VERIFICATION REPORT OF SICHUAN FURONG COAL MINE METHANE UTILIZATION PROJECT

(VCS PROJECT ID: 1446)

Document Prepared By

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Summary:

Shenzhen CTI International Certification Co., Ltd (CTI) has performed the verification of Sichuan Furong Coal Mine Methane Utilization Project (hereinafter referred to as "the project") of Sichuan Furong Group's Limited Industrial Company with regard to the requirements of VCS Standard Ver 4.2 and ACM0008 version 04.

The verification scope is defined as a periodic independent review and ex-post determination by the Designed Operational Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: 1) Desk review of the project design and the baseline and monitoring plan; 2) on-site visit and follow-up interviews with project stakeholders; 3) Resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report and Opinion, was conducted according to CTI's internal procedures.

The findings from the desk review of the original project activity documents and the findings from interviews during the follow up visit are summarized. The verification of the Project issued 1 Corrective Action Request (CAR). The Project Participant revised the Monitoring Report. The CAR was successfully closed. The verification is based on the monitoring report, the monitoring plan as set out in the validated PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to CTI by the project proponent.

CTI confirms that the project is implemented as planned and described in the approved revised CDM PDD and VCS PD. Installed equipment being essential for generating emission reduction run reliably and are calibrated appropriately. The monitoring system is in place and the project is ready to generate GHG emission reductions. The GHG emission reduction is calculated without material misstatements.

Based on the assessments performed and the historical evidence collected, CTI concludes:

- the project is conformance with the Verified Carbon Standard (VCS) Version 4.2 and the applied CDM methodology ACM0008 version 04;
- without qualification or limitation, that the project complies with the verification criteria for projects and their GHG emission reductions or removals set out in VCS Version 4.2;
- the project implementation is in line with the approved revised CDM-PDD and project monitoring plan contained in the revised CDM PDD (version 08, 28 August 2013);
- the verification period of 01 January 2013 to 31 December 2017;
- Verified GHG emission reductions and removals in the above verification period:

Content

1 INTRODUCTION

Shenzhen CTI International Certification Co., Ltd (CTI) was commissioned by Goldchina Consultancy International Co., Ltd. to verify and certify the emissions reductions reported for the period 01 January 2013 to 31 December 2017 set out in the monitoring report of the project activity 'Sichuan Furong Coal Mine Methane Utilization Project' on the basis of requirements of VCS Standard Version 4.2 and ACM0008 version 04. This report contains the findings from the verification and a statement for the verified emission reductions.

1.1 Objective

Verification is the periodic independent review and ex post determination by the verifier of the monitored reductions in anthropogenic emissions by sources of greenhouse gases that have occurred as a result of a registered VCS project activity during the verification period. The verification report is the written assurance by the verifier that, during a specified time period, a project activity achieved the reductions in anthropogenic emissions by sources of greenhouse gases as verified.

The objective of the verification is

1. To verify that the project is implemented as stated in the approved revised CDM PDD and VCS PD.

2. To confirm that the monitoring system is in place and fully functional.

3. To assure that the project has generated verifiable emission reductions.

The verification shall consider both qualitative and quantitative information on emission reductions. Quantitative data comprises the monitoring reports submitted by the project entity to the auditor. Qualitative data comprises information on internal management controls, calculation procedures, frequency of emission reports, and review of calculations.

1.2 Scope and Criteria

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions against the VCS Version 4.2.

Based on the key project information, the verification addresses the implementation and operation of the project activity as set out in the CDM PDD and validated VCS PD, and the information and reported emissions reductions set out in the monitoring report prepared by the project participant (PP) for this monitoring period.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the PPs and is based on:

the approved VCS methodology applied in project description (PD)

the registered CDM PDD, approved revised CDM-PDD

CDM validation report and the validation opinion on the post registration changes

The Verified Carbon Standard (VCS) Version 4.2

the ISO 14064-2:2006, ISO 14064-3:2006 and ISO 14065:2007

Relevant methodological tools applicable during monitoring of the project activity

Relevant decisions, guidance and clarifications of the VCSA and any other information and references relevant to the project activity's reported emission reductions

The validation/verification body and validation/verification team meet the competence requirements set out in ISO 14065:2007.

CTI conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification does not provide any consulting or recommendations for the client.

1.3 Level of Assurance

As the VCS Version 4.2 only recognizes verified emission reductions, CTI has focused on providing a reasonable level of assurance that the emission reduction calculation methodology used is appropriate and correctly applied, and that emission reductions have been accurately monitored.

Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Audit techniques respond to the assessed risks
		Risk level	Justification	
1	Human error in the quantification of emissions (which may be more likely to occur if personnel are unfamiliar with, or not well trained regarding, emissions processes or data recording);	Low	The project owner has established the CDM monitoring and management manual and appointed the CDM technical staffs, CDM accountant staffs and CDM manager which were trained to responsible for the reading and recording of the power meters, gas flow meters, methane concentration meters, auditing of these metered data. The installation and calibration of monitoring meters was also stipulated in the manual. The CDM monitoring and management manual has also established the QA/QC procedure to ensure the veracity and validity of the monitoring procedure and monitoring records. So the risk level is low.	Depending on the monitoring period being verified, conduct increased sampling during the months when there is a greater likelihood of errors and issues with data quality control due to project participants' leave schedules.
2	Undue reliance on a poorly designed information system, which may have few effective quality controls; for example, the use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security, etc.;	Low		Depending on the monitoring period being verified, conduct increased sampling during the months when there is a greater likelihood of errors and issues with data quality control due to project participants' leave schedules.
3	Manual adjustment of otherwise automatically recorded activity levels; for example, manual input may be required if a flare meter becomes overloaded.	Low		Depending on how data is generated, processed, and reported, place greater emphasis on verifying data captured and processed manually and/or in spreadsheets versus those that are generated from an automated system.

Consideration of materiality in conducting the verification

(a) The expected achieving emission reductions of the proposed project is 215,387 tons of CO_2e (with 21 of the GWP of CH_4) per year in the registered PDD, or 282,954.3 tons of CO_2e (with 28 of the GWP of CH_4) , which is less than 300,000 tonnes of CO_2e per year. So the project is not a large project. As per VCS standard, the threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions and/or removals shall be five percent.

(b) CTI has undertaken a reasonable assurance engagement in accordance with VCS Standard (Version 4.2). 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, VCS-MR, 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

Title of Project Activity	Sichuan Furong Coal Mine Methane Utilization Project
VCS project ID.	VCS 1446
Registration Date of the Project Activity	16/04/2010
Crediting Period	16/04/2010 to 15/04/2020(fixed)
Monitoring Period Covered in this Report	01/01/2013 to 31/12/2017
Project Participants	Sichuan Furong Group's Limited Industrial Company
Location of the Project Activity	Yibin City, Sichuan Province, People's Republic of China
UNFCCC Link	https://cdm.unfccc.int/Projects/DB/DNV-CUK1244587133.21/view
VCS Link	https://registry.verra.org/app/projectDetail/VCS/1446

The project involves coal mine methane capture and utilization in power generation at captive CMM power plants. Generator sets with a combined capacity of 15MW (with model number 500GF1-2RW, installed at Baijiao and Gongquan CMM power plant, and JMS620GS generators installed at Baijiao and Shanmushu CMM power plant) have been installed to utilise CMM extracted from Furong Group's Baijiao, Shanmushu, Xunchang and Gongquan coal mines that is vented in the baseline scenario is captured by the project for power generation, while the small portion of residential and commercial usage of CMM in the baseline scenario remains unaffected by the Project and no emission reduction is claimed for this part of CMM utilization. Through the implementation of the project, it is estimated that an average annual volume of 15.6 million cubic meters of CH_4 will be combusted and destroyed, which in the baseline scenario would otherwise be released directly into the atmosphere. It is estimated average annual 43,890 MWh electricity derived from CMM will be delivered to the Furong coal mines for self-use, which will displace electricity from the CCPG. Waste heat from the power generation process is recovered and utilized for coal miners. However, no ERs will be claimed for this component as conservative.

The verification team checked the Construction completion acceptance reports issued by Sichuan Furong Group's Limited Industrial Company and was able to confirm that it is implemented by phases. The project start date is 28 November 2007, which is the four domestic generators(three of them were moved from Baijiao to Gongquan in May to June 2012) each with a 500kW capacity were commissioned in Baijiao CMM power plant. By the end of year 2012, totally generation capacity of 13.144MW have been installed, namely 6.596MW have been installed in the Baijiao coal mine area, 3.50MW in Gongquan coal mine area and 3.048MW in Shanmushu coal mine area. 6.096MW in the Baijiao coal mine area and 3.50MW in Gongquan coal mine area have been put into commission on 25/05/2009 and 15/05/2009. 3.048MW in Shanmushu coal mine area has been put into commission since 01/09/2013 and another 3.048MW gas generator has been put into commission at Shanmushu coal mine since 01/10/2015.

