

VCS VERIFICATION REPORT FOR GROUPED HYDROPOWER PLANTS IN CHONGQING, YUNNAN, SICHUAN AND GUIZHOU PROVINCES, P.R. CHINA



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Summary:

China Classification Society Certification Company (CCSC), commissioned by Swiss Carbon Value Ltd., has performed the fifth periodic verification of the Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou Provinces, P.R. China (hereafter referred to as “the Project”) covering the monitoring period from 26/05/2015 to 27/03/2016, on the basis of requirements of Verified Carbon Standard (VCS) Version 3.6.

The Project involves the installation and operation of 88 run-of-river hydropower plants in Chongqing, Sichuan, Guizhou and Yunnan Provinces, People’s Republic of China. The Project is expected to export annual electricity of 807,765MWh with 450,914 MWh to the Central China Power Grid (CCPG) and 356,851MWh to the Southern China Power Grid (SCPG) respectively utilizing renewable hydro resources. The project activity achieves greenhouse gas (GHG) emissions reductions by displacing electricity from existing fossil fuel based power plants and likely capacity additions within the given grid.

The Project has been registered as a VCS project (VCS Registration No. 438) under VCS 2007.1 using approved CDM methodology AMS-I-D. “Grid connected renewable electricity generation” (Version 13.0) with the first renewable crediting period from 28/03/2006 to 27/03/2016.

The verification process includes three phases:

- 1) Desk review of documents;
- 2) On-site visit and follow-up interviews;

3) Issuance of the final verification report and opinion.

CCSC appointed a qualified verification team in accordance with internal procedures to perform the verification.

In the course of the verification, No Corrective Action Request (CAR) or Clarification Requests (CL) was raised.

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

- All operations of the 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., AMS-I-D. *"Grid connected renewable electricity generation"* (Version 13.0).
- The implementation of monitoring is in compliance with 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 1.0 dated 17/07/2017).

In conclusion, it is CCSC's opinion that the project activity "Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou Provinces, P.R. China", as described in the Monitoring Report (Version 1.0), meets all relevant requirements for VCS and all relevant host Party criteria. Hence, CCSC is able to certify that the emission reductions from the Project during the monitoring period from 26/05/2015 to 27/03/2016 amount to 531,900tCO₂e, with 330,394tCO₂e within the CCPG and 201,506tCO₂e within the SCPG, CCSC requests issuance of the equivalent VCUs.

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1 INTRODUCTION

1.1 Objective

Swiss Carbon Value Ltd. has commissioned CCSC to verify and provide a verification statement of the emission reductions of the Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou Provinces, P.R. China (hereafter referred to as “the Project”) which is located in Chongqing City, Sichuan Province, Guizhou Province and Yunnan Province, People's Republic of China for the fifth monitoring period from 26/05/2015 to 27/03/2016 following the fourth monitoring period from 26/06/2013 to 25/05/2015, on the basis of requirement of VCS Standard (Version 3.6) as well as criteria to provide for consistent project operations, monitoring and reporting.

CCSC as the validation/verification body (VVB) of the Project has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2013.

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 project activity has been implemented and operated as per the VCS project description (VCS-PD) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the 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 and in accordance with the additional requirements stated by the VCS Association (VCSA);
- c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology /7/;
- d) Evaluate the data recorded and stored as per the monitoring methodology /7/.

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/, the emission reduction calculation spreadsheet /2/, supporting documents available to the verifier and information collected through performing interviews and during the on-site assessment, VCAS's requirements publicly available, relevant rules, including the host country legislation, etc.) to be independently reviewed, the project geographical locations to be visited on-site, the related project local stakeholders to be interviewed with, and processes that are necessary to acquire objective evidence for the evaluation of the project compliance to the VCS requirements and associated interpretations.

The above verification activities are conducted according to the VCSA 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 project.

1.3 Level of Assurance

CCSC has undertaken a reasonable assurance engagement in accordance with VCS Standard (Version 3.6) /6/. 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 /1/, and supporting evidences made available to the verifier and information collected through performing interviews and during the on-site inspection.

1.4 Summary Description of the Project

The Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou Provinces, P.R. China is a grouped project under VCS 2007.1 /5/, which consists of 88¹ run-of-river hydropower stations in less-developed rural areas of south-western China. There are four sub-groups (i.e. 9 projects are located in Yunnan Province, 60 in Chongqing City, 13 in Sichuan Province and 6 in Guizhou Province), which are determined by the geographical boundary.

The electricity generated from the Project will be supplied to Central China Power Grid (CCPG) and Southern China Power Grid (SCPG), where geographic and system boundaries can be clearly identified and information on the grid and calculation of baseline emissions is published and public available according to China DNA's Guidance on China Grid Baseline Emission Factors dated on 18th July 2008 /16/.

The CCPG and SCPG are both dominated by thermal power plants as per the China Electrical Power Yearbook 2003~2007 /14/. By exporting expected annual electricity of 450,914MWh and 356,851MWh to the CCPG and SCPG respectively, the project activity achieves greenhouse gas (GHG) emissions reductions by displacing electricity from fossil fuel based power plants connected to the grid.

According to the VCS website, the Project has been registered as a VCS project (VCS Registration No. 438) on 08/06/2009 and the current fifth verification has been finalized for the monitoring period from 26/05/2015 to 27/03/2016.

During the monitoring period from 26/05/2015 to 27/03/2016, the total GHG emission reductions generated by the Project are 531,900 tCO₂e, with 330,394 tCO₂e within the CCPG and 201,506tCO₂e within the SCPG.

2 VERIFICATION PROCESS

¹ According to the registered Validation Report /4/, there were totally 98 projects within the Grouped Project in the VCS-PD /3/ of 10th June 2009. However, all retrofitted projects (i.e. project No. 17, 19 and 89) have been withdrawn from the Grouped Project during validation. There are seven hydropower plants (8_Mayuexi, 14_Lianmeng, 16_Gaodongzi, 20_Dibao, 26_Xiangyang Stage II, 43_Leyuan, 64_Banqiao Stage III) have excluded from the grouped project in a conservative manner, although no double counting would be expected. Therefore, the final project list consists of 88 individual projects.

2.1 Method and Criteria

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

CCSC verified the Project against the requirements set in VCS /5//6//8//9//10/, 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 /19/, the applied monitoring methodology /7/, the VCS monitoring report (VCS-MR) /1/ 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/ with respect to the monitoring plan and the applied methodology /7/. Particular attention was given to the sampling approach, the quality of the metering equipment including calibration requirements, 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 A of this report contains a complete list of all documents and proofs reviewed by the verification team.

2.3 Interviews

From 10/11/2016 to 12/11/2016, CCSC performed an on-site assessment at the physical site of sampled individual projects of the Project.

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

During the on-site assessment, the verification team has interviewed with key personnel from the Project owner (the project participant) and the consultancy.

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

Date: 10/11/2016 to 12/11/2016	
Interview topics	Interviewed Organizations and persons
--The status of VCS project implementation. -- Any changes of the VCS project. -- The project on-site inspection —The evidences of construction status and operation of key equipment, parameters monitoring	7.Chongqing Wanzhou Dengta Hydroelectric Plant Wang Shan, manager Huang Li, general staff Li Lin, general staff

Date: 10/11/2016 to 12/11/2016	
Interview topics	Interviewed Organizations and persons
and data processing activities, monitor equipment and calibration. -- Monitoring data. --Quality Management; organizational structure, responsibilities and competencies; Internal QA/QC Management procedures and document control. --Compliance with National Laws and Regulations.	15.Chongqing Wanzhou Wanlin Hydroelectric Plant Huang Yuan, manager Wang Mushan, general staff Jiang Shui, general staff 24.Beiya Hydroelectric Plant Wang Xia, manager Huang Ren, maintenance man Li Yifan, electrician 38.Xinqiao Hydroelectric Plant Yang Yang, manager Li Da, electrician 44.Yong'an Hydroelectric Plant Zhang Li, manager Li Yun, electrician 54.Nanmu Hydroelectric Plant Huang Xiu, manager Wang Quan, electrician Li Yiyang, maintenance man 56.Daheba Hydroelectric Plant Zhang Wen, manager Wang Zhi, electrician 68.Longqiao Hydroelectric Plant Chen Wen, manager Wang Rui, electrician 70.Xinmin Tailwater Stage II Hydroelectric Plant Fang Jiang, manager Wang Yifan, electrician Tang Wenguang, maintenance man 74.Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project Wang Dashan, manager Li Zao, electrician

