VCS VERIFICATION REPORT

65MW DAGUSHAN HYDROPOWER PROJECT IN CHINA

(VCS PROJECT ID: 653)

Document Prepared By

Shenzhen CTI International Certification Co., Ltd

Project Title	65MW Dagushan Hydropower Project in China
Version	01.0
Report ID	CTI/NB-2021-0614

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Client	Climate Bridge (Shanghai) Ltd.
Pages	28
Date of Issue	30/06/2021
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Summary:

Shenzhen CTI International Certification Co., Ltd (CTI) has performed the verification of the emission reductions reported for the project activity "65MW Dagushan Hydropower Project in China" (VCS Project ID: 653) for the monitoring period 22/07/2019 to 31/12/2020, to review and determine the monitored reductions in GHG emissions that have occurred as a result of the project activity. These emission reductions are claimed as Verified Carbon Units (VCU) under the Verified Carbon Standard (VCS) version 4.1.

The verification was performed on the basis of VCS Programme Guide version 4.0 and VCS Standard version 4.1 for the VCS projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. The verification was conducted by means of document review, follow-up interviews and site inspections, and the resolution of outstanding issues. The verification team identified no CAR, no CL or FAR in this monitoring period.

In CTI's opinion, the GHG emission reductions reported for the project in the monitoring report (version 01.1 dated 28/06/2021) are fairly stated. The GHG emission reductions of the monitoring period were calculated correctly on the basis of approved methodology ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources" (Version 20.0), the VCS PD for renewal of crediting period version 06.1 dated 03/02/2021.

CTI does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines

clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to CTI and the engagement conditions detailed in this report. CTI cannot be held liable by any party for decisions made or not made based on this report.

Hence, CTI is able to certify that the emission reductions from the "65MW Dagushan Hydropower Project in China" during the period amount to 137,144 tCO_2e.

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1 INTRODUCTION

Climate Bridge (Shanghai) Ltd. has commissioned Shenzhen CTI International Certification Co., Ltd (CTI) to carry out the verification and certification of emission reductions reported for the "65MW Dagushan Hydropower Project in China" (the project) for the period 22/07/2019 to 31/12/2020. This report contains the findings from the verification and includes a verification statement for the verified carbon units.

1.1 Objective

Verification is the periodic independent review and ex-post determination by an accredited verification body of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined verification period.

A verification statement is the written assurance by a verification body that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and provide a verification statement of emission reductions reported for the "65MW Dagushan Hydropower Project in China" for the period 22/07/2019 to 31/12/2020.

1.2 Scope and Criteria

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement;
- To verify that reported GHG emissions data is sufficiently supported by evidence.

The criteria of the verification are:

- VCS Program Guide (version 4.0) /25/
- VCS Standard (version 4.1) /24/ and other relevant requirements defined by Verra;
- The approved methodology ACM0002 (Version 20.0) /27/ applied by the project.

The verification shall ensure that reported emission reductions are complete and accurate in order to be verified.

1.3 Level of Assurance

The verification report expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement. CTI applied a materiality threshold of 5% with respect to omission or misstatements concerning reported quantities as per VCS standard.

1.4 Summary Description of the Project

Sectoral Scope and Project Type

According to the VCS Program Guide (version 4.0) /25/, the project is applicable under the following activity categories:

- Sectoral Scope: 1. Energy (Renewable/non-renewable).

According to Annex A of the Kyoto Protocol, the project is applicable under the Sectoral Scope 1: Energy Industries (renewable/ non-renewable sources).

Project Background

Project title:	65MW Dagushan Hydropower Project in China
Project proponent:	Gansu Zhangye Dagushan Hydropower Co., Ltd. (China)
Project location:	the middle of the upper steam of the Heihe River, within the territory of Su'nan Yugu Autonomous County of Gansu Province, approximately 102 km far from Zhangye City, People's Republic of China
VCS Project ID:	653
Applied methodology:	ACM0002 Version 20.0
VCS project crediting period:	the second VCS crediting period
VCU verification period:	22/07/2019 to 31/12/2020

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification was performed through means of the following three phases in accordance with the requirement of the registered VCS PD, the applied methodology, and the VCS Standard (version 4.1) and other relevant VCS requirements:

- A desk review of the monitoring report and all support documents;
- Follow-up interviews with project stakeholders and site inspection;
- The resolution of outstanding issues and the issuance of the verification report and statement.

The following sections outline each step in more detail.

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- The emission reduction calculations and the relevant data records;
- The calibration and maintenance records for the monitoring instruments;

The management systems to support the project operation and monitoring

2.2 Document Review

Based on the requirements of competency, experience and qualified sectoral scopes, CTI appointed a verification team in accordance with CTI's internal procedures.

