpretations.

The above verification activities are conducted according to the VERRA's requirements. In doing so, the principles of accuracy and completeness, relevance, reliability and credibility were followed.

The verification is not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the grouped project.

1.3 Level of Assurance

CCSC has undertaken a reasonable assurance engagement in accordance with VCS Standard (version 4.2) /16/. It requires a reasonable level of assurance in verification that GHG assertions are free of material errors, omissions and misrepresentations. The verification conclusion is based on the VCS-PD /3/, VCS-MR /5/, and supporting evidences made available to the verifier and information collected through performing interviews and during the on-site and remote inspection.

1.4 Summary Description of the Project

The grouped project is implemented by China Three Gorges Renewables (Group) Co., Ltd., the main purpose of this project is to generate electricity by using renewable solar PV energy to the grid consists of solar PV Power Generation plants located in 30 provinces of China. During this monitoring period, the grouped project included initial seven project activity instances with total installed capacity of 260MW. The estimated annual average GHG emission reduction from the initial seven project activity instances is 302,268 tCO₂e and the total estimate GHG emissions reductions over the first crediting period from 23-January-2013 to 22-January-2023 is 3,026,288 tCO₂e.

The grouped project can reduce GHG emissions by generate electricity by using renewable solar PV energy to the grid and replacing equivalent electricity generated by fossil fuel fired power plants connected to the State Grid or China Southern Power Grid. In the monitoring period from 01-January-2019 to 28-February-2022, total net electricity supplied to the grid is 1,138,326.572 MWh. The total verified carbon units (VCUs) achieved in the monitoring period are 946,107 tCO₂e, which has been verified by on-site and remote inspection, and checking the related documentations, interview with the grouped project implementer.

The grouped project generates electricity by using renewable solar PV energy to the grid and replacing equivalent electricity generated by fossil fuel fired power plants connected to the State Grid or China Southern Power Grid thus the grouped project generates GHG emission reductions and produces financial, social and environmental benefits. The grouped project has resulted in the local sustainable development as described in Section 1 of the Monitoring Report. The grouped project started operation on 23-January-2013 and the initial seven project instances are the CPA of the Grid Connect Solar PV Power Generation Plant Programme (PoA 8868) under CDM, which were included into the PoA on 04-February-2015. The CPA of the PoA 8868 (i.e., 8868-P1-0001, 8868-P1-0002, 8868-P1-0003, 8868-P1-0010 and 8868-P1-0011) are not involved within the context of the project. After conduct the grouped project validation under VCS program, the grouped project was allocated with VCS ID 1461 and the emission reductions have been certified as verified carbon units (VCUs) for this monitoring period.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using CCSC internal procedures.

CCSC verified the grouped project against the requirements set in VCS/16//18//19//20/, and other relevant VCS requirements.

The following sections outline each step in more detail.

2.2 Document Review

A desk review of the registered VCS-PD /3/, the registered validation report /4/, the previous verification report /26/, the applied monitoring methodology /17/, the VCS monitoring report (VCS-MR) /1//5/and supporting documents was conducted by the verification team. The aim of the desk review of the documentation was to verify the completeness of the data and the

information presented, to carry out the compliance check of the VCS-MR /1//5/ with respect to the monitoring plan and the applied methodology /17/. Particular attention was given to the quality of the metering equipment including calibration requirements/21/, the monitored data and its evidence, and the emission reduction calculation. The evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions was also conducted.

Appendix B of this report contains a complete list of all documents and proofs reviewed by the verification team.

2.3 Interviews

Due to the current situation with the global COVID-19 pandemic scenario and The current epidemic prevention policy in Project sites, which requires a quarantine for people from other province, that will certainly put the verification team under potential health risk, from 18-June-2022 to 25-June-2022 verification team conducted remote inspection with the seven instances through “Tencent meeting” and used standard auditing techniques to verify information and compliance with applicable requirements to the extent possible, to ensure the completeness and credibility of the verification, and performed an on-site assessment at the physical site of the Zhaoyang and Sanyang project .

The verification team verified that the actual implementation of the grouped project was as described in the VCS-PD /3/ and VCS-MR /1/. This included the review of the grouped project operation based on the evidence of on-site observation and presented documents.

During the assessment, the verification team has interviewed with key personnel from the grouped project owner (the grouped project participant) and the consultancy. And the verification team interviewed the villager near the grouped project through the telephone.

The assessment content and topics/the persons interviewed at the assessment were provided in the below table.

Date: From 18-June-2022 to 25-June-2022	
Interview topics	Interviewed Organizations and persons ¹
--The status of VCS project implementation. -- Any changes of the VCS project.	Three Gorges New Energy Jinchang Wind Power Co., Ltd. Wan Yongming, Shift Supervisor

¹ The villagers were interviewed through the telephone.

Date: From 18-June-2022 to 25-June-2022	
Interview topics	Interviewed Organizations and persons ¹
-- The grouped project inspection -- The evidences of construction status and operation of key equipment, parameters ---- monitoring and data processing activities, monitor equipment and calibration. -- Sustainable Development Contributions -- Environmental aspects (including air quality, water quality, solid waste, noise and vegetation restoration) -- Monitoring data. -- Quality Management; organizational structure, responsibilities and competencies; Internal QA/QC Management procedures and document control. -- Compliance with National Laws and Regulations.	Su Long, Deputy Manager of Maintenance Center Wulan Jinfeng New Energy PV Power Co., Ltd. Ren Hai, Deputy Manager of Production and Marketing Department Three Gorges New Energy Pishan Power Generation Co., Ltd. Shi Yong, Watch Officer Three Gorges New Energy Hami Wind Power Co., Ltd. He Yujing, Business Manager of Production and Marketing Department Jiuquan Zhaoyang New Energy Power Generation Co., Ltd. Gao Junqiang, Watch Officer Jiuquan Sanyang New Energy Power Generation Co., Ltd. Zheng Hanbin, Watch Officer China Three Gorges Renewables (Group) Co., Ltd. Li Yang, Business Manager Ying Yiwen, Business Manager Liu Yuzhi, Business Manager Ma Jing, Manager Wang Hongye, Director
-- The impact of the project activity -- The communication with the project owner	Jiugou Village Zhang Zhongmin, villager Han Yumei, villager Dazhaizi Village Zhao Jianhuai, villager

Date: From 18-June-2022 to 25-June-2022	
Interview topics	Interviewed Organizations and persons ¹
	Zhang Dabao, villager Xishagou Village Gao Yongqing, villager Shaan Village Nuer Maimaiti, villager Aizezi Abula, villager Xinghua Village Mamu Hamai, villager
-- Preparation of Monitoring Report. -- Compliance of the monitoring plan with the monitoring methodology -- Compliance of monitoring with the monitoring plan -- Assessment of data and calculation of GHG emission reductions	Climate Bridge (Shanghai) Ltd., Liu Yanyu, Project manager

2.4 Site Inspections

The on-site and remote assessment involved following activities,

An assessment of the implementation and operation of the grouped project as per the VCS-PD /3/;

A review of information flows for generating, aggregating and reporting the monitoring parameters;

Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved monitoring plan;

A cross-check between information provided in the monitoring report /5/ and data from other sources such as operational records or similar data sources;

A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS-PD /3/ and the selected methodology /17/;

A review of calculations and assumptions made in determining the GHG data and emission reductions;

An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

During the inspection, the grouped project location, main equipment, monitoring equipment and project implementation were inspected and document evidence were checked, details as following table,

Date	Activity performed	Instances	Team Member
18-June-2022	Remote inspection	Dazhaitan and Heqingtian project (01&02 instance)	Ma Zhiwei Li Cuiping Zhang Xinglu Zheng Ruijing
19-June-2022	Remote inspection	Wulan project (03 instance)	
20-June-2022	Remote inspection	Zhaoyang & Sanyang project (06&07 instance)	

Date	Activity performed	Instances	Team Member
21-June-2022	Remote inspection	Hami project (05 instance)	
22-June-2022	On-site inspection	China Three Gorges Renewables (Group) Co., Ltd. ²	
23-June-2022	Remote inspection	Pishan project (04 instance)	
25-June-2022	On-site inspection	Zhaoyang & Sanyang project (06&07 instance)	

² Beijing Headquarters

2.5 Resolution of Findings

During the verification of a project activity, to identify issues that need to be further elaborated upon, researched or added to in order to confirm that the grouped project meets the VERRA's requirements and can achieve credible emission reductions, the verification team will issue a Corrective Action Request (CAR), a Clarification Request (CL) or a Forward Action Request (FAR) depending on different situations.