Date: 10/11/2016 to 12/11/2016	
Interview topics	Interviewed Organizations and persons
	Wang Lin, maintenance man 75. Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project Duan Li, manager Wang Yilin, staff Li Xiang, maintenance man 77. Mozigou Hydroelectric Plant Yang Hao, manager Huang Kang, electrician Wang Li, maintenance man 78. Mayihe Hydroelectric Plant Li Bo, manager Li Xiangyun, electrician Chen Jiang, maintenance man 80. Toudaoshui Hydroelectric Station Yang Liang, manager Wang Hua, electrician Huang Yu, maintenance man 85. Daihuanggou Hydroelectric Plant Fang Jiangshui, manager Du Jiang, maintenance man Duan Yu, electrician 96. Yingjiang Husa River 5th Stage Hydropower Plant Li Yulin, manager Lv Jiang, maintenance man Bai Shan, electrician 97. Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station Li Shu, manager Fang Lan, electrician Wang Ren, maintenance man 98. Fugong County Lishadi Hydropower Plant Project

Date: 10/11/2016 to 12/11/2016	
Interview topics	Interviewed Organizations and persons
	Chen Yanjun, manager Fang Yun, staff Jiang Shan, staff Wulong County Small Hydropower Industry Association Hu Shihua, Chairman Zhang Lin, General Secretary Zhao Yunong, Office Clerk Yi Gao Tian Cheng (Beijing) Technology Co., Ltd. Xie Libin, General Manager
-- 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	Swiss Carbon Value Ltd. (the Consultant) Fang Qun, Project Manager

2.4 Site Inspections

The on-site assessment involved following activities,

- 1) An assessment of the implementation and operation of the project activity as per the VCS-PD /3/;
- 2) A review of information flows for generating, aggregating and reporting the monitoring parameters;
- 3) Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved monitoring plan;
- 4) A cross-check between information provided in the monitoring report /1/ and data from other sources such as operational records or similar data sources;
- 5) 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 /7/;
- 6) A review of calculations and assumptions made in determining the GHG data and emission reductions;

- 7) 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.

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 project activity meets the VCSA 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 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 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 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 no CARs or CLs that have been raised during the current fifth verification.

2.5.1 Forward Action Requests

No Forward Action Requests were raised during the current fifth verification.

2.6 Eligibility for Validation Activities

The VVB of “China Classification Society Certification Company” commissioned by the project participant is one of eligible VVBs listed on the VCS website (<http://database.v-c-s.org/china-classification-society-certification-company>), and it holds the accreditation for validation/verification for the sectoral scope: “1. Energy (renewable/non-renewable)”, to which the project activity belongs. Therefore, CCSC is eligible for the validation/verification of the project activity.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The verification team has checked the official website of other GHG Programs like CDM, GS VER, and is able to confirm that none of any individual project activities under the Grouped Project is included in any GHG programs or any other mechanisms that include GHG allowance trading. The net GHG emission reductions generated by the Grouped Project during this monitoring period have not been used for compliance under any emission trading programs or mechanisms. The Project have not sought or received any other form of GHG-related environmental credit during this monitoring period.

The Project has been registered as a VCS project, and it did not apply for any other approved or not approved GHG programs.

Therefore the Verification Team confirms that the project is eligible to participate under the VCS Program.

3.2 Methodology Deviations

No deviation from the methodology is needed to be submitted.

3.3 Project Description Deviations

Through on-site interviews and document review, the verification team confirms that there are no project description deviations according to the registered PD /3/.

3.4 Grouped Project

There is no inclusion of new project activity instances into the Grouped Project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

4.1.1 Project Implementation in accordance with the VCS PD

The proposed Grouped Project involves the installation and operation of 88 run-of-river hydropower plants in Chongqing City, Sichuan Province, Guizhou Province and Yunnan Province, People's Republic of China.

It was confirmed by site inspection of sampling projects in Chongqing City, Sichuan Province, Guizhou Province and Yunnan Province that all the individual projects were developed as run-of-river hydropower projects, consisting of water intake structure, the water conveyance system and the power house. The power generating technology, installed capacity, technical specifications of the water turbine generators and electricity delivering systems have been verified to be consistent with the validated PD /3/ by site assessment of the sampling projects.

Through document review, the verification team has verified that the project commissioning start date has been appropriately described in the monitoring report /1/ in accordance with the validated PD /3/.

Therefore, the verification team confirms that no data and/or variables presented in the monitoring report /1/ and the associated emission reduction calculations /2/ differ significantly from the ones stated in the validated PD /3/, which may lead to an increase in the emission reductions for this period in relation to the estimates in the validated PD /3/.

According to the validated PD /3/, the Project is a grouped project under VCS 2007.1 /5/, and it consists of four sub-groups (i.e. 9 projects are located in Yunnan Province, 60 in Chongqing City, 13 in Sichuan Province and 6 in Guizhou Province), which are classified by geographical boundary.

The verification team has independently carried out a sampling approach for the Grouped Project according to the guideline set out in Annex A.2.4.6 of ISO 14064-3, Clause A.2.4.6.4. Since the monitoring data of 7 individual projects (i.e. project No.1, 25, 29, 45, 76, 82, 93) are not available for verification and the project participant claimed zero emission reduction during this monitoring period, these projects are not included in the samples.

For projects located in Chongqing City, Sichuan Province, Guizhou Province and Yunnan Province, the verification team has visited the project sites by sampling method. By evaluating the potential risks (i.e. project types, installed capacity, estimated emission reductions, financial return rate and environmental impact) underlying the individual project activities, the verification team finally determined 18² sampling projects from the Grouped Project and carried out a complete verification of these 18 sampling projects as listed in the following tables.

Table 4-1 Sampling projects

Province	Number of Projects	Number of Samples Required	Sampling Project Serial No.
Sichuan	13	4	78, 77,85, 80
Chongqing	60	8	7, 15,24,38,44,54,56,68
Yunnan	9	3	96,97, 98
Guizhou	6	3	70,74,75
Total	88	18	-

The verification team has checked the total generation capacity of the sampling projects by on-site. The relevant evidence on how the GHG data were monitored and collected during the monitoring period (including monthly monitoring records, the electricity transaction

² According to the registered validation report /4/, all the retrofitted projects (i.e. project No. 17, 19 and 89) have been withdrawn by the project participants during validation process, therefore the total project amount is finally 95; And since one of the withdrawn projects (project No. 89) was also the sampled project (the previous total number of sampled projects was 19 before all three retrofitted projects were withdraw), so the total sampling project amount is finally determined as 18 projects within the Grouped Project.

receipts/electricity sales receipts, the accuracy and calibration of the electricity meters³) have been reviewed during onsite assessment.

The major technical specifications of the sampling projects have been verified during the site visit and listed in the table below.

Table 4-2 Verified Technical Specifications of the Water Turbine Generators (sampling projects)⁴

No	Project Title	Major Generating Facilities	
7	Chongqing Wanzhou Dengta Hydroelectric Plant	Capacity	0.25MW
		Hydro Turbine	HL820-WJ-60
		Generators	SFW250-10/850
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	Capacity	0.52MW
		Hydro Turbine	HLA550-WJ-50
		Generators	SFW-W260-6/650
24	Beiya Hydroelectric Plant	Capacity	0.125W
		Hydro Turbine	HL194-WJ-35
		Generators	SFW125-6/650
38	Xinqiao Hydroelectric Plant	Capacity	0.4 MW
		Hydro Turbine	XJA—W50/1×12.5
		Generators	SFW400—6/850
44	Yong'an Hydroelectric Plant	Capacity	0.63 MW
		Hydro Turbine	CJ237-W-70/1×7
		Generators	SFW-W630-6/990
54	Nanmu Hydroelectric Plant	Capacity	0.82MW
		Hydro Turbine	CD22—W—70/1×9
			CD22—W—10/1×7.8
		Generators	SFW—W500-8/990
			SFW—W320-8/850
56	Daheba Hydroelectric Plant	Capacity	1 MW
		Hydro Turbine	CJA23-W—90/1×4
		Generators	SFW—W500-6/850
68	Longqiao Hydroelectric Plant	Capacity	2×2 MW
		Hydro Turbine	HLD54-WJ-78
		Generators	SFW2000-6/1430
70	Xinmin Tailwater Stage II Hydroelectric Plant	Capacity	1.26 MW
		Hydro Turbine	HLA153-WJ-500
		Generators	SFW —W630— 6/990
74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	Capacity	6 MW
		Hydro Turbine	H4045-LJ-160
		Generators	sf3000-24/3250

³ The detailed references of each sampled project have been listed in the Appendix A of this report.