Function	Name	Technical competence	Task Performance*
Team Leader	Li Ziqi	1.2	☒ DR ☒ SV ☒ RP ☐ TR
Technical Reviewer	Zhang Lei	1.2	☒ DR ☐ SV ☐ RP ☒ TR

*DR=Document review; SV=Site visit; RP=Reporting; TR=Technical review

In addition to the VER/VCU monitoring report /1/, emission reduction calculation spreadsheet /2/, VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) /10/ and its Validation Report (version 01.0 dated 04/02/2021) /11/, the following documents also were assessed as a part of the verification audit:

- registered CDM PDD (version 05 dated 04/02/2010) /17/;

- Validation Report of registered CDM PDD /18/;

- revised monitoring plan approved by CDM EB on 03/03/2011 /12/;

- Validation Statement of the revised monitoring plan /13/;

- Baseline and monitoring methodology ACM0002 applied by the project /27/;

- Relevant decisions, clarifications and guidance from the Verra /24/-/26/; and

- Other information and references relevant to the project activity.

During the desk review, CTI has applied standard auditing techniques to assess the quality of information provided. The following activities were performed:

- A review of the data and information presented to verify their completeness;

- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures; and

An 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.

2.3 Interviews

On 28/06/2021, CTI visited Gansu Zhangye Dagushan Hydropower Co., Ltd. performed on-site assessment. The key personnel of the project were interviewed or assisted the verification team /28/. Main topics of the interview cover implementation of the project construction, applicability of selected methodology, implementation of project monitoring, emission reduction calculation, etc.

The key personnel interviewed /28/ are summarized in the table below:

Interviewed personnel	Role	Organization	Subject
Mr. Li Jianmin	Plant Director	Gansu Zhangye Dagushan Hydropower Co., Ltd. (the project owner)	Operation of the project activity; Implementation of the monitor plan of the project activity; Data collection and data achievement; Calibration of meters and equipment maintenance;
Mr. Qin Xiaojun	Operation Director		
Mr. Che Tianming	Operation Duty		
Mr. Li Hong	Operation Duty		
Ms. Zhang Zehua	Villager	Local resident	The impact of the project activity; The complaint by local stakeholders; The stakeholder consultation during the operation of the project activity.
Ms. Li Guiying	Villager	Local resident	
Mr. Wang Peng	Staff	Local Environment Protection Bureau	
Mr. Ye Zongpei	Project Manager	Climate Bridge (Shanghai) Ltd.	Data collection and ER calculation.

2.4 Site Inspections

The verification team performed the on-site verification (the middle of the upper steam of the Heihe River, within the territory of Su'nan Yugu Autonomous County of Gansu Province, approximately 102 km far from Zhangye City, People's Republic of China) on 28/06/2021. The interviewed personnel and objective are listed in above table. During the on-site assessment, CTI has applied standard auditing techniques to assess the quality of information provided. The following aspects of the project activity have been verified:

- An assessment of the implementation and operation of the registered project activity is as per the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021);
- A review of information flows for generating, aggregating and reporting the monitoring parameters; and

- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the VCS PD for renewal of crediting period;
- A cross-check between information provided in the monitoring report and data from other sources such as plant logbooks and electricity sale receipts;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD for renewal of crediting period and the selected methodology;
- A review of calculations and assumptions made in determining the GHG data and emission reductions; and
- An identification that quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The data presented in the monitoring report were assessed by review of the detailed project documentation and production records, as well as by interviews with personnel from the project developer Gansu Zhangye Dagushan Hydropower Co., Ltd. and observation of collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results, to verify the correct application of the approved monitoring methodology and the determination of the emission reductions.

In addition all parameters required by the monitoring methodology ACM0002 (Version 20.0), and the management system were assessed during the site visit.

2.5 Resolution of Findings

A corrective action request (CAR)shall be raised, where:

i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

ii. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;

iii. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project proponents.

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

The verification team identified no CAR, CL or FAR in this monitoring period.

2.5.1 Forward Action Requests

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

CTI confirmed that there was no FAR identified in previous verification /11/, and no FAR was raised during this verification.

2.6 Eligibility for Validation Activities

The CDM PDD of the project activity was validated by TÜV NORD CERT GmbH on 08/03/2010 /18/. The revised monitoring plan of the project activity was validated by Germanischer Lloyd Certification /18/. The previous periodic verification was carried out by LGAI Technological Center, S.A. (Applus+ Certification) on 13/11/2020 and by Shenzhen CTI International Certification Co., Ltd (CTI) on 26/05/2021 against Voluntary Carbon Standard version 4.1 /21/ /23/. The VCS PD for renewal of crediting period of the project activity was validated by Shenzhen CTI International Certification Co., Ltd (CTI) on 04/02/2021 /11/. The verification for the proposed monitoring period 22/07/2019 to 31/12/2020 is the 1st verification undertaken by CTI after CTI completed the validation for the renewal of VCS crediting period and CTI did not verify more than six consecutive years of this project's GHG emission reductions or removals, which satisfies with 4.1.20 of VCS Standard version 4.1.