The objective of this phase of the verification is to resolve issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions prior to CCSC's positive conclusion on the GHG emission reduction calculation.

Findings established during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

A Corrective Action Request (CAR) will be raised if one of the following occurs:

- a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the grouped project participants, or if the evidence provided to prove conformity is insufficient;
- b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the grouped project participants;
- c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the grouped project participants.

A Clarification Request (CL) will be raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A Forward Action Request (FAR) will be raised, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

There are 2 CLs that have been raised during the current verification.

2.5.1 Forward Action Requests

No Forward Action Requests were raised during the current verification.

2.6 Eligibility for Validation Activities

The VVB of “China Classification Society Certification Co. Ltd.” commissioned by the project participant is one of eligible VVBs listed on the VERRA website (<https://verra.org/project/vcs-program/validation-verification/>), and it holds the accreditation for validation/verification for the sectoral scope: “1. Energy (renewable/non-renewable)”, to which the grouped project belongs. Therefore, CCSC is eligible for the validation/verification of the grouped project.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The grouped project has not been registered or is seeking registration under any other GHG programs which has been checked during the validation process.

The grouped project started operation on 23-January-2013 and the initial seven project instances are the CPA of the Grid Connect Solar PV Power Generation Plant Programme (PoA 8868) under CDM, which were included into the PoA on 04-February-2015 verified by checking the dedicated UNFCCC website. After conduct the grouped project (including initial seven project instances) validation under VCS program, the grouped project was allocated with VCS ID 1461. Seven CPAs of the PoA 8868 (8868-P1-0004, 8868-P1-0006, 8868-P1-0009, 8868-P1-0007, 8868-P1-0005 and 8868-P1-0012) correspond to the seven instances of the Grouped Project, and the CPA of the PoA 8868 (i.e., 8868-P1-0001, 8868-P1-0002, 8868-P1-0003, 8868-P1-0010 and 8868-P1-0011) are not involved within the context of the project

The grouped project period under VCS started on 23-January-2013 and will be expired on 22-January-2023.

The grouped project is located in China and is developed and operated by China Three Gorges Renewables (Group) Co., Ltd. and project owners of each instance which are all Chinese Investment Enterprise.

The grouped project has sought the registration with the VCS Program and validation was conducted by VVB and has been successfully registered in VCS Program and via checking the VCS dedicated website of the grouped project.

The verification team also checked the Gold Standard Registry and the Climate Action Reserve to determine if the grouped project is producing other environmental credits. It was confirmed that the grouped project is not listed on these registries and therefore there is no other environmental credit (for example renewable energy certificate) which has or will be produced by or obtained for the grouped project.

Via on-site interview with the grouped project implementer and checking the UNFCCC website of the Grid Connect Solar PV Power Generation Plant Programme (PoA 8868) and No Double Counting Statement/25/. It is verified that the implementation of the grouped project is consistent with the description in the Project Description/3/ and the monitoring system is fully functional to generate Verified Carbon Units (VCUs) without any double counting for this monitoring period from 01-January-2019 to 28-February-2022.

3.2 Methodology Deviations

No deviation from the methodology is needed to be submitted.

3.3 Project Description Deviations

The name of the Grouping Entity of the Grouped Project was China Three Gorges New Energy Corp. at the time of the project validation, which changed its name to China Three Gorges Renewables (Group) Co., Ltd. on 26-June-2019 according to Letter of Confirmation provided by the project owner. The verification team confirms this name change does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

No deviation from the project description is needed to be submitted during this monitoring period.

3.4 Grouped Project

In this monitoring period from 01-January-2019 to 28-February-2022, there is no new project activity instances inclusion into the (grouped) project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

4.1.1 Project Implementation in accordance with the VCS PD

Through the onsite visit, interviewing the grouped project developer and reviewing the grouped project operation, CCSC confirmed that the grouped project was implemented to generate electricity by using renewable solar PV energy to the grid consists of solar PV Power Generation plants located in 30 provinces of China. During this monitoring period, the grouped project included initial seven project activity instances with total installed capacity of 260MW which is consistent with the value in PD.

The grouped project can reduce GHG emissions by generate electricity by using renewable solar PV energy to the grid and replacing equivalent electricity generated by fossil fuel fired power plants connected to the NWPG. In the monitoring period from 1-January-2019 to 28-February-2022, total net electricity supplied to the grid is 1,138,326.572 MWh. The total verified carbon units (VCUs) achieved in the monitoring period are 946,107 tCO₂e, which has been verified by on-site inspection, and checking the related documentations, interview with the grouped project implementer.

Via checking the MR/1/ and by site inspection, CCSC verified that there are no changes on the key equipment and technology since the validation of the grouped project.

This verification covers the period from 1-January-2019 to 28-February-2022.

The commenced electricity generation date of each project activity instance is as below table.

Table 4-1 Construction start dates and commissioning dates of the project activity instances

Instance ID	Instance name	Construction start date	Commissioning date
Instance 01	the Dazhaitan Project	25-August-2012	06-March-2013
Instance 02	the Heqingtian Project	01-September-2013	26-December-2013
Instance 03	the Wulan Project	04-November-2012	23-January-2013
Instance 04	the Pishan Project	10-October-2013	21-December-2013
Instance 05	the Hami Project	10-October-2013	26-December-2013
Instance 06	the Zhaoyang Project	30-November-2012	20-July-2013
Instance 07	the Sanyang Project	30-November-2012	30-June-2013

As part of the site visit the verification team was able to confirm that the grouped project implementation is in accordance with the grouped project description contained in the registered PD/3/. There are no any material discrepancies between project implementation and the grouped project description.

The grouped project started operation on 23-January-2013 and the initial seven project instances are the CPA of the Grid Connect Solar PV Power Generation Plant Programme (PoA 8868) under CDM, which were included into the PoA on 04-February-2015 verified by checking the dedicated UNFCCC website. After conduct the grouped project validation under VCS program, the grouped project was allocated with VCS ID 1461. Seven CPAs of the PoA 8868 (8868-P1-0004, 8868-P1-0006, 8868-P1-0009, 8868-P1-0007, 8868-P1-0005 and 8868-P1-0012) correspond to the seven instances of the Grouped Project, and the CPA of the PoA 8868 (i.e., 8868-P1-0001, 8868-P1-0002, 8868-P1-0003, 8868-P1-0010 and 8868-P1-0011) are not involved within the context of the project

The net GHG emission reductions during this monitoring period from the grouped project was not used for compliance with emission trading programs or to meet binding limits on GHG emissions confirmed via on-site interview with the grouped project implementer and checking the UNFCCC website of the Grid Connect Solar PV Power Generation Plant Programme (PoA 8868).