75	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	Capacity	9.5 MW
		Hydro Turbine	HLUF3913-LJ-160
			HLA551-LJ-140
		Generators	SF3500_24/3250
			SF2500-20/2800
77	Mozigou Hydroelectric Plant	Capacity	1.26 MW
		Hydro Turbine	CJ475-W-85/1*8
		Generators	SFW-W630-8/990
78	Mayihe Hydroelectric Plant	Capacity	1.26 MW
		Hydro Turbine	DL54—WJ—60
		Generators	SFW-W630-6/990
80	Toudaoshui Hydroelectric Station	Capacity	3.2 MW
		Hydro Turbine	XJE-W-60B/2×11.5
		Generators	SFW1600-6/1430
85	Daihuanggou Hydroelectric Plant	Capacity	8 MW
		Hydro Turbine	CJA237-W-110/2×9
		Generators	SFWE-K4000-8/1730
96	Yingjiang Husa River 5 th Stage Hydropower Plant	Capacity	8 MW
		Hydro Turbine	HLD46-WJ-76
		Generators	SFW4000-6/1730
97	Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station	Capacity	2×5 MW
		Hydro Turbine	HLC437-WJ-93
		Generators	SFW5000—8/2160
98	Fugong County Lishadi Hydropower Plant Project	Capacity	14 MW
		Hydro Turbine	HLA1794-WJ-100
		Generators	SFW7000-6/2150

According to the validated PD /3/ and the emission reductions calculation spreadsheet /2/, the total net electricity export to Southern China Power Grid (SCPG) is the accumulated electricity supply by the individual projects that are located in Yunnan Province (i.e. project No. 90~98) and Guizhou Province (i.e. project No. 70,71,73,74,75). The total net electricity export to Central China Power Grid (CCPG) is the accumulated electricity supply by the individual projects that are located in Chongqing City (i.e. project No. 1~69 excluding 8, 14, 16, 17, 19, 20, 26, 43,64) and Sichuan Province (i.e. project No. 76~88) and Guizhou Province (i.e. project No.72⁵). The total electricity export to SCPG and CCPG has been summarized in the emission reduction calculation spreadsheet /2/ and checked to be correctly accounted. The actual net electricity export to SCPG and CCPG is listed in the table below and compared with the estimated values in the validated PD /3/.

⁵ According to the power purchase agreement, the No.72 Dahegou Hydroelectric Plant is owned by Chongqing Feng Yuan Jin Hui Hydroelectric Development Limited Liability Company. The power is exported to CCPG by Chongqing Nanchuan power grid.

Table 4-3 Net Electricity Export to SCPG (Unit: MWh)

Year	Actual Net Electricity Export to SCPG ($EG_{Export,y}$)	Estimated values in the Validated PD
2015 (26/05/2015-25/12/2015)	190,802.901	$356,851 \times 214 / 365 = 209,222.230$
2016 26/12/2015-27/03/2016	41,710.845	$356,851 \times 93 / 365 = 90,923.679$
Total	232,513.746	300,145.909

Note: The total net electricity export to SCPG is estimated as 356,851.44 MWh/year in the validated PD /3/. The monitoring period within year 2015 covers 214 days, and the monitoring period within year 2016 covers 93 days.

Table 4-4 Net Electricity Export to CCPG (Unit: MWh)

Year	Actual Net Electricity Export to CCPG($EG_{Export,y}$)	Estimated values in the Validated PD
2015 (26/05/2015-25/12/2015)	276,439.982	$450,914 \times 214 / 365 = 264,371.496$
2016 26/12/2015-27/03/2016	75,554.124	$450,914 \times 93 / 365 = 114,890.416$
Total	351,994.106	379,261.912

Note: The total net electricity export to CCPG is estimated as 450,914 MWh/year in the validated PD /3/. The monitoring period within year 2015 covers 214 days, and the monitoring period within year 2016 covers 93 days.

From the tables above, the verification team confirms that the total net electricity exports to SCPG and CCPG are both less than the estimated values in the validated PD /3/ and therefore the team confirmed there are no changes of the Project from the validated PD /3/ that cause increase of emission reductions.

According to the information collected during on-site visit and the relevant evidence provided by project owner, CCSC can confirm that no project design change occurred during the monitoring period and the Project was implemented in accordance the validated VCS-PD /3/.

4.1.2 Compliance of monitoring with the monitoring plan

The verification team has assessed the implementation of monitoring by the 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):	$EG_{Export,y}$ The accumulated net electricity exported to the China Southern Power Grid by all the hydropower plants under the Project located in Yunnan Province and Guizhou Province in the year y
Measuring frequency:	Continuously measurement
Reporting frequency:	Monthly recorded
Is measuring and reporting frequency in accordance with the	Yes

monitoring plan and monitoring methodology? (Yes / No)	
Type of monitoring equipment:	Gateway meters at each individual project
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:	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 the electricity transaction 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 4.2 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_{Export,y} The accumulated net electricity exported to the Central China Power Grid by all the hydropower plants under the Project located in Chongqing City and Sichuan Province in the 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:	Gateway meters at each individual project
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	Yes.

PD? If the PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	
Company performing the calibration:	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 the electricity transaction receipts in line with the registered VCS-PD.
How were the values in the monitoring report verified?	The verification details have been reported in Section 4.2 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.

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 all the sampling projects in this monitoring period has been listed in Table 4-5 below. The monitoring equipment has been installed in the project activity according to registered monitoring plan. In summary, the verification team is able to verify that the accuracy the monitoring equipments were set according to the registered monitoring plan and relevant sectoral standard of China.

Table 4-5 Verified calibration information of monitoring meters (sampling projects)

Project No.	Project title	Meter Serial No.	Meter Model Number	Accuracy Class	Calibration Certificate Serial No.	Calibration Entity	Calibration Date	Calibration Valid Until
7	Chongqing Wanzhou Dengta Hydroelectric Plant	253629	DSSD 536	0.5S	032700012	Chongqing City Wanzhou Measurement Quality Testing Center	08/04/2015	07/04/2020
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	293742	DSSD 323	1.0	032700019	Chongqing City Wanzhou Measurement Quality Testing Center	13/01/2015	12/01/2018
24	Beiya Hydroelectric Plant	3016052013	DSZ188	0.2	/	Chongqing City Wulong County Power Supply Limited Company	25/02/2015	24/02/2018
38	Xinqiao Hydroelectric Plant	6016055007	DSZ188	0.5	/	Chongqing City Wulong County Power Supply Limited Company	25/02/2015	24/02/2018
44	Yong'an Hydroelectric Plant	6016252043	DSZ323	0.5	/	Chongqing City Wulong County Power Supply Limited Company	25/02/2015	24/02/2018
54	Nanmu Hydroelectric Plant	6016222343	DSSD 536	0.2	/	Chongqing City Wulong County Power Supply Limited Company	25/02/2015	24/02/2018
56	Daheba Hydroelectric Plant	088263	ZFH405	0.5	/	Chongqing City Fulin County Power Supply Limited Company	26/01/2015	25/01/2018
68	Longqiao Hydroelectric Plant	1342541	DSF 32-2F	0.5	/	Chongqing City Wulong County Power Supply Limited Company	26/01/2015	25/01/2018
70	Xinmin Tailwater Stage II Hydroelectric Plant	4011588921	DSSD 323	0.2	/	Chongqing City Wulong County Power Supply Limited Company	01/05/2015	30/04/2018
74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	148092	DSSD 51	0.5S	201406382	Xingyi City Power Supply Limited Company	23/06/2014	22/06/2019
75	Guizhou Province Xingyi City Puti 2 nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	820042	DSSD 331	0.2S	201402932	Xingyi City Power Supply Limited Company	24/02/2014	23/02/2019

77	Mozigou Hydroelectric Plant	328922	DSSD 331	1.0	20150310	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	28/03/2015	27/03/2018
78	Mayihe Hydroelectric Plant	30092	DSSD 331	1.0	201011015 20150130	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	28/08/2010 28/08/2015	27/08/2015 27/08/2018
80	Toudaoshui Hydroelectric Station	328998	DSSD 331	1.0	20150308	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	28/03/2015	27/03/2018
85	Daihuanggou Hydroelectric Plant	50003	DSSD 331	1.0	201111032 20160421	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	28/04/2011 28/04/2016	27/04/2016 27/04/2018
96	Yingjiang Husa River 5 th Stage Hydropower Plant	08000200 8788	DSSD 103F4	0.5S	2015032	Yunnan Lincang Measurement Quality Testing Center	24/03/2015	23/03/2017
97	Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station	782763	DSSD 103F4	0.2	2015031	Yunnan Lincang Measurement Quality Testing Center	24/03/2015	23/03/2017
98	Fugong County Lishadi Hydropower Plant Project	ZZ00063	DTSD 341	0.2S	2015ZXDd g-00039 2016ZXDd g-00033	Yunnan Institute of Metrology And Testing Technology	20/01/2015 20/01/2016	19/01/2016 19/01/2017

4.1.3 Remaining Issues from Previous Validation or Verification

This is the fifth verification and the verification team can confirm that there were no any remaining issues from the previous verification through checking the 4th verification report of the Project /19/.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

4.2.1 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:

- 1) **EG_{export,y}**: The accumulated net electricity exported to the Southern China Power Grid by all the hydropower plants under the Grouped Project located in Yunnan and Guizhou Provinces in the year y;
- 2) **EG_{export,y}**: The accumulated net electricity exported to the Central China Power Grid by all the hydropower plants under the Grouped Project located in Chongqing City and Sichuan Province in the year y.