Furthermore, CTI just undertook verification activities for the project according to the VCS Program Guide. This section is thus not applicable.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project was validated by TÜV NORD CERT GmbH on 08/03/2010 under CDM scheme for registration /18/, and validated by Germanischer Lloyd Certification under CDM scheme for revision of registered monitoring plan. The VCS PD for renewal of crediting period of the project activity was validated by Shenzhen CTI International Certification Co., Ltd (CTI) on 04/02/2021 /11/. CTI performed verification activities on the proposed monitoring period for the project according to the VCS Program Guide.

3.2 Methodology Deviations

The validation process /18/ has assessed all factors and issues that constitute the basis for emission reductions from the project according to the applicable CDM methodology ACM0002 (Version 20.0) /27/. There was not any methodology deviation applied to this project. Details refer to section 4.1.

3.3 Project Description Deviations

There were not project description deviations identified by CTI to this monitoring period or a previous monitoring period. The verification team assessed through visual inspection and document review that all physical features of the proposed project activity including data monitoring, reporting and collecting

systems have been implemented in accordance with the VCS PD for renewal of crediting period /10/. Details refer to section 4.1.

3.4 Grouped Project

The project was not a grouped project; hence this clause is not applicable.

4 VERIFICATION FINDINGS

This section summarizes the findings from the verification of the emission reductions reported for the "65MW Dagushan Hydropower Project in China" for the period 22/07/2019 to 31/12/2020.

4.1 Project Implementation Status

Project Implementation in accordance with the registered project design document

The project is a grid-connected hydro power plant, which is located in the middle of the upper steam of the Heihe River, within the territory of Su'nan Yugu Autonomous County of Gansu Province, approximately 102 km far from Zhangye City, People's Republic of China. The installed capacity of the project activity is 65 MW, consisting of 2 sets of hydropower turbine generators with unit capacity of 26 MW and another set of hydropower turbine generator with unit capacity of 13 MW. The average annual power delivered to the grid by the project is expected to be 195,150 MWh. The actual implementation of the project during this verification period was verified in terms of name plate capacities of each hydro turbine and monitoring equipment. The details of the hydro turbines with respect to installation and capacity have been verified to be consistent with description indicated in the VCS PD for renewal of crediting period. The project started operation on 22/07/2009, 24/07/2009, and 26/07/2009 respectively for 3 units, which has been verified by site visit interview, checking validation report and verification report of previous monitoring period /18//21//23/. The electricity generated by the project activity was supplied to the Northwest Power Grid of China (NWPG), which can be confirmed by the Power Purchase Agreement (PPA) signed between Gansu Zhangye Dagushan Hydropower Co., Ltd. and State Grid Gansu Electric Power Company /3/.

The project start date was identified as 22/07/2009 when the first hydro turbine started to operate and began generating GHG emission reductions. As per the VCS PD for renewal of crediting period, the 1st VCS crediting period of the project is determined as from 22/07/2009 to 21/07/2019, and the 2nd VCS crediting period of the project is determined as from 22/07/2019 to 21/07/2029.. The selected monitoring period is from 22/07/2019 to 31/12/2020, which is within the 2nd VCS crediting period.

All the monitoring system in operation period is consistent with the VCS PD for renewal of crediting period. The control system at the power plant is automated and assures continuous operation, including monitoring on malfunction of equipment. By checking the daily operation and maintenance records /6/, CTI can confirm that no serious malfunction happened and the plant was under a normal

operation as expected in this monitoring period.

On-site training for the related procedures including monitoring, recording and reporting was verified to be in place /5/ and their implementation was confirmed by interview with the key operators /28/ and observing the operation.

As part of the site visit, CTI confirms that the project implementation is in accordance with the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) The verification team confirmed through visual inspection and document review that all physical features of the proposed project activity including data collection systems and storage systems have been implemented in accordance with the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021).

Compliance of monitoring plan with monitoring methodology

CTI is able to confirm that the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) is in accordance with the approved methodology applied by the project activity, i.e. ACM0002 (Version 20.0).

Compliance of monitoring with the monitoring plan

The monitoring has been carried out in accordance with the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021). CTI confirms that all parameters stated in the monitoring plan are monitored and reported appropriately. All parameters required to be monitored by the monitoring plan as per the monitoring methodology ACM0002 (Version 20.0) and the management system were assessed during the site visit. The monitoring report lists each parameter required by the monitoring plan and the information flow (i.e. from data generation, aggregation, recording, calculation and reporting) for these parameters is provided. The information flow for the each parameter in further verified in the following sections.

Parameters monitored

According to the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021), there are 3 monitoring parameters of the project:

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

By site interview and checking the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) and verification reports, CTI confirmed that the power generated by the proposed project will be transmitted to Heihe Substation (330kV) together with the electricity of Erlongshan Hydropower Plant (hereinafter “EHP”), and then to Gansu Power Grid and finally to NWPG.