Location	Installed capacity	Model	Waste heat boiler
Baijiao power plant	0.5 MW (1* 0.5MW) 6.096MW (2*3.048MW)	500GF1-2RW JMS620GS-S.L	Q2/500/0.28-5.5-115/60 QC12/500-2.4-1.0-200
Shanmushu power plant	6.096MW (2*3.048MW)	JMS620GS-S.L	Q12.4/493-1.75-0.8
Gongquan power plant	3.5MW(7*0.5MW)	500GF1-2RW	Q2/500/0.28-1.0/120/60r

Sichuan Provincial Development and Reform Commission approved the installed capacity changes in the 'Approval of the installed capacity of the Sichuan Furong Coal Mine Methane Utilization Project', Chuan Fa Gai Neng Yuan Han [2013]536 dated 15 May 2013. The verification team reviewed the Chuan Fa Gai Neng Yuan Han [2013] and was able to confirm that 2 sets of 500GF1-2RW for back-up units only and the total actual capacity of the project activity will be about 15MW.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification of this project is based on the VCS Version 4.2, the validated project design document, the monitoring report, emission reduction calculation spread sheet, the VCS Project Description (VCS-PD) and other supporting documents made available to the verifier, as well as information collected through performing interviews and during the on-site assessment.

Based on CTI's review of the project a verification team was established that takes into account the coverage of the qualifications and sectoral scope(s) for verifying the ER achieved by the project activity in the relevant monitoring period for this verification. Standard auditing techniques have been adopted. The verification team performed a desk review and follow-up interviews with relevant project stakeholders. The next step was to close out findings through direct communication with the PP and finally prepared the verification report. This verification report and other supporting documents then underwent an internal quality control by the technical review department of CTI before submission to request for issuance.

The overall verification process, from contract review to verification report and opinion, was conducted according to CTI internal procedures.

Table 2.1 List of verification team and technical reviewer

Function	Name	Technical competence	Task Performance*
Team Leader & Verifier	Tong Dezheng	1.2, 8.1, 10.1	☒DR ☒SV ☒RP ☐TR
Technical Reviewer	Lin Shunrong	1.2, 14.1, 15.1	☒DR ☐SV ☐RP ☒TR
Technical Expert for TR	Jiang Shu'e	6.1, 8.1, 10.1	☒DR ☐SV ☐RP ☒TR

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

2.2 Document Review

A detailed desk review was undertaken prior to the site visit. This included the approved CDM PDD, including the monitoring plan and the corresponding validation report, the applied monitoring methodology, VCS Version 4.2, VCS PD, VCS monitoring report, relevant external data and reports, on-site documents, relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board. All monitoring procedures were discussed prior to the site visit.

A complete list of all documents reviewed is contained in Annex A.

2.3 Interviews

The verification team carried out interviews in order to confirm evidence associated with the data generation, aggregation, calculation and reporting of the monitoring parameters, to assess the information included in the project documentation, and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During verification the verification team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table 2.2and the interviewees in table 2.3.

Table 2.2 Interviewed topics

Interviewed organization	Topics
Goldchina Consultancy International Co., Ltd. (Consultant)	Project design and implementation Monitoring Plan Monitoring data and Monitoring Report GHG Calculations
Sichuan Furong Group's Limited Industrial Company	Project design and implementation

(Project proponent)	Technical equipment, including calibration and operation Monitoring Plan and management procedures Monitoring data Data uncertainty and residual risks (QA/QC)

Table 2.3 List of interviewees

Name	Title &Organization
ZHANG Hongge	CDM Director, Sichuan Furong Group's Limited Industrial Company
Chen Guiping	Engineer on duty, Sichuan Furong Group's Limited Industrial Company
WANG Lu	Operator on duty, Sichuan Furong Group's Limited Industrial Company
Liu Runsheng	Operator on duty, Sichuan Furong Group's Limited Industrial Company
Liu Long	Operator on duty, Sichuan Furong Group's Limited Industrial Company
Wang Yuejian	Operator on duty, Sichuan Furong Group's Limited Industrial Company
Li Xi	Project manager, Goldchina Consultancy International Co., Ltd.
ZHENG Zhaoning	Technical Director, Goldchina Consultancy International Co., Ltd.