According to the VCS-MR /1/ of the Project and the registered VCS-PD /3/, only the net electricity export to the grid shall be taken into account. This means that the monitoring measurement method shall exclude electricity imported from the grid by the project activity. The electricity exported (EG_{out}) and imported (EG_{in}) are both continuously monitored through bi-lateral gateway meters installed at a point which are both agreed by the grid company and the project owners. The net electricity is the difference of the electricity export and the electricity import, i.e. $EG_{Export,y} = EG_{out} - EG_{in}$. The daily and monthly monitoring records of all sampling projects have been verified during onsite assessment.

The verification team has cross-checked the input values in the emission reductions calculation spreadsheet /2/ with the electricity transaction receipts of each individual project. It was confirmed that the electricity transaction receipts can identify the electricity import from the grid and electricity export to the grid (EG_{out} and EG_{in}). The electricity transaction receipts have been the basis for the grid company and project owner to issue the electricity invoices to each other.

It was also confirmed that most of the individual projects have complete electricity transaction receipts during the monitoring period, which means that the electricity exported and imported can be directly determined through cross-check with the electricity transaction receipts available to verification team. However, for some individual projects (i.e. project No. 39, 46, 50, 62, 63, 70, 73, 78,79,80,81, 83-86,88,94-98), the electricity transaction receipts don't have imported electricity. In this case, the project proponents have conducted a conservative approach to determine the imported electricity for projects which don't have imported electricity on electricity transaction receipts. As per the ER spreadsheet /2/, a discount factor of 0.73% is applied and determined according to the highest average ratio of import electricity to export electricity of 60 individual projects which have the complete transaction receipts of electricity imported and exported during

the monitoring period. The verification team has conducted the described process and is able to confirm the selected discount factor is conservative since:

- ◆ The discount factor is selected as the highest average electricity import to export ratio, which is calculated according to the average import to export ratios over the entire monitoring period for 60 individual projects that have complete electricity import/export data. This is consistent with the individual projects which have adopted the discount factor to estimate the electricity import since the discount factor has been applied during the entire monitoring period in the emission reduction calculation spreadsheet /2/.
- ◆ The ratio of 0.73% is deemed as conservative through cross-checking with the Hydroenergy Design Code for Small Hydropower Projects (SL76-94) /18/ issued by Ministry of Water Resources of People's Republic of China, which indicates that the internal consumption for hydropower plants should be within range of 0.5%-1%. The verification team has listed the ratios of imported electricity to exported electricity of other projects in the following table for cross-check.

Table 4-6 Statistic Monitoring Results of EG_{in}/EG_{out} within the Project

EG_{in}/EG_{out}	0%~0.5%	0.5%~1.0%
Total Project Number	54	6
Percent	90%	10%

From the statistic monitoring results indicated in the table above, the verification team is able to confirm it is very unlikely the ratio of EG_{in}/EG_{out} crosses the selected discount factor within the Project considering the technical competences, operation and management experiences and hydro resources utilization are similar in the same region.

By applying the discount factor of 0.73%, the electricity imported from the grid has been conservatively determined for project No.39,46,50,62,63,70,73, 78,79,80,81, 83-86,88, 94-98.

Parameter determined ex-ante:

EF_y: The grid CO₂ emission factor of the power grid where the project connected to, i.e. SCPG and CCPG.

According to the validated PD /3/, the EF_y is ex-ante determined as 0.97350 tCO₂e/MWh for CCPG and 0.87118 tCO₂e/MWh for SCPG over the first crediting period. The emission factors used in the monitoring report have been verified against the registered VCS-PD /3/ and found them to be consistent.

4.2.2 Assessment Data and Calculation

It was verified that all the individual projects are all new run-of-river hydropower plant. Therefore, the project emission of the Grouped Project is zero (PE_y=0) under AMS-I.D Version 13.0 /7/.

The individual projects are newly-built, with no transferred from another activity or to another activity. The main generating equipment including water turbine generators are newly purchased, and the name plates have been verified during site assessment. Therefore, no leakage ($L_y=0$) needs to be considered for the project activity according to the methodology /7/.

Since the project emission and the leakage emission has been justified as zero under AMS-I.D Version 13.0 /7/, the calculation of the emission reductions simply involves the calculation of the baseline emissions.

Formula 1: $ER_y = BE_y - 0 - 0 = EG_{Export,y} \times EF_y$

Where:

ER_y : Emission reductions (Unit: tCO_2)

$EG_{Export,y}$: Net electricity supplied to the grid (Unit: MWh)

EF_y : Baseline emission factor of the SCPG (0.87118 tCO_2/MWh) and CCPG (0.97350 tCO_2/MWh), calculated ex-ante and will not be updated during the first crediting period.

BE_y : The baseline emissions (Unit: tCO_2)

The net electricity delivered to the grid ($EG_{export,y}$) is the difference between the electricity exported to the grid (EG_{out}) and the electricity imported from the grid (EG_{in}) i.e.:

Formula 2: $EG_{Export,y} = EG_{out} - EG_{in}$

Following the approach described in section 4.2.1 above, $EG_{export,y}$ was verified as below:

Table 4-7 Net Electricity Export of the Project (Unit: MWh)

Year	$EG_{Export,y}$ to SCPG (MWh)	$EG_{Export,y}$ to CCPG (MWh)
2015 (26/05/2015-25/12/2015)	190,802.901	276,439.982
2016 26/12/2015-27/03/2016	41,710.845	755,54.124
Total	232,513.746	351,994.106

The verification team has confirmed the emission reductions of each individual project have been conservatively calculated in line with above mentioned Formula 1&2 in the emission reduction calculation spreadsheet /2/. The total emission reductions within SCPG are the accumulated emission reductions achieved by the individual projects that are located in Yunnan Province (i.e. project No. 90~98) and Guizhou Province (i.e. project No. 70,71,73,74,75). The total emission reductions within CCPG are the accumulated emission reductions achieved by the individual projects that are located in Chongqing City (i.e. project No. 1~69 excluding 8, 14, 16, 17, 19, 20, 26, 43,64) and Sichuan Province (i.e. project No. 76~88) and Guizhou Province (i.e. project No. 72). The total emission reductions within SCPG and CCPG have been summarized in the emission reduction calculation spreadsheet /2/ and checked to be correctly accounted.

Table 4-8 Verified Emission Reductions within CCPG and SCPG

Year	ERs within CCPG (tCO ₂ e)	ERs within SCPG (tCO ₂ e)	ERs within CCPG and SCPG (tCO ₂ e)
2015 (26/05/2015-25/12/2015)	275,131	165,179	422,310
2016 (26/12/2015-27/03/2016)	73,263	36,327	109,590
Total	330,394	201,506	531,900

Notes: The detailed ERs of each individual project are listed in Section 5 of this report.

By cross-check the input values in the emission reductions calculation spreadsheet /2/ with the electricity transaction receipts⁶, the verification team confirms that the monitoring results as listed in the Monitoring Report /1/ and emission reductions calculation spread sheet /2/ are conservative. The verification team confirms that the applied spreadsheet formulas and connections are correct and in line with the indicated emission reduction calculation in the monitoring plan contained in the validated PD /3/ and the applied methodology /7/.

Comparison of ERs

Based on the above assessment, CCSC can conclude that the emission reduction during the monitoring period from 26/05/2015 to 27/03/2016 have been quantified correctly in accordance with the project description and applied methodology /7/, and the emission reduction during the monitoring period is verified as 531,900tCO₂e. Compared with the estimated emission reductions under the same days of 307 from 26/05/2015 to 27/03/2016 in the registered VCS-PD /3/, 630,692(=749,846*307/365) tCO₂e, the verified emission reduction is far less than the estimated value. CCSC considers the value of verified emission reduction is reasonable.

4.3 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	(i) EG_{out} ; (ii) EG_{in}
Monitoring method	The quantity of electricity supplied to the grid (EG_{out}) and electricity imported from the grid (EG_{in}) by individual projects are measured by bi-direction gateway meters.
Measuring/Reading/Recording frequency	The parameters are continuously measured and monthly recorded.
Calibration	See Table 4-5 Verified calibration information of monitoring meters

⁶ All the electricity transaction receipts of each individual project have been used for cross-check to determine the actual electricity imported and exported to the grid. The reference list of the electricity transaction receipts for sampling projects has been listed in Appendix A of this report.

frequency/ interval	(sampling projects). 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 26/05/2015 to 27/03/2016.
Data reported	Through cross checking with the electricity sale receipts and electricity transaction receipts, the monitored data can be confirmed as acceptable to calculate emission reductions. Furthermore, a conservative approach of discount factor has been applied as described in section 4.2.1 above.

In summary, 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 /1/ and ER calculation spreadsheet /2/. Key data have been cross-checked via external sources, such as electricity sale receipts and electricity transaction receipts.

4.4 Non-Permanence Risk Analysis

A central information system has been established for the Project in line with the monitoring report. The monitoring organization structure, quality assurance process and monitoring roles and responsibility have been implemented in accordance with the monitoring report /1/. The central GHG information system has integrated four functional units: projects owners, Intermediary companies, South Pole's China team and Global Quality Control and Technical Support Team, where the coordination effectiveness has been verified during site assessment. South Pole Carbon Asset Management Ltd. is responsible for gathering and managing individual projects' information and their monitoring relevant documents by using their central information control tool (i.e. PMT software).