$EG_{facility,y}$ is calculated by following formula:

$$EG_{facility,y} = (EG_{M1} + EG_{M2}) * (EG_{M7} + EG_{M9}) / (EG_{M5} + EG_{M7} + EG_{M9})$$

The parameter EG_{M1}, EG_{M2}, EG_{M5}, EG_{M7}, EG_{M9} were measured by electricity meters M1, M2, M5, M7 and M9 continuously. Meter M1, M2, M7 and M9 are bi-directional while M5 is singile-directional. Meter M1 and M2 are installed at Heihe 330 kV Substation, while meter M5, M7, M9 are installed at the project

site. Electricity meters M3, M4, M6, M8 and M10 installed at the project site are used as the backup meters of meters M1, M2, M5, M7 and M9 correspondingly. The meter reading was recorded monthly and archived electronically.

The cut-off time was 24:00 hr of last day of each month. At the cut-off time, the staff from project developer and the grid company read the electricity meters together. The project developer record electricity meters' readings and form Monthly Reading Records (MRRs) /7/. The staff from power grid company record electricity meter's readings and then transcribes the data into Sales Receipts /8/. $EG_{facility,y}$ was sourced from Meter Reading Records (MRRs) /7/ issued by the project developer, and Sales Receipts /8/ issued by power grid company covering monitoring period.

As described above, the meters have been installed in accordance with the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021). CTI has on-site checked the location of the meters against the diagram of power connection system and found them to be consistent.

Data in the monthly reading records were used to the report, through a cross check with Sales Receipts, and the conservative values were applied to calculate Quantity of net electricity generation supplied by the project plant/unit to the grid. The data reported in the monitoring report and ERs calculation spreadsheet has been verified by the verification team. Supporting references and data required to determine the net electricity supplied to the grid by the project is found to be complete and transparent.

Installed capacity of the hydropower plant after the implementation of the project activity (Cap_{PJ})

By checking Nameplate of hydropower turbine and generator, it is confirmed by the verification team the installed capacity of project activity is 65,000,000 W, which is consistent with that in the VCS PD for renewal of crediting period /10/. The parameter will be checked annually.

Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ})

By checking Survey Report issued by Gansu water conservancy and hydropower survey and design institute /19/, it is confirmed the area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full is 138,047 m^2 through the whole monitoring period. The parameter will be checked annually.

Monitoring equipment and calibration

The meters have been calibrated periodically as per the relevant industrial standard by the qualified third party to ensure the monitoring equipments' accuracy and in good conditions. The relevant information of meters' calibration is listed as below.

Meter	Serial Number	Type	Accuracy Class	Calibration Frequency	Calibration Date
M1 (old)	36061122	SL7000	0.2s	Quarterly	20/07/2019
					19/10/2019
					18/01/2020

					17/04/2020
M1 (new)	215294377	MK6E	0.2s	Quarterly	10/05/2020
					09/08/2020
					08/11/2020
M2 (old)	36085837	SL7000	0.2s	Quarterly	20/07/2019
					19/10/2019
					18/01/2020
					17/04/2020
M2 (new)	215294356	MK6E	0.2s	Quarterly	10/05/2020
					09/08/2020
					08/11/2020
M3 M4	20080850060011 20080850060012	DTSD341	0.2s	Annually	23/10/2018
					21/10/2019
					18/10/2020
M5	215294945	0.2s	MK6E	Quarterly	20/07/2019
					19/10/2019
					18/01/2020
					17/04/2020
					16/07/2020
					15/10/2020
M6	06022100934603	0.2s	DTSD50	Annually	23/10/2018
					21/10/2019
					18/10/2020
M7	215294941	0.2s	MK6E	Quarterly	20/07/2019
					19/10/2019
					18/01/2020
					17/04/2020
					16/07/2020
					15/10/2020
M8	215294942	0.2s	MK6E	Annually	23/10/2018
					21/10/2019
					18/10/2020

M9	215294943	0.2s	MK6E	Quarterly	20/07/2019
					19/10/2019
					18/01/2020
					17/04/2020
					16/07/2020
					15/10/2020
M10	215294944	0.2s	MK6E	Annually	23/10/2018
					21/10/2019
					18/10/2020

By checking the meter change record and interviewing with the project owner during site visit, it is confirmed by the verification team that due to regular replacement, State Grid Gansu Power Company Electricity Science Research Institute Measurement and Testing Center replaced new meter for M1 and M2. The meter change time of M1 and M2 are respectively from 14:06 to 14:30 on 18/05/2020 and from 14:40 to 15:10 on 18/05/2020. The detailed information of newly replaced electricity meters are listed above.

The meters were calibrated by State Grid Gansu Power Company Electricity Science Research Institute Measurement and Testing Center. Calibration records and accreditation certificates /14//15/ have been verified by the verification team. The accuracy of meters is comply with that in the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021). By checking the industrial metering configuration standard "Technical Administrative Code of Electric Energy Metering (DL/T 448-2016)" /16/, CTI can confirm that the accuracy level of all meters meets the requirement stipulated in this standard. CTI can thus confirm that the accuracy of the meters is in line with the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) and relevant industry standard.

In the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021), it stated that the meters will be calibrated and checked annually for accuracy. By checking the calibration reports, CTI found the calibration frequency of these meters is annual, which is in line with the calibrating standard "Technical Administrative Code of Electric Energy Metering (DL/T 448-2016)" /16/. Hence, CTI can confirm that the meters' calibration frequency is in line with the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) and relevant industry standard, and the calibrations of meters are verified to be valid for the whole reporting period.