2.4 Site Inspections

A site visit to the project activity was undertaken on 11 April and 12 April 2022, the below content was confirmed by the verification team:

Confirmed the implementation and operation of the project;

Resolved issues identified during document review;

Confirmed the correct procedure of implementation for operations and data collection;

Cross-checked information provided in the MR documentation with other sources (raw data);

Checked the monitoring equipment against the requirements of the PD and the approved methodology, including calibrations, maintenance, etc.;

Identified if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

2.5 Resolution of Findings

As an outcome of the verification process, the verification team can raise different types of findings. Where issues are identified relating to the monitoring, implementation and operation 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, these issues are discussed and concluded in the verification report through the following approaches:

Corrective Action Request (CAR) is issued, where:

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;

Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;

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

Issues identified in a Forward Action Request (FAR) during validation (or previous verification) to be verified have not been resolved by the project participants.

Clarification Request (CL) is issued, where:

Information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The verification process may be stopped until this information has been made available to the verifiers' satisfaction. Failure to address a CL may result in a CAR. Information or clarification provided as a result of a CL may also lead to a CAR. After satisfactory close out of CARs and CLs, the final report presents the verification activities undertaken, the issues raised, and explains how these issues have been closed out to enable the final verification conclusions to be made.

A complete list of CARs, and CLs are included in Annex B.

2.6 Forward Action Requests

Forward Action Requests (FAR) may also be raised for actions if the monitoring and reporting require attention and/or adjustment for the next verification period. These have no impact upon the completion of the current verification activity.

There is no FARs observed during the verification process.

2.7 Eligibility for Validation Activities

CTI has the accreditation for validation/verification body under a VCS-approved GHG program (see https://verra.org/project/vcs-program/validation-verification/) and holds the accreditation for the validation or verification for the sectoral scope applicable to the methodology applied to the project (https://verra.org/project/china-environmental-united-certification-center-co-ltd-CTI/). Thus CTI meets the requirements by VCS Program Guide.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The validation of project activity "Sichuan Furong Coal Mine Methane Utilization Project" was completed under the CDM criteria by the designated operational entity DNV on 09 June 2009, as per the validation report published at the UNFCCC website (http://cdm.unfccc.int/Projects/DB/DNV-CUK1244587133.21/history), the registration request of the project was reviewed by CDM EB and the revised validation report was submitted on 12 April 2010. CTI reviewed the CDM validation report and confirmed that it provides details regarding Method and Criteria, Document Review, Interviews, Site Inspections, and Resolution of findings can be found in the validation reported. This project was registered as a CDM project on 16 April 2010, with UNFCCC reference number 2677.

The project proponent (Sichuan Furong Group's Limited Industrial Company) has requested sequential registration of the project on both VCS and CDM. In accordance with the VCS Standard: VCS Version 4.2, "projects may be registered under both the VCS Program and an approved GHG program". "Project proponents shall not claim credit for the same GHG emission reduction or removal under the VCS Program and another GHG program"

3.2 Methodology Deviations

Not applicable. There are no deviations identified for the methodology applied to the project.

3.3 Project Description Deviations

The post –registration changes on the project implementation and monitoring plan were described in the revised registered PDD version 08 dated 28/08/2013. Validation opinion was prepared by ERM CVS for post registration changes dated 09 September 2013 and approved by EB on18/12/2013.

There are no deviations identified for the methodology applied to the project.

3.4 Grouped Project

Not applicable

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project involves coal mine methane capture and utilization in power generation at captive CMM power plants. Generator sets (with model number 500GF1-2RW, installed at Baijiao and Gongquan CMM power plant, and JMS620GS generators installed at Baijiao and newly built Shanmushu CMM power plant) have been installed to utilise CMM extracted from Furong Group's Baijiao, Shanmushu and Gongquan coal mines, and waste heat from the power generation process is recovered and utilized for coal miners. However, no ERs will be claimed for this component as conservative.

The project construction commenced on 31 August 2007, and the operation of the first generator was started on 28 November 2007. The project start date is 28 November 2007, which is the four domestic generators each with a 500kW capacity were commissioned in Baijiao CMM power plant (three 500GF1-2RW generators were moved from Baijiao to Gongquan in May to June 2012). By the end of year 2012, totally generation capacity of 13.144MW have been installed, namely 6.596MW have been installed in the Baijiao coal mine area, 3.50MW in Gongquan coal mine area and 3.048MW in Shanmushu coal mine area. 6.096MW in the Baijiao coal mine area and 3.50MW in Gongquan coal mine area have been put into commission on 25/05/2009 and 15/05/2009. 3.048MW in Shanmushu coal mine area has been put into commission since 01/09/2013 and another 3.048MW gas generator has been put into commission at Shanmushu coal mine since 01/10/2015. Based on the interview, and checking the nameplate of the facilities, the Project Completion acceptance Reports, the verifier confirm that the equipment and the project implementation are consistent with the approved revised PDD and previous MR. The implementation and operation status in terms of generators and waste heat boiler for each coal mine are confirmed as stated in the tables below separately.