It is verified that the implementation of the grouped project is consistent with the description in the Project Description/3/ and the monitoring system is fully functional to generate Verified Carbon Units (VCUs) without any double counting for this monitoring period from 23-January-2013 to 31-December-2018.

Besides, based on VVB's local expertise, China has a national emissions trading scheme only cover the high-emission industries, such as power generation sector that emitted at least 26,000 tons of CO₂e/year which has been verified in the public website (https://www.mee.gov.cn/xxgk2018/xxgk/xxgk02/202101/t20210105_816131.html) , and it is confirmed that the grouped project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the grouped project owner by checking the enforced company list in public information (https://www.mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/t20201230_815546.html) . Hence, it is confirmed that the emission reductions will not be double counted.

The grouped project was registered as a VCS project activity with the VCS Ref. No. 1461/3/, with 10 years of 1st crediting period started from 23-January-2013 to 22-January-2023 under VCS Program.

This monitoring period (1-January-2019 to 28-February-2022) is the 2nd monitoring period in the first 10-years crediting period.

Details of the grouped project location and geographic coordinates are given in table 4-2 below:

Table 4-2: Project Location of initial seven project activity instances

Instance ID	Project Location	Geographical coordinates
Instance 01	Yongchang County, Jinchang City, Gansu Province of China	102°17'49" E, 38°16'29" N
Instance 02	Yongchang County, Jinchang City, Gansu Province of China	102°16'40" E, 38°16'58" N
Instance 03	Wulan County, Qinghai Province of China	98°23'50" E, 37°00'42" N
Instance 04	Pishan County, Hetian City and Xinjiang Uygur Autonomous Region	78°14'51" E, 37°32'21" N
Instance 05	Hami City, Xinjiang Uygur Autonomous Region of China	93°37'07" E, 43°02'44" N
Instance 06	Jiuquan City, Gansu Province of China	98°34'30" E, 39°35'06" N
Instance 07	Jiuquan City, Gansu Province of China	98°34'20" E, 39°35'27" N

The locations of the initial seven project activity instances' project site are verified with on-site investigation by GPS devices and confirmed by checking the map.

The major technical specifications of the grouped project have been verified during the site visit and listed in the table below and the verification team confirmed they are consistent with the registered PD /3/.

The Instance 01 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 50MW (50.112MWp of total solar cell modules) consists of 172,800 pieces of 290Wp polycrystalline silicon solar cells/15/. 100 sets of inverters with capacity 500kW were installed in Instance 01/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters are connected to boost transformers, and then transformed together with Instance 02 to transformer substation before delivered to NWPG.

Table 4-3-1 The main technical parameters of **INSTANCE 01**

Item	Unit	Index
Solar cells		
Model	-	JKM290P-72
Number	-	172,800
Maximum power (Pmax)	Wp	290 (0~+3%)
Rated voltage	V	36.4

Rated current	A	7.97		
Open-circuit voltage (Voc)	V	44.9		
Short-circuit current (Isc)	A	8.89		
Maximum system voltage	V	1,000		
Operation period	Year	25		
Manufacturer		Jinko Solar Co., Ltd.		
Inverters				
Model		SSL0500	KNGI900-500HEA	SG500KTL
Rated output power	kW	500	500	500
Maximum DC voltage	V	900	900	1000
Maximum input short-circuit current	A	/	/	1450
MPPT voltage range	V	500-750	450-820	450-820
Maximum input current	A	1200	1168	1200
Rated output voltage	V	400	270	270
Rated frequency	Hz	50/60	50	50
Maximum output current	A	/	1188	1176
Operation period	Year	25	25	25
Manufacturer		Emerson Network Power Co., Ltd.	Beijing Kenuo Weiye Technology Co., Ltd.	Sungrow Power Supply Co., Ltd.

The Instance 02 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 50MW (50.9067MWp of total solar cell modules) consists of 78,660 pieces of 295Wp and 92,340 pieces of 300Wp polycrystalline silicon solar cells/15/. 100 sets of inverters with capacity 500kW were installed in the Instance 02/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters are connected to boost transformers, and then transformed together with Instance 01 to transformer substation before delivered to NWPG

Table 4-3-2 The main technical parameters of **INSTANCE 02**

Item	Unit	Index
Solar cells		

Model		TSM-300PC14	TSM-295PC14	JC295M-24/Ab
Number		92,340	10,260	68,400
Maximum power (Pmax)	Wp	300 (0~+3%)	295 (0~+3%)	295 (0~+5)
Maximum power voltage (Vmp)	V	36.9	36.6	36.3
Maximum power current (Imp)	A	8.13	8.07	8.13
Open-circuit voltage (Voc)	V	45.3	45.2	44.7
Short-circuit current (Isc)	A	8.60	8.55	8.62
Maximum system voltage	V	1000	1000	1000
Operation period	Year	25	25	25
Manufacturer		Trina Solar Changzhou Co., Ltd.	Trina Solar Changzhou Co., Ltd.	Renesola Zhejiang Co., Ltd.
Inverters				
Model		EP-0500-A		
Rated output power	kW	500		
Maximum DC voltage	V	1,000		
Maximum input short-circuit current	A	1,327		
MPPT voltage range	V	500-820		
Maximum input current	A	1,128		
Rated output voltage	V	315		
Rated frequency	Hz	50		
Maximum output current	A	1,008		
Operation period	Year	25		
Manufacturer		Wuxi Shangneng new energy Co., Ltd.		

The Instance 03 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 20MW (20.139MWp of total solar cell modules) consists of 82,200 pieces of 245Wp polycrystalline silicon solar cells/15/. 40 sets of inverters with capacity 500kW were installed in the Instance 03/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters

are connected to boost transformers, and then transformed to transformer substation before delivered to NWPG.

Table 4-3-3 The main technical parameters of **INSTANCE 03**

Item	Unit	Index
Solar cells		
Model		YL245P-29b
Number		82200
Maximum power (Pmax)	Wp	245 (0~+5)
Rated Voltage	V	30.2
Rated current	A	8.11
Open-circuit voltage (Voc)	V	37.8
Short-circuit current (Isc)	A	8.63
Maximum system voltage	V	1000
Operation period	Year	25
Manufacturer		Yingli Energy (China) Co., Ltd.
Inverters		
Model		DS500KTL
Rated output power	KW	500
Maximum DC voltage	V	1000
MPPT voltage range	V	450-880
Maximum input current	A	1200
Rated output voltage	V	270
Rated frequency	Hz	50/60
Maximum output current	A	1070
Operation period	Year	25
Manufacturer		Anhui Jinfeng New Energy Co., Ltd.

The Instance 04 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 20MW (20MWp of total solar cell modules) consists of 80,000 pieces of 250Wp polycrystalline silicon solar cells/15/. 40 sets of inverters with capacity 500kW were installed in the Instance 04/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters are connected to boost transformers, and then transformed to transformer substation before delivered to NWPG.