The monitoring data and records will be archived in electronic documents and paper documents. The project owners will keep the copies of electricity generation records and sales receipts. Calibration of Meters & Metering has been implemented periodically according to DL/T448-2000 /17/. After calibrated by qualified entity, the electricity metering equipment is sealed and stamped, which has been verified during onsite assessment. It was also confirmed during the site assessment that all the staff involved in the individual projects has received periodic training on operation and maintenance of the hydropower plant.

In summary, the verification team has ensured that the quality management system for the Project is in place. The documented instructions including the responsibilities have been properly implemented and in line with the monitoring report /1/ and validated VCS-PD /3/. The internal review at a regular interval ensures the quality assurance of the monitoring procedures.

5 SAFEGUARDS

5.1 No Net Harm

N/A

5.2 Local Stakeholder Consultation

Since this is the fifth verification of the project activity, hence, local stakeholders' consultation details are not applicable in this project activity.

6 VERIFICATION CONCLUSION

CCSC has carried out the fifth periodic verification of the project "Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou Provinces, P.R. China". The verification was performed based on the requirements set by Voluntary Carbon Standard (VCS) Version 3.6 /6/, as well as criteria given to provide for consistent project operations, monitoring and reporting. This verification covers the period from 26/05/2015 to 27/03/2016 inclusive.

In the course of the verification no Corrective Action Request (CAR) or Clarification Request (CL) was raised. The verification is based on the VCS-MR /1/, the VCS-PD /3/, ER calculation spread sheet /2/ and supporting documents available to CCSC.

As the result of the verification, CCSC confirms that:

- The project activity 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 Project are in place;
- The VCS-MR /1/ and other supporting documents provided are complete in accordance with the latest applicable version of the VCS Registration & Issuance Process /10/ and in accordance with the additional requirements stated by the VCS Association (VCSA);
- The actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology i.e. AMS-I.D. Version 13.0 /7/;
- 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 26/05/2015 to 27/03/2016

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)
Year 2015 (26/05/2015-	422,310	0	0	422,310

25/12/2015)				
Year 2016 (26/12/2015- 27/03/2016)	109,590	0	0	109,590
Total	531,900	0	0	531,900

The verified emission reductions of each individual project are listed in the following table:

Project Title	Verified Emission Reductions
1. Zengfuyoujiang Hydroelectric Plant	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 0 tCO ₂ e Emission reductions: 0 tCO ₂ e Emission reductions within 2015: 0 tCO ₂ e Emission reductions within 2016: 0 tCO ₂ e
2. Jianshitan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,137 tCO ₂ e Emission reductions: 2,137 tCO ₂ e Emission reductions within 2015: 1,846 tCO ₂ e Emission reductions within 2016: 291 tCO ₂ e
3. Jinxing Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 3158 tCO ₂ e Emission reductions: 3158 tCO ₂ e Emission reductions within 2015: 2530 tCO ₂ e Emission reductions within 2016: 628 tCO ₂ e
4. Huzhong Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 9,369 tCO ₂ e Emission reductions: 9,369 tCO ₂ e Emission reductions within 2015: 7003 tCO ₂ e Emission reductions within 2016: 2366 tCO ₂ e
5. Chongqing Wanzhou Fengmu Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 645 tCO ₂ e Emission reductions: 645 tCO ₂ e Emission reductions within 2015: 467 tCO ₂ e Emission reductions within 2016: 178 tCO ₂ e
6. Chongqing	Reporting period: 2015-05-26 to 2016-03-27

Wanzhou Longdong Hydroelectric Plant	Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 377 tCO₂e Emission reductions: 377 tCO₂e Emission reductions within 2015: 313 tCO₂e Emission reductions within 2016: 64 tCO₂e
7. Chongqing Wanzhou Dengta Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 632 tCO₂e Emission reductions: 632 tCO₂e Emission reductions within 2015: 632 tCO₂e Emission reductions within 2016: 0 tCO₂e
9. Chongqing Wanzhou Xiaolong Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 812 tCO₂e Emission reductions: 812 tCO₂e Emission reductions within 2015: 671 tCO₂e Emission reductions within 2016: 141 tCO₂e
10. Chongqing Wanzhou Yihe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 298 tCO₂e Emission reductions: 298 tCO₂e Emission reductions within 2015: 298 tCO₂e Emission reductions within 2016: 0 tCO₂e
11. Chongqing Wanzhou Tiande Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 675 tCO₂e Emission reductions: 675 tCO₂e Emission reductions within 2015: 487 tCO₂e Emission reductions within 2016: 188 tCO₂e
12. Chongqing Wanzhou Puziling Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 423 tCO₂e Emission reductions: 423 tCO₂e Emission reductions within 2015: 351 tCO₂e Emission reductions within 2016: 72 tCO₂e
13. Chongqing Wanzhou Yanshan	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period:

Hydroelectric Plant	Project emissions: 0 tCO₂e Baseline emissions: 642 tCO₂e Emission reductions: 642 tCO₂e Emission reductions within 2015: 429 tCO₂e Emission reductions within 2016: 213 tCO₂e
15. Chongqing Wanzhou Wanlin Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 1,063 tCO₂e Emission reductions: 1,063 tCO₂e Emission reductions within 2015: 882 tCO₂e Emission reductions within 2016: 181 tCO₂e
18. Chongqing Wanzhou Yanjingxi Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 867 tCO₂e Emission reductions: 867 tCO₂e Emission reductions within 2015: 659 tCO₂e Emission reductions within 2016: 208 tCO₂e
21. Chongqing Wanzhou Xianfeng Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 5,725 tCO₂e Emission reductions: 5,725 tCO₂e Emission reductions within 2015: 4,290 tCO₂e Emission reductions within 2016: 1,435 tCO₂e
22. Heba Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 1010 tCO₂e Emission reductions: 1010 tCO₂e Emission reductions within 2015: 633 tCO₂e Emission reductions within 2016: 377 tCO₂e
23. Sandaoguai Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 131 tCO₂e Emission reductions: 131 tCO₂e Emission reductions within 2015: 88 tCO₂e Emission reductions within 2016: 43 tCO₂e
24. Beiya Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period:

	Project emissions: 0 tCO ₂ e Baseline emissions: 231 tCO ₂ e Emission reductions: 231 tCO ₂ e Emission reductions within 2015: 200 tCO ₂ e Emission reductions within 2016: 31 tCO ₂ e
25. Wulong Guanqiao Hydroelectric Plant	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 0 tCO ₂ e Emission reductions: 0 tCO ₂ e Emission reductions within 2015: 0 tCO ₂ e Emission reductions within 2016: 0 tCO ₂ e
27. Qingtongxi Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 454 tCO ₂ e Emission reductions: 454 tCO ₂ e Emission reductions within 2015: 278 tCO ₂ e Emission reductions within 2016: 176 tCO ₂ e
28. Heping Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 420 tCO ₂ e Emission reductions: 420 tCO ₂ e Emission reductions within 2015: 367 tCO ₂ e Emission reductions within 2016: 53 tCO ₂ e
29. Guanziya Hydroelectric Plant	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 0 tCO ₂ e Emission reductions: 0 tCO ₂ e Emission reductions within 2015: 0 tCO ₂ e Emission reductions within 2016: 0 tCO ₂ e
30. Baiyangping Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 736 tCO ₂ e Emission reductions: 736 tCO ₂ e Emission reductions within 2015: 615 tCO ₂ e Emission reductions within 2016: 121 tCO ₂ e
31. Chengmendong Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period:

	Project emissions: 0 tCO ₂ e Baseline emissions: 1,020 tCO ₂ e Emission reductions: 1,020 tCO ₂ e Emission reductions within 2015: 885 tCO ₂ e Emission reductions within 2016: 135 tCO ₂ e
32. Shuanglong Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 156 tCO ₂ e Emission reductions: 156 tCO ₂ e Emission reductions within 2015: 33 tCO ₂ e Emission reductions within 2016: 123 tCO ₂ e
33. Chushuitang Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 1,637 tCO ₂ e Emission reductions: 1,637 tCO ₂ e Emission reductions within 2015: 1,215 tCO ₂ e Emission reductions within 2016: 422 tCO ₂ e
34. Shuangqiao Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 554 tCO ₂ e Emission reductions: 554 tCO ₂ e Emission reductions within 2015: 470 tCO ₂ e Emission reductions within 2016: 84 tCO ₂ e
35. Shiqiao Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 639 tCO ₂ e Emission reductions: 639 tCO ₂ e Emission reductions within 2015: 507 tCO ₂ e Emission reductions within 2016: 132 tCO ₂ e
36. Shuanglian Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 817 tCO ₂ e Emission reductions: 817 tCO ₂ e Emission reductions within 2015: 602 tCO ₂ e Emission reductions within 2016: 215 tCO ₂ e
37. Baijia Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e