Data management and control

Gansu Zhangye Dagushan Hydropower Co., Ltd. is responsible for operation and routine maintenance of power plant under the project activity. The quality assurance and quality control procedures have been addressed in the VER project management and monitoring manual /4/, including the organization structure with the responsibilities, personnel competencies, monitoring procedures and monitoring

management. By interview with the staff /28/ and check records /4/-/6/ during on-site visit, it can be confirmed that the monitoring management system is implemented following the project management and monitoring manual.

All monitoring devices have been calibrated and maintained periodically to ensure the accuracy of measurement. Calibration records of instruments used in measurements were made available during the verification visit and found to be valid for the entire period of the verification. Competence and training records of in-plant personnel engaged in measurement of plant parameters were presented during verification and found to be in order.

By checking UNFCCC website(https://cdm.unfccc.int/Projects/DB/RWTUV1256040897.46/view?cp=1), it is confirmed by CTI that the project has been registered as CDM project activity on 09/05/2010 with reference No. 3045. By checking public information from the IREC Mechanism database of China, it is confirmed by CTI that the project has been registered under IREC Mechanism.

Furthermore, CTI checked public information from Chinese Emission Trading System, Gold Standard Registry and interviewed with project owner during site visit, it is confirmed that except CDM, VCS, IREC scheme, the project has not been participated or been rejected under any other GHG programs since validation or previous verification.

Therefore, the verification team confirmed that the project only applies CERs, VCUs, IRECs under CDM, VCS, IREC standard, and no rejection from CDM, VCS or IREC standard occurs, there are no other forms of environmental credits applied or issued for the project activity.

The emission reduction resulted from the project during this monitoring period would apply for VCUs. However, the GHG emission reductions generated from the period 22/07/2019 to 29/07/2019, 01/08/2019 to 19/09/2019, and 01/01/2020 to 30/04/2020 was not counted, since other form of credits - IREC has been applied for this period. Except the period 22/07/2019 to 29/07/2019, 01/08/2019 to 19/09/2019, and 01/01/2020 to 30/04/2020, baseline emission reductions of the remaining period in this monitoring period were counted.

The forms of credits applied or issued for the project activity is as follows:

Start Date	End Date	GHG Emission Reduction (tCO_2e)	Credit	Program
22/07/2009	08/05/2010	172,015	VCU	VCS
09/05/2010	31/03/2011	196,425	CER	CDM
01/04/2011	28/04/2012	232,859	CER	CDM
29/04/2012	31/03/2018	1,338,561	VCU	VCS
01/01/2019	21/07/2019	115,605	IREC	IREC
22/07/2019	29/07/2019	7,994	IREC	IREC
01/08/2019	19/09/2019	34,547	IREC	IREC

01/01/2020	30/04/2020	22,886	IREC	IREC

By checking the website of relevant registries, the project has not been rejected under any other GHG programs since validation or previous verification.

The project would contribute to sustainable development in as below:

- The project activity achieves obvious greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions, as grid-connected fossil fuel-fired power dominates in the Northwest Power Grid of China.

- The project is to replace grid-connected fossil fuel-fired power plants in the Northwest Power Grid of China, and thus reduce fossil fuel consumption and avoid pollutants emission, such as sulfur dioxide and dust, brought by fossil fuel combustion. Therefore, the project has obvious environmental benefit.

- The project activity creates local employment opportunity during the construction and operation period of the project activity.

The technical parameters have been verified with the nameplates /9/ as below:

Equipment	Parameter	Unit	Amount
Turbine	Units(large/small)	-	3 (2*large/1*small)
	Model(large/small)	-	HL(257)-LJ-225 HL(257)-LJ-160
	Rated Head	m	73
	Rated Flow (large/small)	m^3/s	40/21
	Rated Rotation Speed (large/small)	r/min	300/428.6
	Rated Power (large/small)	MW	27.3/13.6
	Annual operation time	h	3,094
Generator	Model (large/small)	-	SF-J26-20/4800 SF-J13-14/3400
	Rated Power	MW	26/13
	Rated Voltage	kV	10.5
	Rated Rotation Speed	r/min	300/428.6
Manufacturer	Hangzhou Resource Power Equipment Co., Ltd.		

The verification team confirmed that there is no proposed or actual change to the VCS PD for renewal of crediting period and revised monitoring plan approved by CDM EB during this monitoring period. All required equipments and procedures are available and implemented in an appropriate manner. All necessary monitoring instruments are installed. All required instruments including standby and operating procedures for the same have been implemented in an appropriate manner. The project is completely operational and the same has been confirmed on-site. Neither mistakes nor malfunction on main meters have been observed during this monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

By checking the EIA summary and conclusion provided in the registered CDM PDD and the VCS PD for renewal of crediting period, it is confirmed that hydro power is green power and the impact caused by hydro power on the surrounding ecosystem and residents, wastewater, solid waste and atmosphere etc. is very little, there would be no net harm caused due to the project activity. Also, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during the site visit. The project is renewable energy project and thus no net harm observed in air or water quality on-site.