Table 4-3-4 The main technical parameters of **INSTANCE 04**

Item	Unit	Index
Solar cells		
Model		EG250-P60-C
Maximum power (Pmax)	Wp	250 (0~+3%)
Rated voltage	V	30.20
Rated current	A	8.28
Open-circuit voltage (Voc)	V	37.72
Short-circuit current (Isc)	A	8.81
Maximum system voltage	V	1000
Operation period	Year	25
Manufacturer		ChangZhou EGing Photovoltaic Technology Co., Ltd
Inverters		
Model		EP-0500-A
Rated output power	KW	500
Maximum DC input voltage	V	1000
Maximum DC input current	V	1128
MPPT voltage range	A	420-820
Rated AC output voltage	V	270
Rated frequency	Hz	50
Rated AC output current	A	1069
Operation period	Year	25
Manufacturer		Wuxi Shangneng New Energy Co., Ltd.

The Instance 05 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 20MW (20.4MWp of total solar cell modules) consists of 81,600 pieces of 250Wp polycrystalline silicon solar cells/15/. 40 sets of inverters with capacity 500kW were installed in the Instance 05/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters are connected to boost transformers, and then transformed to transformer substation before delivered to NWPG.

Table 4-3-5 The main technical parameters of **INSTANCE 05**

Item	Unit	Index	
Solar cells			
Model		JAP6-60-250/3BB	JC250M-24/Bb
Number		40,800	40,800
Maximum power (Pmax)	Wp	250(0~+5W)	250(>=0)
Maximum power Voltage (Vmp)	V	29.98	30.1
Maximum power current (Imp)	A	8.34	8.31
Open-circuit voltage (Voc)	V	37.54	37.4
Short-circuit current (Isc)	A	8.84	8.83
Maximum system voltage	V	1000	1000
Operation period	Year	25	25
Manufacturer		Hefei JA Solar Technology Co., Ltd.	Renesola Zhejiang Ltd.
Inverters			
Model	-	YLSSL-500	
Rated output power	kW	500	
Maximum DC voltage	V	1000	
MPPT voltage range	V	420-850	
Maximum input current	A	1,250	
Rated output voltage	V	270	
Rated frequency	Hz	50	
Rated output current	A	1,070	
Operation period	Year	25	
Manufacturer		Shenzhen WinLine Technology Co., Ltd.	

The Instance 06 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 50MW (50MWp of total solar cell modules) consists of 200,000 pieces of 250Wp polycrystalline silicon solar cells/15/. 50 sets of 500kW inverters and 40 sets of 630 kW inverters were installed in the Instance 06/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters are connected to boost transformers, and then transformed together with Instance 07 to transformer substation before delivered to NWPG.

Table 4-3-6 The main technical parameters of **INSTANCE 06**

Item	Unit	Index	
Solar cells			
Model	-	JAP6-60-3BB-250/3BB	JKM250P-60
Maximum power (Pmax)	Wp	250±3%	250(0~+5%)
Maximum power voltage (Vmp)	V	30.00	30.40
Maximum power current (Imp)	A	8.32	8.23
Open-circuit voltage (Voc)	V	37.79	37.60
Short-circuit current (Isc)	A	8.67	8.81
Maximum system voltage	V	1000	1000
Operation period	Year	25	25
Manufacturer	-	JA Solar	JINKO Solar
Inverters			
Model	-	SG500MX	SG630KTL
Rated output power	kW	500	630
Maximum DC voltage	V	1000	1000
MPPT voltage range	V	500-850	500-820
Maximum input current	A	1120	1400
Rated output voltage	V	315	315
Rated frequency	Hz	50	50
Operation period	Year	25	25
Manufacturer	-	SUNGROW POWER SUPPLY CO., LTD	SUNGROW POWER SUPPLY CO., LTD

The Instance 07 involves the installation of a grid-connected solar photovoltaic power plant. The total installed capacity of the grid connected photovoltaic power station is 50MW (50MWp of total solar cell modules) consists of 200,000 pieces of 250Wp polycrystalline silicon solar cells/15/. 50 sets of 500kW inverters and 40 sets of 630 kW inverters were installed in the Instance 07/15/. The electricity generated by solar cell module connected to dc-to-ac inverter, inverters are connected to boost transformers, and then transformed together with Instance 06 to transformer substation before delivered to NWPG.

Table 4-3-7The main technical parameters of **INSTANCE 07**

Item	Unit	Index	
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Solar cells			
Model	-	CS6P-250P	JKM250P-60
Maximum power (Pmax)	Wp	250	250(0~+5%)
Rated Voltage	V	30.10	30.40
Rated current	A	8.30	8.23
Open-circuit voltage (Voc)	V	37.20	37.60
Short-circuit current (Isc)	A	8.87	8.81
Maximum system voltage	V	1000	1000
Operation period	Year	25	25
Manufacturer	-	Canadian Solar	JINKO Solar
Inverters			
Model	-	SG500MX	SG630KTL
Rated output power	kW	500	630
Maximum DC voltage	V	1000	1000
MPPT voltage range	V	500-850	500-820
Maximum input current	A	1120	1400
Rated output voltage	V	315	315
Rated frequency	Hz	50	50
Operation period	Year	25	25
Manufacturer	-	SUNGROW POWER SUPPLY CO., LTD	SUNGROW POWER SUPPLY CO., LTD

Via on-site inspection, checking the documents/8//9//22/ and interview with the grouped project implementer, CCSC verified that the grouped project contributes the sustainable development goal through the following aspects

Table 4-4 Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
------------	------------	---------------	-----------------------------	-------------------------------	-------------------------------------

1)	7.2	Renewable energy supplied to the power grid	Implemented activities to increase	1,138,326.572 MWh of net electricity from renewable sources was supplied to the power grid during this monitoring period.	1,138,326.572 MWh of net electricity from renewable sources was supplied to the power grid during this monitoring period.
2)	8.5	Number of long-term jobs provided	Implemented activities to increase	110 employees have signed long-term labour contracts and receive stable payments due to the implementation of the grouped project.	The Groupe Project provided 110 long-term jobs during this monitoring period.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	The Grouped Project achieved GHG emission reductions of 946,107 tCO ₂ e during this monitoring period.	The Grouped Project achieved GHG emission reductions of 946,107 tCO ₂ e during this monitoring period.

According to the information collected during on-site visit and the relevant evidence provided by project owner, CCSC can confirm that:

- a) The monitoring period from 1-January-2019 to 28-February-2022 is compliance with previous monitoring period and the crediting period and complies with the requirement of the VCS Standard Version 4.2 /16/;
- b) No project design change occurred during this monitoring period and the grouped project was implemented in accordance the registered VCS-PD /3/;
- c) The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters) is appropriate.
- d) The grouped project has contributed to sustainable development during this monitoring period and over project lifetime;
- e) The GHG emission reductions or removals generated by the grouped project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading;
- f) The grouped project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period. None of the credits will be claimed in the same period;
- g) The GHG emission reductions generated by the grouped project during this monitoring period (1-January-2019 to 28-February-2022) will be only claimed under VCS program as VCUs for the grouped project to avoid double counting.