	Baseline emissions: 1,681 tCO ₂ e Emission reductions: 1,105 tCO ₂ e Emission reductions within 2015: 576 tCO ₂ e Emission reductions within 2016: 576 tCO ₂ e
38. Xinqiao Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 1,491 tCO ₂ e Emission reductions: 1,491 tCO ₂ e Emission reductions within 2015: 911 tCO ₂ e Emission reductions within 2016: 580 tCO ₂ e
39. Luchi Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 659 tCO ₂ e Emission reductions: 659 tCO ₂ e Emission reductions within 2015: 612 tCO ₂ e Emission reductions within 2016: 47 tCO ₂ e
40&48. Xiang yang Stage Xiangyang Stage III & I Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,451 tCO ₂ e Emission reductions: 2,451 tCO ₂ e Emission reductions within 2015: 2,118 tCO ₂ e Emission reductions within 2016: 333 tCO ₂ e
41. Xiangyun Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 1,253 tCO ₂ e Emission reductions: 1,253 tCO ₂ e Emission reductions within 2015: 750 tCO ₂ e Emission reductions within 2016: 503 tCO ₂ e
42. Hongshan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 1,261 tCO ₂ e Emission reductions: 1,261 tCO ₂ e Emission reductions within 2015: 1,080 tCO ₂ e Emission reductions within 2016: 181 tCO ₂ e
44. Yong'an Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 1,056 tCO ₂ e

	Emission reductions: 1,056 tCO₂e Emission reductions within 2015: 783 tCO₂e Emission reductions within 2016: 273 tCO₂e
45. Suokousi Hydroelectric Plant	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 0 tCO₂e Emission reductions: 0 tCO₂e Emission reductions within 2015: 0 tCO₂e Emission reductions within 2016: 0 tCO₂e
46. Xinli Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 1,163 tCO₂e Emission reductions: 1,163 tCO₂e Emission reductions within 2015: 915 tCO₂e Emission reductions within 2016: 248 tCO₂e
47. Caijiagou Stage III Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 2,353 tCO₂e Emission reductions: 2,353 tCO₂e Emission reductions within 2015: 1,862 tCO₂e Emission reductions within 2016: 491 tCO₂e
49. Cheqingyan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 2,599 tCO₂e Emission reductions: 2,599 tCO₂e Emission reductions within 2015: 2,319 tCO₂e Emission reductions within 2016: 280 tCO₂e
50. Lianghekou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 2,702 tCO₂e Emission reductions: 2,702 tCO₂e Emission reductions within 2015: 1,954 tCO₂e Emission reductions within 2016: 748 tCO₂e
51. Wuhe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 1,104 tCO₂e Emission reductions: 1,104 tCO₂e

	Emission reductions within 2015: 884 tCO ₂ e Emission reductions within 2016: 220 tCO ₂ e
52. Sihe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 3,198 tCO ₂ e Emission reductions: 3,198 tCO ₂ e Emission reductions within 2015: 2,342 tCO ₂ e Emission reductions within 2016: 856 tCO ₂ e
53. Shilingyan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 871 tCO ₂ e Emission reductions: 871 tCO ₂ e Emission reductions within 2015: 765 tCO ₂ e Emission reductions within 2016: 107 tCO ₂ e
54. Nanmu Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,697 tCO ₂ e Emission reductions: 2,697 tCO ₂ e Emission reductions within 2015: 1,893 tCO ₂ e Emission reductions within 2016: 804 tCO ₂ e
55. Canglong Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,345 tCO ₂ e Emission reductions: 2,345 tCO ₂ e Emission reductions within 2015: 1,683 tCO ₂ e Emission reductions within 2016: 662 tCO ₂ e
56. Daheba Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 3,838 tCO ₂ e Emission reductions: 3,838 tCO ₂ e Emission reductions within 2015: 2,776 tCO ₂ e Emission reductions within 2016: 1062 tCO ₂ e
57. Heixigou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 3,885 tCO ₂ e Emission reductions: 3,885 tCO ₂ e Emission reductions within 2015: 3,164 tCO ₂ e

	Emission reductions within 2016:	721 tCO ₂ e
58. Yanchanghe Stage III Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,795 tCO ₂ e Emission reductions: 2,795 tCO ₂ e Emission reductions within 2015: 2,585 tCO ₂ e Emission reductions within 2016: 210 tCO ₂ e	
59. Muzonghe Stage IV Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 4,810 tCO ₂ e Emission reductions: 4,810 tCO ₂ e Emission reductions within 2015: 3,949 tCO ₂ e Emission reductions within 2016: 861 tCO ₂ e	
60. Dengta Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 1,960 tCO ₂ e Emission reductions: 1,960 tCO ₂ e Emission reductions within 2015: 1,518 tCO ₂ e Emission reductions within 2016: 442 tCO ₂ e	
61. Banqiao Stage II Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 3,113 tCO ₂ e Emission reductions: 3,113 tCO ₂ e Emission reductions within 2015: 2,271 tCO ₂ e Emission reductions within 2016: 842 tCO ₂ e	
62. Shuangchahe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,518 tCO ₂ e Emission reductions: 2,518 tCO ₂ e Emission reductions within 2015: 1,799 tCO ₂ e Emission reductions within 2016: 719 tCO ₂ e	
63. Songshigou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO ₂ e Baseline emissions: 2,686 tCO ₂ e Emission reductions: 2,686 tCO ₂ e Emission reductions within 2015: 2,300 tCO ₂ e Emission reductions within 2016: 386 tCO ₂ e	

65. Shujiahe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 3,624 tCO₂e Emission reductions: 3,624 tCO₂e Emission reductions within 2015: 3,624 tCO₂e Emission reductions within 2016: 0 tCO₂e
66. Yangyan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 3,044 tCO₂e Emission reductions: 3,044 tCO₂e Emission reductions within 2015: 2,761 tCO₂e Emission reductions within 2016: 283 tCO₂e
67. Baiguo Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 7,376 tCO₂e Emission reductions: 7,376 tCO₂e Emission reductions within 2015: 7,228 tCO₂e Emission reductions within 2016: 148 tCO₂e
68. Longqiao Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 15,910 tCO₂e Emission reductions: 15,910 tCO₂e Emission reductions within 2015: 12,659 tCO₂e Emission reductions within 2016: 3,251 tCO₂e
69. Baiyang Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 9,097 tCO₂e Emission reductions: 9,097 tCO₂e Emission reductions within 2015: 8,980 tCO₂e Emission reductions within 2016: 117 tCO₂e
70. Xinmin Tailwater Stage II Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 2,855 tCO₂e Emission reductions: 2,855 tCO₂e Emission reductions within 2015: 2,349 tCO₂e Emission reductions within 2016: 506 tCO₂e

71. Dongliuhe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 3,168 tCO₂e Emission reductions: 3,168 tCO₂e Emission reductions within 2015: 2,685 tCO₂e Emission reductions within 2016: 483 tCO₂e
72. Dahegou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 5,524 tCO₂e Emission reductions: 5,524 tCO₂e Emission reductions within 2015: 4,375 tCO₂e Emission reductions within 2016: 1,149 tCO₂e
73. Xinmin Stage II Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 20,843 tCO₂e Emission reductions: 20,843 tCO₂e Emission reductions within 2015: 16,218 tCO₂e Emission reductions within 2016: 4,625 tCO₂e
74. Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 8,486 tCO₂e Emission reductions: 8,486 tCO₂e Emission reductions within 2015: 6,644 tCO₂e Emission reductions within 2016: 1,842 tCO₂e
75. Guizhou Province Xingyi City Puti 2 nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 15,203 tCO₂e Emission reductions: 15,203 tCO₂e Emission reductions within 2015: 12,132 tCO₂e Emission reductions within 2016: 3,071 tCO₂e
76. Wumaxi Stage I Hydroelectric Plant	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 0 tCO₂e Emission reductions: 0 tCO₂e Emission reductions within 2015: 0 tCO₂e Emission reductions within 2016: 0 tCO₂e

77. Mozigou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 2,826 tCO₂e Emission reductions: 2,826 tCO₂e Emission reductions within 2015: 2,135 tCO₂e Emission reductions within 2016: 691 tCO₂e
78. Mayihe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 5,073 tCO₂e Emission reductions: 5,073 tCO₂e Emission reductions within 2015: 3,721 tCO₂e Emission reductions within 2016: 1,352 tCO₂e
79. Jinyatan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 6,482 tCO₂e Emission reductions: 6,482 tCO₂e Emission reductions within 2015: 5,351 tCO₂e Emission reductions within 2016: 1,131 tCO₂e
80. Toudaoshui Hydroelectric Station	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 7,370 tCO₂e Emission reductions: 7,370 tCO₂e Emission reductions within 2015: 5,293 tCO₂e Emission reductions within 2016: 2,077 tCO₂e
81. Sanhui Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 15,742 tCO₂e Emission reductions: 15,742 tCO₂e Emission reductions within 2015: 13,155 tCO₂e Emission reductions within 2016: 2,587 tCO₂e
82. Yunwushan Hydroelectric Plant	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 0 tCO₂e Emission reductions: 0 tCO₂e Emission reductions within 2015: 0 tCO₂e Emission reductions within 2016: 0 tCO₂e
83. Gongjiagou	Reporting period: 2015-05-26 to 2016-03-27