4.2.2 Local Stakeholder Consultation

As per the registered CDM PDD, in October 2006, the local stakeholder's consultation was done through distributing a one-page questionnaire, which was designed to be easily filled in. 100 copies of questionnaire were distributed, and by the end of December 2006, 100 pieces of reply were received. 100 participants filled in the questionnaires included local residents, builders and members of the local authorities. The opinions expressed by the stakeholders were recorded and are available on request.

The survey showed that the proposed project receives strong support from the local community. 98% of the stakeholders believe the proposed project will promote local economic development and agree with the project development and construction. For the 2% stakeholders who worried about the possible negative impact on the local eco-environment, the project owner has taken effort to make them understand the little impact on the eco-environment as the EIA conclusion. All such conclusion has been verified through site visit and check registered Registered CDM PDD.

By checking the filled questionnaires from local stakeholders, it is confirmed by the verification team that communications with local stakeholders was being carried out at periodic intervals in July 2019 and May 2020 by the project owner. There are no negative comments received for the project.

Via checking questionnaires from local stakeholders and interviewing with staff from local environmental protection bureau and local residents during the site visit, it is confirmed by the verification team that during the implementation stage of this monitoring period, local authority has conducted spot checks on the implementation of the project periodically as per the request from the local governments' regulations. 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 project passed all the periodic spot checks by local government.

4.3 AFOLU-Specific Safeguards

For non-AFOLU projects, this section is not required.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

CTI confirms that appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

According to the applied methodology, the emission reductions are determined as the difference between the baseline emissions, project emissions and leakage:

$ER_y = BE_y - PE_y$

Baseline emissions

Baseline reductions in this monitoring period are determined as multiplying Quantity of net electricity generation supplied by the project plant/unit in year y ($EG_{facility,y}$) by the validated ex-ante fixed grid emission factor (EF_y).

$BE_y = EG_{facility,y} \times EF_y$

Grid emission factor (EF_y)

EF is the grid emission factor of the which has been verified ex-ante in the validation stage in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) /10/ as 0.5536 tCO_2e/MWh.

Quantity of net electricity generation supplied by the project plant/unit in year y ($EG_{facility,y}$)

$EG_{facility,y}$ is calculated by following formula:

$$EG_{facility,y} = (EG_{M1} + EG_{M2}) * (EG_{M7} + EG_{M9}) / (EG_{M5} + EG_{M7} + EG_{M9})$$

Period	MRRs						Sales Receipts	Conservative value
	EG_{M1} (MWh)	EG_{M2} (MWh)	EG_{M5} (MWh)	EG_{M7} (MWh)	EG_{M9} (MWh)	$EG_{facility,y}$ (MWh)		
22/07/2019 - 31/12/2019	132,384.268	129,008.660	130,389.754	65,623.336	78,300.710	138,702.581	138,703.056	138,702.581
01/01/2020 - 31/12/2020	200,624.666	200,415.943	174,774.610	83,714.779	144,742.835	227,214.940	227,214.942	227,214.940

*Note: The cut-off time for transaction was 24:00 of last day of every month. As per the statement from local power grid company, the amount of electricity from 22/07/2019 to 31/07/2019 has been confirmed.

The GHG emission reductions generated from the intervals from 22/07/2019 to 29/07/2019, 01/08/2019 to 19/09/2019, and 01/01/2020 to 30/04/2020 was not counted, since other form of credits - IREC has been applied for these intervals. Therefore, only baseline emission reductions of the period from 30/07/2019 - 31/07/2019, 20/09/2019 to 31/12/2019 and 01/05/2020 to 31/12/2020 was counted in this monitoring period.

Hence, the corresponding baseline emission reductions are calculated as:

Period	$EG_{facility,y}$	$EF_{grid,CM,y}$	BE_y
	MWh	tCO_2/MWh	tCO_2
30/07/2019 - 31/07/2019	377.786	0.5536	209
20/09/2019 - 31/12/2019	61,479.386	0.5536	34,035
01/05/2020 - 31/12/2020	185,874.066	0.5536	102,900
Total	247,731.238	/	137,144

*Note: As per the statement from local power grid company, the amount of electricity from 30/07/2019 to 31/07/2019, 20/09/209 to 30/09/2019 has been confirmed.

Project emissions

According to FSR and by checking Nameplate of hydropower turbine and generator during site visit, it is confirmed that the installed capacity of the project (Cap_{PJ}) is 65,000,000W. By checking Survey Report issued by Gansu water conservancy and hydropower survey and design institute /19/, it is confirmed the area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full is 138,047 m^2 through the whole monitoring period.

Thus the power density of the project is calculated as (65,000,000 – 0) / (138,047 – 0)= 471 W/m^2, greater than 10W/m^2.

Therefore, based on ACM0002, Version 20.0, the project emission (PEy) = 0 tCO_2e.