4.1.2 Compliance of monitoring with the monitoring plan

The verification team has assessed the implementation of monitoring by the grouped project owner against the registered monitoring plan. A short summary on the verification of every parameter listed in the monitoring plan and used for emission reduction calculation is provided below:

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in the monitoring plan of PD):	$EG_{facility,y}$ Net quantity of electricity delivered to the grid by a typical instance in year y
Measuring frequency:	Continuously measurement
Reporting frequency:	Monthly recorded

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Electricity meter
Is accuracy of the monitoring equipment as stated in the PD? If the PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. Accuracy level of monitoring meters is as described in the registered PD /3/. For details see Table 4-5.
Calibration frequency /interval:	Periodically as per relevant sectoral standards in China
Is the calibration interval in line with the monitoring plan of the PD? If the PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes.
Company performing the calibration:	Yes. See Table 4-5
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes.
Is(are) calibration(s) valid for the whole reporting period?	Yes. For details see Table 4-5
If applicable, has the reported data been cross-checked with other available data?	Not applicable.
How were the values in the monitoring report verified?	The verification details have been reported in Section 4.4 of this report.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative	Not applicable.

assumption theoretically possible been applied or has a request for deviation been approved?	
Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PD):	EG _{output,y} Electricity delivered by a typical instance to the grid in year y (MWh)
Measuring frequency:	Continuously measurement
Reporting frequency:	Monthly recorded
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Electricity meter
Is accuracy of the monitoring equipment as stated in the PD? If the PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. Accuracy level of monitoring meters is at least 0.5 s as described in the registered PD /3/. For details see Table 4-5
Calibration frequency /interval:	Periodically as per relevant sectoral standards in China
Is the calibration interval in line with the monitoring plan of the PD? If the PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes.
Company performing the calibration:	Yes. See Table 4-5
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes.
Is(are) calibration(s) valid for the whole reporting period?	Yes. For details see Table 4-5

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data has been cross-checked with receipts in line with the registered VCS-PD /3/.
How were the values in the monitoring report verified?	The verification details have been reported in Section 4.4 of this report.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable.
Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of PD):	EG _{input,y} Electricity imported by a typical instance from the grid in year y (MWh)
Measuring frequency:	Continuously measurement
Reporting frequency:	Monthly recorded
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Electricity meter
Is accuracy of the monitoring equipment as stated in the PD? If the PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes. Accuracy level of monitoring meter is at least 0.5s as described in the registered PD /3/. For details see Table 4-5

Calibration frequency /interval:	Periodically as per relevant sectoral standards in China
Is the calibration interval in line with the monitoring plan of the PD? If the PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes.
Company performing the calibration:	Yes. See Table 4-5
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes.
Is(are) calibration(s) valid for the whole reporting period?	Yes. For details see Table 4-5
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data has been cross-checked with receipts in line with the registered VCS-PD /3/.
How were the values in the monitoring report verified?	The verification details have been reported in Section 4.4 of this report.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable.

According to the applied methodology ACM0002 (version 16.0) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, the net electricity supplied to the grid by the grouped project $EG_{facility,y}$, which is used for the calculation of baseline emission. The net electricity supplied to the grid by the grouped project ($EG_{facility,y}$) is calculated as follows:

$$EG_{facility,y} = EG_{output,y} - EG_{input,y}$$

Furthermore, the verification team has verified that the accuracy of measure of the monitoring equipment was set according to the requirements and all calibration procedures were carried out according to the monitoring plan and manufacturer specifications. The calibration information of the monitoring meters/10/ in this monitoring period has been listed in Table 4-5 below.

In summary, the verification team is able to verify that the accuracy the monitoring equipment was set according to the registered PD/3/ and relevant sectoral standard of China.

Table 4-5 Verified calibration information of monitoring meters

Meter	Type	Accuracy	Serial number	Frequency	Calibration date	Valid until	Calibration Entity /11/
M1 (Instance 01)	WU.TE. 432q	0.2S	416000 68	Annually	21-Apr-2018 20-Apr-2019 19-Apr-2020 18-Apr-2021	20-Apr-2019 19-Apr-2020 18-Apr-2021 17-Apr-2022	State Grid Gansu Electric Power Company Electric Power Research Institute Metrology Center
M2 (Instance 01)	WU.TE. 432q	0.2S	416000 67	Annually	21-Apr-2018 20-Apr-2019 19-Apr-2020 18-Apr-2021	20-Apr-2019 19-Apr-2020 18-Apr-2021 17-Apr-2022	State Grid Gansu Electric Power Company Electric
M1 (Instance 02)	WU.TE. 432q	0.2S	416000 68	Annually	21-Apr-2018 20-Apr-2019 19-Apr-2020 18-Apr-2021	20-Apr-2019 19-Apr-2020 18-Apr-2021 17-Apr-2022	State Grid Gansu Electric Power Company Electric

M2 (Instance 02)	WU.TE. 432q	0.2S	416000 67	Annually	21-Apr-2018 20-Apr-2019 19-Apr-2020 18-Apr-2021	20-Apr-2019 19-Apr-2020 18-Apr-2021 17-Apr-2022	Power Researc h Institute Metrolo gy Center
M1 (Instance 03)	DTSD3 41	0.2S	012003 09	Annually	29-Nov-2018 28-Nov-2019 27-Nov-2020 26-Nov-2021	28-Nov-2019 27-Nov-2020 26-Nov-2021 25-Nov-2022	Qinghai Provinc e Electric Energy Measur ement and Verificat ion Center
M2 (Instance 03)	DTSD3 41	0.2S	012003 10	Annually	29-Nov-2018 28-Nov-2019 27-Nov-2020 26-Nov-2021	28-Nov-2019 27-Nov-2020 26-Nov-2021 25-Nov-2022	Metrolo gical Verificat ion and Testing Institute of Qinghai Provinc e
M1 (Instance 04)	DTSD3 41	0.2S	700001 8	Annually	04-Apr-2018 03-Apr-2019 02-Apr-2020 01-Apr-2021	03-Apr-2019 02-Apr-2020 01-Apr-2021 30-Mar-2022	
M2 (Instance 04)	DTSD3 41	0.2S	700001 7	Annually	04-Apr-2018 03-Apr-2019 02-Apr-2020 01-Apr-2021	03-Apr-2019 02-Apr-2020 01-Apr-2021 30-Mar-2022	Xinjiang Electric Power Researc h Institute
M3 (Instance 04)	DSZ31 1	0.2S	338364 4	Annually	04-Apr-2018 03-Apr-2019 02-Apr-2020 01-Apr-2021	03-Apr-2019 02-Apr-2020 01-Apr-2021 30-Mar-2022	
M1 (Instance 05)	DTSD3 41	0.2S	978740 8	Annually	12-Jan-2018 11-Jan-2019	11-Jan-2019 10-Jan-2020	Xinjiang Electric Power Researc

					10-Jan-2020	09-Jan-2021	h Institute
					09-Jan-2021	08-Jan-2022	
					08-Jan-2022	07-Jan-2023	
M2 (Instance 05)	DTSD3 41	0.2S	978740 9	Annually	12-Jan-2018	11-Jan-2019	
					11-Jan-2019	10-Jan-2020	
					10-Jan-2020	09-Jan-2021	
					09-Jan-2021	08-Jan-2022	
					08-Jan-2022	07-Jan-2023	
M1 (Instance 06)	MK6E	0.2S	211650 965	Annually	18-Mar-2018	17-Mar-2019	State Grid Gansu Electric Power Compan y Electric Power Researc h Institute Metrolo gy Center
					17-Mar-2019	16-Mar-2020	
					16-Mar-2020	15-Mar-2021	
					15-Mar-2021	14-Mar-2022	
M1 (Instance 06)	MK6E	0.2S	211650 966	Annually	18-Mar-2018	17-Mar-2019	State Grid Gansu Electric Power Compan y Electric Power Researc h Institute Metrolo gy Center
					17-Mar-2019	16-Mar-2020	
					16-Mar-2020	15-Mar-2021	
					15-Mar-2021	14-Mar-2022	
M1 (Instance 07)	MK6E	0.2S	211650 965	Annually	18-Mar-2018	17-Mar-2019	State Grid Gansu Electric Power Compan y Electric Power Researc h Institute Metrolo gy Center
					17-Mar-2019	16-Mar-2020	
					16-Mar-2020	15-Mar-2021	
					15-Mar-2021	14-Mar-2022	
M1 (Instance 07)	MK6E	0.2S	211650 966	Annually	18-Mar-2018	17-Mar-2019	State Grid Gansu Electric Power Compan y Electric Power Researc h Institute Metrolo gy Center
					17-Mar-2019	16-Mar-2020	
					16-Mar-2020	15-Mar-2021	
					15-Mar-2021	14-Mar-2022	

4.2 Safeguards

4.2.1 No Net Harm

By checking the EIA summary and conclusion provided in the registered VCS PD, it is confirmed that the grouped Project is a clean renewable energy project and did not result in any negative environmental or socio-economic impacts during this monitoring period. Also, the EIA of the grouped project are approved by the government.