Hydroelectric Plant	Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 29,481 tCO₂e Emission reductions: 29,481 tCO₂e Emission reductions within 2015: 21,885 tCO₂e Emission reductions within 2016: 7,596 tCO₂e
84. Chahe Stage III Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 18,032 tCO₂e Emission reductions: 18,032 tCO₂e Emission reductions within 2015: 12,388 tCO₂e Emission reductions within 2016: 5,644 tCO₂e
85. Daihuanggou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 23,187 tCO₂e Emission reductions: 23,187 tCO₂e Emission reductions within 2015: 16,206 tCO₂e Emission reductions within 2016: 6,981 tCO₂e
86. Gaoqiaohe Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 35,092 tCO₂e Emission reductions: 35,092 tCO₂e Emission reductions within 2015: 24,401 tCO₂e Emission reductions within 2016: 10,691 tCO₂e
87. Zhuyeshan Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 18,713 tCO₂e Emission reductions: 18,713 tCO₂e Emission reductions within 2015: 17,301 tCO₂e Emission reductions within 2016: 1,412 tCO₂e
88. Lianghekou Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 34,704 tCO₂e Emission reductions: 34,704 tCO₂e Emission reductions within 2015: 26,580 tCO₂e Emission reductions within 2016: 8,124 tCO₂e
90. Dabaishu Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period:

	Project emissions: 0 tCO₂e Baseline emissions: 13,370 tCO₂e Emission reductions: 13,370 tCO₂e Emission reductions within 2015: 10,610 tCO₂e Emission reductions within 2016: 2,760 tCO₂e
91&92. Dashi Stage III& II Hydroelectric Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 16,357 tCO₂e Emission reductions: 16,357 tCO₂e Emission reductions within 2015: 13,527 tCO₂e Emission reductions within 2016: 2,830 tCO₂e
93. Yunnan Midu County Taishanhe Hydropower Station	Reporting period: N/A Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 0 tCO₂e Emission reductions: 0 tCO₂e Emission reductions within 2015: 0 tCO₂e Emission reductions within 2016: 0 tCO₂e
94. Zhenyuan County Xiaojiehe Hydropower Station	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 13,923 tCO₂e Emission reductions: 13,923 tCO₂e Emission reductions within 2015: 11,532 tCO₂e Emission reductions within 2016: 2,391 tCO₂e
95. Jinghong City Chuangye Hydropower Station	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 23,208 tCO₂e Emission reductions: 23,208 tCO₂e Emission reductions within 2015: 19,222 tCO₂e Emission reductions within 2016: 3,986 tCO₂e
96. Yingjiang Husa River 5 th Stage Hydropower Plant	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 18,565 tCO₂e Emission reductions: 18,565 tCO₂e Emission reductions within 2015: 15,377 tCO₂e Emission reductions within 2016: 3,188 tCO₂e
97. Yunnan Province Jinping	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period:

County Mengqiao Village Datan Hydropower Station	Project emissions: 0 tCO₂e Baseline emissions: 24,214 tCO₂e Emission reductions: 24,214 tCO₂e Emission reductions within 2015: 20,235 tCO₂e Emission reductions within 2016: 3,979 tCO₂e
98. Fugong County Lishadi Hydropower Plant Project	Reporting period: 2015-05-26 to 2016-03-27 Verified emission in the above reporting period: Project emissions: 0 tCO₂e Baseline emissions: 41,314 tCO₂e Emission reductions: 41,314 tCO₂e Emission reductions within 2015: 34,648 tCO₂e Emission reductions within 2016: 6,666 tCO₂e

7 APPENDIX A: REFERENCE

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

Ref no.	Reference Document
/1/	South Pole Carbon Asset Management Ltd., VCS Monitoring report Version 1.0 dated 17/07/2017
/2/	South Pole Carbon Asset Management Ltd., ER calculation spreadsheet
/3/	South Pole Carbon Asset Management Ltd., registered VCS-PD dated 13/10/2009
/4/	TÜV Rheinland Japan Ltd., Registered Validation Report Version 03 dated 05/11/2009
/5/	VCS Association, Voluntary Carbon Standard 2007.1
/6/	VCS Association, Voluntary Carbon Standard Version 3.6
/7/	CDM Executive Board, AMS-I.D. Grid connected renewable electricity generation Version 13.0
/8/	VCS Association, Monitoring Report Template Form Version 3.4
/9/	VCS Board, VCS Program Guide Version 3.6
/10/	VCS Association, Registration & Issuance Process Version 3.7
/11/	International Organization for Standardization, ISO 14064-2:2006, ISO 14064-3:2006 and ISO 14065:2013 (ISO, www.iso.org).
/12/	CDM Executive Board, Tool to calculate the emission factor for an electricity system, Version 01.1
/13/	IPCC: Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual
/14/	China Electric Power Yearbook 2003~2007
/15/	China Energy Statistical Yearbook 2005~2007
/16/	Chinese DNA, 2008 Baseline Emission Factors for Regional Power Grids in China

/17/	China National Economic Trading Commission, Technical Administrative Code of Electric Energy Metering, DL/T 448-2000
/18/	Ministry of Water Resources of People's Republic of China, Hydroenergy Design Code for Small Hydropower Projects (SL76-94).
/19/	China Classification Society Certification Company, Fourth Verification Report Version 01, dated 21/09/2015

The specific project documents of the sampling projects have been reviewed during verification process as indicated below:

Document Review List for Sampling Project No. 7

- <7-01> Chongqing Wanzhou Dengta Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period
- <7-02> Chongqing Wanzhou Dengta Hydroelectric Plant, Contract of Power Combined to the Grid, 27th April 2005
- <7-03> Chongqing Wanzhou Dengta Hydroelectric Plant, Power Purchasing Agreement, 27th April 2005
- <7-04> Chongqing Wanzhou Dengta Hydroelectric Plant, Electrical Connection Scheme of Dengta Hydroelectric Plant
- <7-05> Chongqing Wanzhou Dengta Hydroelectric Plant, Monitoring Manual of Dengta Hydroelectric Plant
- <7-06> Chongqing City Wanzhou Measurement Quality Testing Centre, Calibration Certificates of Project NO.7, Valid from April 8th 2015 to 7th April 2020.
- <7-07> Chongqing Wanzhou Dengta Hydroelectric Plant, Power Records Covering this Monitoring Period
- <7-08> Chongqing Wanzhou Dengta Hydroelectric Plant, Electricity Invoice Covering this Monitoring Period
- <7-09> Cooperation Agreement between Chongqing City Wanzhou Measurement Quality Testing Centre and Chongqing Three Gorges Water Conservancy Power Limited Company
- <7-010> Business License of Chongqing City Wanzhou District Huiyin Hydroelectric Development Limited Company

Document Review List for Sampling Project No. 15

- <15-01> Chongqing Wanzhou Wanlin Hydroelectric Plant, Contract of Power Combined to the Grid, 25th December 2007
- <15-02> Chongqing Wanzhou Wanlin Hydroelectric Plant, Electrical Connection Scheme of Wanlin Hydroelectric Plant
- <15-03> Chongqing City Wanzhou Measurement Quality Testing Centre, Calibration Certificates of Project NO.15, Valid from January 13th 2015 to 12th January 2018.
- <15-04> Cooperation Agreement between Chongqing City Wanzhou Measurement Quality Testing Centre and Chongqing Three Gorges Water Conservancy Power Limited Company
- <15-05> Business License of Chongqing City Wanzhou District Wanlin Hydroelectric Plant
- <15-06> Chongqing Wanzhou Wanlin Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period

<15-07> Chongqing Wanzhou Wanlin Hydroelectric Plant, Power Records Covering this Monitoring Period

Document Review List for Sampling Project No. 24

<24-01> Beiya Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period

<24-02> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 24, Valid From 25th February 2015 to 24th February 2018

<24-03> Business License of Wulong County Beiya Dayan Control Station

<24-04> Beiya Hydroelectric Plant, Electrical Connection Scheme of Wulong County Beiya Hydroelectric Plant

Document Review List for Sampling Project No. 38

<38-01> Xinqiao Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period

<38-02> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 38, Valid From 25th February 2015 to 24th February 2018

<38-03> Xinqiao Hydroelectric Plant, Contract of Power Combined to The Grid, 31st August 2008

<38-04> Xinqiao Hydroelectric Plant, Power Purchasing Agreement, April 2016

<38-05> Xinqiao Hydroelectric Plant, Electrical Connection Scheme of Xinqiao Hydroelectric Plant

<38-06> Business License of Wulong County Boneng Electric Power Limited Company

Document Review List for Sampling Project No. 44

<44-01> Yong'an Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period

<44-02> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 44, Valid From 25th February 2015 to 24th February 2018

<44-03> Yong'an Hydroelectric Plant, Contract of Power Combined to the Grid, February 16st 2012