Leakages

Leakage does not need to be counted this project as per the VCS PD for renewal of crediting period.

Emission reductions

The emission reductions for this monitoring period was calculated as:

Monitoring period	GHG emission reductions or removals (tCO_2e)
22/07/2019 - 31/12/2019	34,244

01/01/2020 - 31/12/2020	102,900
Total ERs claimed (in 528 days)	**137,144**

Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in validated VCS PD

The emission reductions claimed are 137,144 tCO_2e in this monitoring period (i.e. 528 days, in which emission reduction generated from 350 days are counted). Compared with the expected emission reductions 103,590 tCO_2e (calculated as 108,030 tCO_2e/365d×350d) in the VCS PD for renewal of crediting period, the reported emission reductions in this monitoring period are 32.39% more than the expected, which is the resulted from the increased water flow in the flood season to the Heihe River.

By checking the sensitivity analysis in the VCS PD for renewal of crediting period, it is confirmed that when the electricity generation increased by 37.5%, the IRR will reach the 8% benchmark. Therefore, CTI Verification Team confirmed that the fluctuation of emission reductions in this monitoring period will not impact the additionality of the project activity.

In conclusion, CTI is able to confirm that the actual power supply and also emission reductions reported in this monitoring period are reasonable and appropriate. CTI verified the input data for calculating emission reductions and the calculating process, and confirmed the result were complete and transparent.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All necessary documentations are collected, referenced and aggregated, which is easily accessible in hard-copy or electronic format. Measurements are performed by calibrated equipment, and the key data can also be cross-checked via other sources, such as records, receipts and inventory data. No assumptions are used that have any material influence on reported emission reductions.

CTI concludes that during this monitoring period, the evidences for determination of emission reductions are sufficient and reasonable, and the calculation of emission reductions is reliable.

4.6 Non-Permanence Risk Analysis

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

5 VERIFICATION CONCLUSION

Shenzhen CTI International Certification Co., Ltd (CTI) has performed the verification of the emission reductions that have been reported for the project activity "65MW Dagushan Hydropower Project in China" in China (VCS Project ID: 653) for the period 22/07/2019 to 31/12/2020.

The verification is based on the baseline and monitoring methodology ACM0002 (Version 20.0), VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) and the monitoring report (version 01.1 dated 28/06/2021). The verification consisted of the following three phases:

i) desk review of the project design and the baseline and monitoring plan;

ii) follow-up interviews with project stakeholders;

iii) resolution of outstanding issues and the issuance of the final verification and certification report.

The project proponents are responsible for the collection, calculation and determination of the GHG data in accordance with the monitoring plan and the reporting of GHG emission reductions on the basis set out within the project monitoring report.

Our verification approach was based on the requirements as defined under the applicable VCS Version 4.1 and relevant UNFCCC requirements. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is implemented and operated as per the VCS PD for renewal of crediting period and revised monitoring plan approved by CDM EB;
- the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021) is as per the applied methodology;
- the monitoring complies with the monitoring plan contained in the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021);
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Version 4.1 and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

It is CTI's responsibility to provide an independent verification statement on the reported GHG emission reductions for the project. Based on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these, CTI planned and performed our work to obtain the information and explanations that we considered necessary to provide reasonable assurance that reported GHG emission reductions are fairly stated.

CTI does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to CTI and the engagement conditions detailed in this report. CTI cannot be held liable by any party for decisions made or not made based on this report.

In CTI's opinion the GHG emissions reductions of the "65MW Dagushan Hydropower Project in China" for the period 22/07/2019 to 31/12/2020 are fairly stated in the monitoring report (version 01.1 dated 28/06/2021). The GHG emission reductions were calculated correctly on the basis of the approved methodology ACM0002 (Version 20.0) and the VCS PD for renewal of crediting period (version 06.1 dated 03/02/2021).

CTI can confirm that the GHG emission reductions are calculated without material misstatements. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CTI confirms the following statement:

Verification period: From 22/07/2019 to 31/12/2020

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
22/07/2019 - 31/12/2019	34,244	0	0	34,244
01/01/2020 - 31/12/2020	102,900	0	0	102,900
Total	**137,144**	**0**	**0**	**137,144**

Li Ziqi

Ms. Li Ziqi

Team Leader

30/06/2021

Zhang Lei

Ms. Zhang Lei

Technical Reviewe

30/06/2021

APPENDIX A: ABBREVIATIONS

CAR	Corrective Action Request
CER	Certified Emission Reduction(s)
CL	Clarification request
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CTI	Shenzhen CTI International Certification Co., Ltd
DOE	Designated Operational Entity
EF	Emission Factor
ER	Emission Reduction
ETN	Electricity Transaction Note
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
MP	MONITORING REPORT
MR	Monitoring Report
NWPG	Northwest Power Grid of China
PD	Project Description
PP	Project Proponent
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit

APPENDIX B: REFERENCES

Documentation used to verify the information provided by the project proponents

/1/ Climate Bridge (Shanghai) Ltd.: VER/VCU Monitoring Report for 65MW Dagushan Hydropower Project in China, version 1.0 dated 21/06/2021 and version 01.1 dated 28/06/2021.