According to the EIA Report, the environmental impacts of the project instances and associated mitigation measures during the operation period are as follows:

- The project instances will not produce gas pollution.
- The treated sewage of the project instances is used for greening. The flushing water mainly contains SS, barely contains other pollutants.
- The project instances will not produce hazardous waste. The solid waste is mainly domestic refuse from workers and its quantity is tiny; all the solid waste will be collected to the waste landfill site for disposal.
- All the equipment employs the low noise technology, and there are no residents around the project site. Thus, the operation noise will cause no effects on the surrounding environment.
- During the operation period of the proposed instance, plant the suitable vegetation for the vegetation restoration.

And according to the national law/regulations of China, the project owner should take associated mitigation measures in line with the EIA report. During the on-site assessment, the verification team has interviewed with key personnel to ensure the environmental aspects of the project (including air quality, water quality, solid waste, noise and vegetation restoration), and checked the status of suitable vegetation for the vegetation restoration. Hence verification team confirms that the environmental impacts of the project instances were in line with the EIA Report, the measures were fully adopted and there is no net harm due to implementation of project.

4.2.2 Local Stakeholder Consultation

As per the VCS requirements, it is necessary to invite the relevant stakeholders, prior of the validation process. The verification team checked the relevance of the dates during the validation on-site inspection.

Local stakeholder consultation was conducted through distributing questionnaires to local stakeholders in October 2013 by the project owner. The survey was conducted through distributing and collecting responses of questionnaires. The questionnaire was reasonably designed to assess the grouped project impacts on the local environment and social economic development. In total 210 questionnaires were returned with a 100% response rate.

Furthermore, through on-site inspection, the verification team confirmed that communications with stakeholders were conducted at periodic intervals. Key implementation schedules or changes of the grouped project has been and 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 and feedback to project owner. Local government agencies and authorities will conduct spot checks on the implementation of the grouped project, and give suggestions to the project owner on the involved rectification problems.

By checking the questionnaires /23/, the verification team confirm that the local stakeholder has no negative comments for the construction of the grouped project. Meanwhile, by checking the filled questionnaires from local stakeholders, the verification team confirmed that communications with local stakeholders was being carried out in June 2019 and May 2021 by the project owner during this monitoring period. There are no negative comments received for the grouped project during this monitoring period.

Furthermore, via checking questionnaires from local stakeholders and interviewing during the on-site inspection, it is confirmed by the verification team that during the implementation stage of this monitoring period, local authority has conducted follow-up interviews and ongoing communication with local stakeholders to collect any comments or inputs to the grouped project implementation. It is confirmed by the verification team that there were no negative comments and issues from the local stakeholders during this monitoring period and the grouped project passed all the periodic spot checks by local government.

Therefore, the verification team was able to confirm that the stakeholder meeting was adequate and appropriate.

4.3 AFOLU-Specific Safeguards

The grouped project is not AFOLU project, and thus this section is not applicable for the grouped project.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

4.4.1 Parameters and information flow

The parameters required by the monitoring plan and the way CCSC has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the monitoring report are described below:

Parameters monitored ex-post:

$$EG_{facility,y} = EG_{output,y} - EG_{input,y}$$

Where:

$EG_{facility,y}$	Net quantity of electricity delivered to the grid by a typical instance in year y
$EG_{output,y}$	Electricity delivered by a typical instance to the grid in year y
$EG_{input,y}$	Electricity imported by a typical instance to the grid in year y

According to the VCS-MR /6/ of the grouped project and the registered VCS-PD /3/, The electricity delivered by a typical instance to the grid and imported by a typical instance from the grid are both continuously monitored through the meter which is both agreed by the grid company and the grouped project owner. The monthly monitoring records of the grouped project have been verified during onsite assessment.

The verification team has cross-checked electricity figures in the emission reductions calculation spreadsheet /6/ with the receipts/9/ and of the grouped project from the grid company. By the onsite assessment, the values in emission reductions calculation spreadsheet /6/ is in line with the sale receipts/9/ during this period.

Parameter determined ex-ante:

$EF_{coal,adv,y}$, $EF_{oil,adv,y}$ and $EF_{gas,adv,y}$: Efficiency level of best technologies commercially available in China;

$EM_{m,y}$ / EG_y : Net electricity generated by power plant/unit m (or in the project electricity system in case of EG_y) in year y;

$CAP_{j,y}$: Installed capacity of source j in year y in the grid the instance connected to;

$NCV_{i,y}$: Net calorific value (energy content) of fossil fuel type i in year y;

$FC_{i,y}$ / $F_{i,j,y}$: Amount of fossil fuel type I consumed by the instance electricity system in year y;

$EF_{CO2,i,y}$: CO₂ emission factor of fossil fuel type I in year y;

$EF_{grid,OM,y}$: Operating margin emission factor of the grid connected by each instance, i.e. NWPG;

$EF_{grid,BM,y}$: Build margin emission factor of the grid connected by each instance, i.e. NWPG.

$EF_{grid,CM,y}$: Combined margin emission factor for grid connected power generation in year y, i.e. NWPG.

According to the registered PD /3/, the verification team confirms that $EF_{grid,CM,y}$ is ex-ante determined as 0.83115 tCO₂/MWh for NWPG over the first crediting period and all the parameters determined ex-ante are provided in the MR. The parameters determined ex-ante in this monitoring report have been verified against the registered VCS-PD /3/ and found them to be consistent.

4.4.2 Assessment Data and Calculation

It was verified that the grouped project is a renewable energy project. Therefore, the project emission of the grouped project is zero under ACM0002 (version 16.0) /17/ (PEy=0).

The grouped project is a new renewable energy project. Therefore, no leakage needs to be considered for the grouped project according to the methodology /17/. (LEy=0).

Since the project emission and the leakage emission has been justified as zero under ACM0002 (version 16.0) /17/, the calculation of the emission reductions simply involves the calculation of the baseline emissions.

Formula 1:
$$ER_y = BE_y - 0 - 0 = EG_{facility,y} \times EF_{grid,CM,y} \quad (1)$$

Where:

ER_y : Emission reductions in year y (tCO₂/yr)

BE_y : The baseline emissions (tCO₂/yr)

$EG_{facility,y}$: Net quantity of electricity delivered to the grid by a typical instance in year y (MWh)

$EF_{grid,CM,y}$: Combined margin emission factor for grid connected power generation in year y.