<44-04> Yong'an Hydroelectric Plant, Power Purchasing Agreement, 2008

<44-05> Yong'an Hydroelectric Plant, Water-Intaking Permit Certificates, Valid From 4th June 2014 to 31st December 2019

<44-06> Electrical Connection Scheme of Yong'an Hydroelectric Plant

<44-07> License Exempts Wulong County Haiheng Agriculture Limited Liability Company from Electric Power Business, April 16th 2013

<44-08> Business License of Wulong County Haiheng Agriculture Limited Liability Company

Document Review List for Sampling Project No.54

<54-01> Nanmu Hydroelectric Plant, Electricity Transaction Receipts Covering This Monitoring Period

- <54-02> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 54, Valid From 25th February 2015 to 24th February 2018
- <54-03> Nanmu Hydroelectric Plant, Contract of Power Combined to the Grid, February 16st 2012
- <54-04> Nanmu Hydroelectric Plant, Power Purchasing Agreement, 2008
- <54-05> Electrical Connection Scheme of Nanmu Hydroelectric Plant
- <54-06> Business License of Wulong County Nanmu Hydroelectric Plant

Document Review List for Sampling Project No. 56

- <56-01> Daheba Hydroelectric Plant , Electricity Transaction Receipts Covering this Monitoring Period
- <56-02> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 56, Valid From 26th January 2015 to 25th January 2018
- <56-03> Daheba Hydroelectric Plant , Power Purchasing Agreement, 2008
- <56-04> Electrical Connection Scheme of Daheba Hydroelectric Plant
- <56-05> Business License of Wulong County Dexin Hydroelectric Limited Liability Company

Document Review List for Sampling Project No. 68

- <68-01> Longqiao Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period
- <68-02> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 68, Valid From 26th January 2015 to 25th January 2018
- <68-03> Longqiao Hydroelectric Plant, Supplemental Agreement of Power Combined to the Grid, September 13rd 2005
- <68-04> Electrical Connection Scheme of Longqiao Hydroelectric Plant
- <68-05> Longqiao Hydroelectric Plant, Monitoring manual of Longqiao Hydroelectric Plant, June 3rd 2009
- <68-06> Longqiao Hydroelectric Plant, Daily and Monthly Reading Records Covering this Monitoring Period
- <68-07> Longqiao Hydroelectric Plant, Photos of the Scene

Document Review List for Sampling Project No. 70

- <70-01> Xinmin Tailwater Stage II Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period
- <70-02> Electrical Connection Scheme of Xinmin Tailwater Stage II Hydroelectric Plant
- <70-03> Chongqing City Wulong County Power Supply Co., Ltd., Calibration Illustration Letters for Meter Measurement And Calibration of Project No. 70, Valid From 1st May 2015 to 30th April 2018

Document Review List for Sampling Project No. 74

- <74-01> Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project, Electricity Transaction Receipts Covering this Monitoring Period

<74-02> Xingyi City Hydroelectric Limited Liability Company, Calibration Certificates of project NO.74, valid from June 23rd 2014 to 22nd June 2019.

<74-03> Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project, Nameplates of the Equipment

<74-04> Puti Hydropower Plant, Photos of the Scene

Document Review List for Sampling Project No. 75

<75-01> Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project, Electricity Transaction Receipts Covering This Monitoring Period

<75-02> Xingyi City Hydroelectric Limited Liability Company, Calibration Certificates of project NO.75, valid from February 24th 2014 to 22nd February 2019

<75-03> Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project, Nameplates of the Equipment

<75-04> Puti 2nd Stage (Xiniutang) Hydropower Plant, Photos of the Scene

Document Review List for Sampling Project No. 77

<77-01> Mozigou Hydroelectric Plant, Electricity Transaction Receipts Covering this Monitoring Period

<77-02> Electrical Connection Scheme of Mozigou Hydroelectric Plant

<77-03> Ya'an City Yingjing County Power Supply Co., Ltd. Measurement and Calibration Station, Calibration Certificate of Project No.77, Valid from 28th March 2015 to 27th March 2018

<77-04> Ya'an City Yingjing County Power Supply Co., Ltd, Certificate of Metrological Authorization for Special Items, valid from 5th January 2015 to 4th January 2018

<77-05> Mozigou Hydroelectric Plant, Agreement of Power Combined to the Grid, May 12th 2005

<77-06> Business License of Yingjing County Sanhe Village Mozigou Hydroelectric Plant

Document Review List for Sampling Project No. 80

<80-01> Tou dao shui Hydroelectric Station, Electricity Transaction Receipts Covering This Monitoring Period

<80-02> Electrical Connection Scheme of Tou dao Shui Hydroelectric Station

<80-03> Ya'an City Yingjing County Power Supply Co., Ltd. , Measurement and Calibration Station, Calibration Certificate of Project No.80, Valid from 28th March 2015 to 27th March 2018

<80-04> Ya'an City Yingjing County Power Supply Co.,Ltd., Certificate of Metrological Authorization for Special Items, Valid from 5th January 2015 to 4th January 2018

<80-05> Business License of Yingjing County Tou dao shui Hydroelectric Station

Document Review List for Sampling Project No. 85

<85-01> Business License of Yingjing County Daihuanggou Hydroelectric Plant

<85-02> Electrical Connection Scheme of Daihuanggou Hydroelectric Plant

<85-03> Ya'an City Yingjing County Power Supply Co.,Ltd,Certificate of Metrological Authorization for Special Items, Valid from 5th January 2015 to 4th January 2018

<85-04> Monitoring Manual of Daihuanggou Hydroelectric Plant, May 2009

- <85-05> Ya'an City Yingjing County Power Supply Co., Ltd. Measurement and Calibration Station, Calibration Certificate of Project No.85, valid from 28th April 2011 to 27th April 2016; Valid from 28th March 2016 to 27th March 2018
- <85-06> Daihuanggou Hydroelectric Plant, Nameplates of the Equipment
- <85-07> Daihuanggou Hydroelectric Plant, Photos of the Scene

Document Review List for Sampling Project No. 96

- <96-01> Yingjiang Husa River 5th Stage Hydropower Plant, Electricity Transaction Receipts Covering This Monitoring Period
- <96-02> Business License of Yingjiang Husa River 5th Stage Hydropower Plant
- <96-03> Yingjiang Husa River 5th Stage Hydropower Plant, Agreement of Power Combined to the Grid, September 27th 2006
- <96-04> Calibration Certificate of Project No.96, Valid from 24th March 2015 to 23rd March 2017
- <96-05> Electrical Connection Scheme of Yingjiang Husa River 5th Stage Hydropower Plant

Document Review List for Sampling Project No.97

- <97-01> Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station, Electricity Transaction Receipts Covering this Monitoring Period
- <97-02> Calibration Certificate of Project No.97, Valid from 24th March 2015 to 23rd March 2017
- <97-03> Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station, Power Purchasing Agreement, April 2008
- <97-04> Electrical Connection Scheme of Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station
- <97-05> Business License of Jinping Mengqiao Datan Hydropower Limited Liability Company

Document Review List for Sampling Project No. 98

- <98-01> Yunnan Institute of Metrology And Testing Technology, Calibration Certificate of Project No. 98, Valid from 20th January 2015 to 19th January 2016; Valid from 20th January 2016 to 19th January 2017
- <98-02> Fugong County Lishadi Hydropower Plant, Electricity Transaction Receipts Covering this Monitoring Period
- <98-03> Electrical Connection Scheme of Fugong County Lishadi Hydropower Plant
- <98-04> Fugong County Lishadi Hydropower Plant, Photos of the Scene

8 APPENDIX B: RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

No CARs, CLs and FARs were raised in this fifth verification.

9 APPENDIX C: CERTIFICATES OF COMPETENCE



Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 16/10/2014

Mr. Yong Hanlin

Has been qualified in accordance with *CDM Personnel Competence Requirements and Professional Competence Evaluation Instructions* (CDMI0301) as

- ☒ CDM validator for Technical Area(s): TA1.1/TA1.2/TA8.1
- ☒ CDM verifier for Technical Area(s): TA1.1/TA1.2/TA8.1
- ☐ Technical expert for Technical Area(s): _____

Huang ShiYuan
CCSC General Manager



Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 12/04/2016

Ms. Zhang Rui

Has been qualified in accordance with *CDM Personnel Competence Requirements and Professional Competence Evaluation Instructions* (CDMI0301) as

- ☒ CDM validator for Technical Area(s): TA1.2
- ☒ CDM verifier for Technical Area(s): TA1.2
- ☐ Technical expert for Technical Area(s): _____

Huang ShiYuan
CCSC General Manager



Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 27/04/2017

Mr. Zhou Wusen

Has been qualified in accordance with *CDM Personnel Competence Requirements and Professional Competence Evaluation Instructions* (CDMI0301) as

- ☒ CDM validator for Technical Area(s): TA1.2
- ☒ CDM verifier for Technical Area(s): TA1.2
- ☐ Technical expert for Technical Area(s): _____

Huang ShiYuan
CCSC General Manager