/2/ Climate Bridge (Shanghai) Ltd.: Emission reduction calculation spreadsheet for 65MW Dagushan Hydropower Project in China, version 1.0 dated 21/06/2021 and version 01.1 dated 28/06/2021.

/3/ Gansu Zhangye Dagushan Hydropower Co., Ltd. and State Grid Gansu Electric Power Company: Power Purchase Agreement for 65MW Dagushan Hydropower Project in China.

/4/ Gansu Zhangye Dagushan Hydropower Co., Ltd.: VER monitoring manual and management procedure.

/5/ Gansu Zhangye Dagushan Hydropower Co., Ltd.: Records of training for on-site staff.

/6/ Gansu Zhangye Dagushan Hydropower Co., Ltd.: Operation log sheets, from 22/07/2019 to 31/12/2020.

/7/ Gansu Zhangye Dagushan Hydropower Co., Ltd.: Monthly reading records (MMRs) of 65MW Dagushan Hydropower Project in China from 22/07/2019 to 31/12/2020.

/8/ State Grid Gansu Electric Power Company: Monthly electricity transaction notes from 22/07/2019 to 31/12/2020.

/9/ Gansu Zhangye Dagushan Hydropower Co., Ltd.: nameplate of the equipment.

/10/ Climate Bridge (Shanghai) Ltd.: VCS PD for renewal of crediting period, version 06.1 dated 03/02/2021.

/11/ Shenzhen CTI International Certification Co., Ltd (CTI): Validation Report of VCS PD for renewal of crediting period, version 01.0 dated 04/02/2021.

/12/ Revised monitoring plan approved by CDM EB on 03/03/2011.

/13/ Germanischer Lloyd Certification:Validation opinion of revised monitoring period, version 01 dated 21/11/2009.

/14/ Gansu Provincial Quality and Technical Supervision Bureau: Accreditation certificate of State Grid Gansu Electric Power Company Electric Power Research Institute Metrology Center valid till 28/09/2022.

/15/ Measurement Center of State Grid Gansu Electric Power Company: Calibration certificates for meters covering this monitoring period.

/16/ State Economic and Trade Commission: Technical administrative code of electric energy

metering (DL/T 448-2016).

/17/ Climate Bridge (Shanghai) Ltd.: the registered CDM PDD, version 05 dated 04/02/2010.

/18/ TÜV NORD CERT GmbH: the Validation Report for registered CDM PDD dated 08/03/2010.

/19/ Survey Report issued by Gansu water conservancy and hydropower survey and design institute.

/20/ Climate Bridge (Shanghai) Ltd.: VER/VCU Monitoring Report for 65MW Dagushan Hydropower Project in China of previous monitoring period, version 03 dated 13/11/2020.

/21/ LGAI Technological Center, S.A. (Applus+ Certification): Verification Report for 65MW Dagushan Hydropower Project in China of previous monitoring period, version 01.0 dated 13/11/2020.

/22/ Climate Bridge (Shanghai) Ltd.: VER/VCU Monitoring Report for 65MW Dagushan Hydropower Project in China of previous monitoring period, Version 02.1 dated 26/05/2021

/23/ Shenzhen CTI International Certification Co., Ltd (CTI): Verification Report for 65MW Dagushan Hydropower Project in China of previous monitoring period, version 02.0 dated 26/05/2021.

Methodologies, tools and other guidance

/24/ Verified Carbon Standard: VCS Standard, version 4.1.

/25/ Verified Carbon Standard: VCS Program Guide, version 4.0.

/26/ Verified Carbon Standard: Registration and Issuance Process, version 4.0.

/27/ UNFCCC EB: Approved methodology, ACM0002, Version 20.0

Persons interviewed

/28/ Mr. Li Jianmin, Plant Director, The proposed hydro power plant of Gansu Zhangye Dagushan Hydropower Co., Ltd.

Mr. Qin Xiaojun, Operation Director, Gansu Zhangye Dagushan Hydropower Co., Ltd.

Mr. Che Tianming, Operation Duty, Gansu Zhangye Dagushan Hydropower Co., Ltd.

Mr. Li Hong, Operation Duty,Gansu Zhangye Dagushan Hydropower Co., Ltd.

Mr. Wang Peng, Staff, Local Environment Protection Bureau

Ms. Zhang Zehua, Villager, Local resident

Ms. Li Guiying. Villager, Local resident

Mr. Ye Zongpei, Project manager, Climate Bridge (Shanghai) Ltd.

APPENDIX C: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Table 1: Clarification Requests

CL ID	Clarification Request	Response by Project Proponent	Verification Team Assessment
NA	NA	NA	NA

Table 2:Corrective Action Requests

CAR ID	Corrective Action Request	Response by Project Proponent	Verification Team Assessment
NA	NA	NA	NA

Table 3: Forward Action Requests

FAR ID	Forward Action Request	Response by Project Proponent	Verification Team Assessment
NA	NA	NA	NA