The net electricity delivered to the grid ($EG_{facility,y}$) is the difference between the electricity exported to the grid exported and the electricity imported from the grid, as follow:

Formula 2:
$$EG_{facility,y} = EG_{output,y} - EG_{input,y} \quad (2)$$

Following the approach described in section 4.4.1 above, electricity figures were verified as below:

Table 4-6-1 The verified $EG_{\text{facility}, y}$ of the Instance 01

Instance 01 (the Dazhaitan Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	63,618.949	1,610.928	62,008.021
01-Jan-2020 to 31-Dec-2020	73,683.803	1,755.400	71,928.403
01-Jan-2021 to 31-Dec-2021	71,102.217	1,611.300	69,490.917
01-Jan-2022 to 28-Feb-2022	11,443.886	306.168	11,137.718
Total	219,848.855	5,283.796	214,565.059

Table 4-6-2 The verified $EG_{\text{facility}, y}$ of Instance 02

Instance 02 (the Heqingtian Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	64,760.991	0.000	64,760.991
01-Jan-2020 to 31-Dec-2020	76,070.001	0.000	76,070.001
01-Jan-2021 to 31-Dec-2021	73,932.628	0.000	73,932.628
01-Jan-2022 to 28-Feb-2022	12,170.635	0.000	12,170.635
Total	226,934.255	0.000	226,934.255

Table 4-6-3 The verified $EG_{\text{facility}, y}$ of Instance 03

Instance 03 (the Wulan Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	26,549.913	663.736	25,886.177
01-Jan-2020 to 31-Dec-2020	25,870.560	698.164	25,172.396
01-Jan-2021 to 31-Dec-2021	27,938.780	629.853	27,308.927
01-Jan-2022 to 28-Feb-2022	4,772.540	130.576	4,641.964
Total	85,131.793	2,122.329	83,009.464

Table 4-6-4 The verified $EG_{\text{facility}, y}$ of Instance 04

Instance 04 (the Pishan Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	22,462.856	606.136	21,856.720
01-Jan-2020 to 31-Dec-2020	23,448.135	613.752	22,834.383
01-Jan-2021 to 31-Dec-2021	27,653.236	766.864	26,886.372
01-Jan-2022 to 28-Feb-2022	4,115.483	126.536	3,988.947
Total	77,679.710	2,113.288	75,566.422

Table 4-6-5 The verified $EG_{\text{facility}, y}$ of Instance 05

Instance 05 (the Hami Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	32,590.589	487.200	32,103.389
01-Jan-2020 to 31-Dec-2020	35,415.862	487.200	34,928.662
01-Jan-2021 to 31-Dec-2021	33,000.632	435.400	32,565.232
01-Jan-2022 to 28-Feb-2022	5,340.942	77.000	5,263.942
Total	106,348.025	1,486.800	104,861.225

Table 4-6-6 The verified $EG_{\text{facility}, y}$ of Instance 06

Instance 06 (the Zhaoyang Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	65,587.444	1,040.766	64,546.678
01-Jan-2020 to 31-Dec-2020	74,166.784	1,149.334	73,017.450
01-Jan-2021 to 31-Dec-2021	71,315.906	955.756	70,360.150
01-Jan-2022 to 28-Feb-2022	10,448.496	167.382	10,281.114
Total	221,518.630	3,313.237	218,205.393

Table 4-6-7 The verified $EG_{\text{facility}, y}$ of Instance 07

Instance 07 (the Sanyang Project)			
Period	$EG_{\text{output}, y}$ (MWh)	$EG_{\text{input}, y}$ (MWh)	$EG_{\text{facility}, y}$ (MWh)
01-Jan-2019 to 31-Dec-2019	64,677.339	1,032.202	63,645.137
01-Jan-2020 to 31-Dec-2020	73,156.289	1,146.300	72,009.989
01-Jan-2021 to 31-Dec-2021	70,355.381	955.757	69,399.624
01-Jan-2022 to 28-Feb-2022	10,305.573	166.569	10,139.004
Total	218,494.582	3,300.828	215,193.754

Therefore, the net electricity supply ($EG_{\text{facility}, y}$) of the grouped project is calculated as:

Table 4-7 The verified $EG_{\text{facility}, y}$ of the grouped project

Period	Instance 01	Instance 02	Instance 03	Instance 04	Instance 05	Instance 06	Instance 07	The grouped project
	A	B	C	D	E	F	G	$H=A+B+C+D+E+F+G$
01-Jan-2019 to 31-Dec-2019	62,008.021	64,760.991	25,886.177	21,856.720	32,103.389	64,546.678	63,645.137	334,807
01-Jan-2020 to 31-Dec-2020	71,928.403	76,070.001	25,172.396	22,834.383	34,928.662	73,017.450	72,009.989	375,961
01-Jan-2021 to 31-Dec-2021	69,490.917	73,932.628	27,308.927	26,886.372	32,565.232	70,360.150	69,399.624	369,935
01-Jan-2022 to 28-Feb-2022	11,137.718	12,170.635	4,641.964	3,988.947	5,263.942	10,281.114	10,139.004	57,623
Total	214,565.059	226,934.255	83,009.464	75,566.422	104,861.225	218,205.393	215,193.754	1138,326.572

In summary, the verification team confirms that a complete set of data for the monitoring period is available, appropriate emission factor of the power grid has been correctly applied, the emission reductions of the grouped project have been conservatively calculated in line with above mentioned Formula 1&2 in the emission reduction calculation spreadsheet /6/ and MR, the total emission reductions have been summarized in the emission reduction calculation spreadsheet and checked to be correctly accounted. So the verification team confirms the emission reduction is to be correctly accounted and there are no manual transposition errors between data sets. The total emission reduction is as follow:

Table 4-8 Verified Emission Reductions during this monitoring period

Period			EG _{facility,y} (MWh)	EF (tCO ₂ /MWh)	BE _y (tCO _{2e})	PE _y (tCO ₂ e)	LE _y (tCO ₂ e)	ER _y (tCO _{2e})
Year	From	To	A	B	C=A*B	D	E	F=C-D-E
2019	01-Jan-2019	31-Dec-2019	334,807	0.83115	278,271	0	0	278,271
2020	01-Jan-2020	31-Dec-2020	375,961	0.83115	312,477	0	0	312,477
2021	01-Jan-2021	31-Dec-2021	369,935	0.83115	307,467	0	0	307,467
2022	01-Jan-2022	28-Feb-2022	57,623	0.83115	47,892	0	0	47,892
Total			1138,326.572	/	946,107	0	0	946,107

Comparison of ERs

Based on the above assessment, CCSC can conclude that the emission reduction during the monitoring period from 01-January-2019 to 28-February-2022 have been quantified correctly in accordance with the project description and applied methodology /17/, and the emission reduction during this monitoring period is verified as 946,107 tCO₂e. Compared with the estimated emission reductions under the same days of 1,155 from 01-January-2019 to 28-February-2022 in the registered VCS-PD /3/, 1,009,603 (=319,052*1,155/365) tCO₂e, the verified emission reduction is 6.3% less than the estimated value. CCSC considers the value of verified emission reduction is conservative.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The evidences used to determine the GHG emission reductions are assessed as follows:

Assessment of the Evidence Quality	
Parameters monitored	1) $EG_{facility,y}$ 2) $EG_{outport,y}$ 3) $EG_{import,y}$
Monitoring method	The quantity of electricity delivered by a typical instance to the grid ($EG_{outport,y}$) and electricity imported by a typical instance from the grid ($EG_{import,y}$) by the grouped project are measured by meters.
Measuring/Reading /Recording frequency	The parameters are continuously measured and monthly recorded.
Calibration frequency/ interval	See Table 4-5 Verified calibration information of monitoring meter. Through on-site observation and checking the calibration records of meters, the team confirmed that all the monitoring meters meet the rated accuracy level and the calibration frequency fulfils the requirement as described in the monitoring plan.
Calibration cover the monitoring period	The verification team confirms that the validity period of all conducted calibrations covers this monitoring period from 01-January-2019 to 28-February-2022.
Data reported	Through cross checking with the receipts/9/, the monitored data can be confirmed as acceptable to calculate emission reductions.

In conclusion, all necessary documentation is collected, referenced and is easily accessible in hard-copy or electronic format. The data pertaining to the monitored parameters are maintained in the identified internal records and consistent with the values stated in the Monitoring Report /5/ and ER calculation spreadsheet /6/. Monitoring data have been cross-checked with the receipts.

4.6 Non-Permanence Risk Analysis

The grouped project is not AFOLU project, and thus non-permanence risk analysis is not applicable for the grouped project.

5 VERIFICATION CONCLUSION

CCSC has carried out the verification of the grouped project “Grouped Connect Solar PV Power Generation Project in China”. The verification was performed based on the requirements set by VCS Version 4 /16//18//19//20/, as well as criteria given to provide for consistent project operations, monitoring and reporting. This verification covers the period from 01-January-2019 to 28-February-2022 inclusive.

In the course of the verification 2 Clarification Requests (CLs), no Corrective Action Request (CAR) and no forward request (FAR) was raised. The verification is based on the VCS-MR /5/, the VCS-PD /3/, ER calculation spread sheet /6/ and supporting documents available to CCSC.

As the result of the verification, CCSC confirms that:

- The grouped project has been implemented and operated as per the registered VCS-PD /3/ and that all physical features (technology, project equipment, and monitoring and metering equipment) of the grouped project are in place;
- The VCS-MR /5/ and other supporting documents provided are complete in accordance with the latest applicable version of the VCS Registration & Issuance Process /20/ and in accordance with the additional requirements stated by the VERRA;
- The actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology i.e. ACM0002 (version 16.0) /17/;
- The GHG emission reductions are calculated without material misstatements and in a conservative and appropriate manner.

Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CCSC confirms the following statement:

Verification period: From 01-January-2019 to 28-February-2022

Verified GHG emission reductions and removals in the above verification period:

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-Jan-2019 to 31-Dec-2019	278,271	0	0	278,271
01-Jan-2020 to 31-Dec-2020	312,477	0	0	312,477
01-Jan-2021 to 31-Dec-2021	307,467	0	0	307,467
01-Jan-2022 to 28-Feb-2022	47,892	0	0	47,892
Total	946,107	0	0	946,107

APPENDIX A: ABBREVIATIONS

CAR	Corrective Action Request
CCSC	China Classification Society Certification Co. Ltd.
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
DNA	Designated National Authority
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
ETN	Electricity Transaction Note
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
MR	Monitoring Report
NWPG	Northwest China Power Grid
PD	Project Description
PDD	Project Design Document
PP	Project Proponent
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation/Verification Body
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit

APPENDIX B: REFERENCE

Documents provided by the grouped project Participant and relevant background documents have been reviewed or referenced for the periodic verification conclusions.

Ref no.	Reference Document
/1/	Climate Bridge (Shanghai) Ltd., VCS Monitoring report Version 01 dated 20-April-2022
/2/	Climate Bridge (Shanghai) Ltd., ER calculation spreadsheet Version 1.0 dated 20-April-2022
/3/	KOE Environment Consultancy, Inc., The registered VCS-PD dated 15-June-2015
/4/	Bureau Veritas Certification Registered Validation Report ID BVC/China-VCS/7082/2015 dated 26-June-2015
/5/	Climate Bridge (Shanghai) Ltd., VCS Monitoring report Version 02 dated 25-June-2022
/6/	Climate Bridge (Shanghai) Ltd., ER calculation spreadsheet Version 2.0 dated 25-June-2022
/7/	Business License of initial seven instances
/8/	Monthly meter reading records of the electricity of initial seven instances during this monitoring period
/9/	Sale receipts of initial seven instances issued by the grid company during this monitoring period
/10/	Calibration reports of the meters
/11/	Qualification certificate of the meter calibration entity: State Grid Gansu Electric Power Company Electric Power Research Institute Metrology Center, valid from 29-September-2015 to 28-September-2015. Qinghai Province Electric Energy Measurement and Verification Center, valid from 25-July-2011 to 24-July-2019 Metrological Verification and Testing Institute of Qinghai Province, valid from 4-September-2017 to 3-September-2022 Xinjiang Electric Power Research Institute, valid from 24-October-2014 to 22-October-2022

/12/	Power Purchase Agreement signed by both project owner of each instance and local grid company valid for this monitoring period
/13/	Grid Scheduling Agreement signed by both project owner of each instance and local grid company valid for this monitoring period
/14/	Diagram of Power Connection System of initial seven instances
/15/	Equipment Purchase Contract of initial seven instances
/16/	VERRA, VCS Standard, version 4.2
/17/	CDM Executive Board, ACM0002 (version 16.0)
/18/	VERRA, Monitoring Report Template Form Version 4.1
/19/	VERRA, VCS Program Guide Version 4.1
/20/	VERRA, Registration & Issuance Process Version 4.1
/21/	China National Economic Trading Commission, Technical Administrative Code of Electric Energy Metering
/22/	Payrolls of initial seven instances from 2018 to 2021
/23/	Questionnaire survey in June 2019 and May 2021
/24/	Training Records
/25/	No Double Counting Statement for this monitoring period
/26/	Shenzhen CTI International Certification Co., Ltd, Verification Report for 1 st VCU issuing Version 1.0 dated 26-October-2021

APPENDIX C: RESOLUTION OF CLARIFICATION REQUESTS AND CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Table 1. CL from this verification

CL ID	CL-1	Section no.	N/A	Date: 25-June-2022
Description of CL				
In the ER sheet, the Sales Receipts' data of Dazhaitan Project in June 2021 is not consistent with Sales Receipts.				
Project participant response				Date: 25-June-2022
The Sales Receipts of Dazhaitan Project in June 2021 shows 6,034.597 MWh. In version 01 of the ER sheet, the value for Dazhaitan this month was 6,043.597 MWh. The project participant verified the data and realized that it was a typo, and the updated version of the ER sheet shows the correct value 6,034.597.				
Documentation provided by project participant				
ER calculation spreadsheet (Version 2.0 dated 25-June-2022) VCS Monitoring report (Version 02 dated 25-June-2022)				
DOE assessment				Date: 28-June-2022
The verification team has checked the revised VCS Monitoring report and ER calculation spreadsheet supplied by PP, and confirmed that the data had been updated, and was consistent with the Sales Receipts. Therefore, CL-1 is closed successfully.				

CL ID	CL-2	Section no.	1.11	Date: 25-June-2022
Description of CL				
The evidence of project's SDG 8.5 target is not provided				
Project participant response				Date: 25-June-2022

The project participant provides to the VVB with the evidence of the project's SDG 8.5 which includes payrolls and summaries of the number of employees.	
Documentation provided by project participant	
Pay Rolls of the grouped project	
DOE assessment	Date: 28-June-2022
The verification team has checked Pay Rolls and revised VCS Monitoring report, and confirmed that the number of long-term jobs provided was consistent with the Pay Rolls. Therefore, CL-2 is closed successfully.	

Table 2. CAR from this verification

CAR ID	N/A	Section no.	N/A	Date: N/A
Description of CAR				
N/A				
Project participant response			Date: N/A	
N/A				
Documentation provided by project participant				
N/A				
DOE assessment			Date: N/A	
N/A				

Table 3. FAR from this verification

FAR ID	N/A	Section No.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				

N/A	
DOE assessment	Date: N/A
N/A	