Table 4-1 implementation status

Location	Installed capacity	Model	Waste heat boiler	Date put into operation
Baijiao power plant	0.5 MW (1* 0.5MW)	500GF1-2RW	Q2/500/0.28-5.5-115/60	28/11/2007
	6.096MW (2*3.048MW)	JMS620GS-S.L	QC12/500-2.4-1.0-200	25/05/2009
Shanmushu power plant	3.048MW	JMS620GS-S.L	Q12.4/493-1.75-0.8	01/09/2013
	3.048MW	JMS620GS-S.L	Q12.4/493-1.75-0.8	01/10/2015
Gongquan power plant	3.5MW(7*0.5MW)	500GF1-2RW	Q2/500/0.28-1.0/120/60r	15/05/2009

During the on-site visit and interview, the verification team checked the equipment that had been installed to monitor the parameters of MM_{ELEC}, GEN_y, $CONS_{ELEC,PJ}$, and PC_{CH4}, and confirmed that the installation of the monitoring equipment is consistent with the monitoring plan in the registered PDD.

The verification team review the daily and monthly electricity meters readings record for the electricity generation (GEN_y), daily and monthly electricity meters readings record for $CONS_{Elec,PJ}$. daily and monthly CMM consumption records(MM_{ELEC}), and confirmed that MM_{ELEC} is automatically calculated by the installed monitoring system with monitored data by gas flow meters and methane concentration meters, GEN_y, and $CONS_{ELEC,PJ}$ are continuously monitored by on-site electricity meters, which are in line with the monitoring plan in the registered PDD.

The verification team also has reviewed the extracted gas analysis reports (PC_{NMHC}) and confirmed that the analysis reports meet the requirements in the monitoring plan.

The verification team checked and verified the flow of information from data generation, aggregation, to recording, calculation and reporting. The verification team was able to trace the data for this parameter from its measurement source and confirms that it is correctly reported in the monitoring report and the emissions reduction spreadsheet.

Therefore, CTI was able to confirm that there are no any material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.

Although the national emission trading scheme has been launched since 16/07/2021 in China. It is confirmed that the project proponent Sichuan Furong Group's Limited Industrial Company is not included the mandatory emission control scheme and there is no emission cap enforced for the PP by checking the enforced company list in public information. The project is not a registered CCER project in China, according to the Regulation of Carbon Emission Trading, the emission reductions of the project activity are not eligible for transaction in China's ETS. Furthermore, the verification team check the letter of commitment for no-double counting submitted by the project owner, and confirm that the project owner claimed have not submitted, sought, request or received any recognition of reductions generated by the project during the verification period for which the project owner requested VCU issuance from any GHG program other than under the VCS program.

By checking the UNFCCC website (https://cdm.unfccc.int/Projects/DB/DNV-CUK1244587133.21/view), it is confirmed that no GHG emission reductions generated by the project activity has been issued as CERs during the fixed CDM crediting period. The emission reductions for the period of 16/04/2010-31/12/2012 have been issued as VCUs under VCS scheme. Therefore, it is concluded that the monitoring periods of the project is contiguous in line with the requirement of VCS standard and there is no no double counting issuance has occurred for this verified monitoring period 01/01/2013 to 31/12/2017 under both VCS and CDM programmes. Via the on-site interview, the project proponent confirmed the emission reductions for this verified period are only requested for VCUs issuance.

The verification team confirmed the project has implemented the activities that result in the SD contributions described in the monitoring report as following:

- SDG 7.1.2, Indicator Proportion of population with access to electricity.
  As verified by on-site inspection, and via checking daily and monthly electricity generation report, 129780 MWh electricity in this monitoring period and 327461.52MWh electricity till the end of this monitoring period were supplied. This contributes to the demands of the electricity of the local population.
- SDG 8.5.1, Indicator Number of jobs created.
  As verified by on-site interview and by checking employee list, the verification team confirm that 12 persons were employed in Shanmushu power plant in this monitoring period and total more than 40 persons obtained jobs after the project implementation. This contributes to the job creation.
- SDG 13, Indicator Tonnes of greenhouse gas emissions avoided or removed.
  As verified by on-site inspection, and via checking the emission reduction calculation sheet and the daily and monthly reading records, 1,516,883tCO_2e GHG emission reductions are generated by the project activity during this monitoring period. And by checking the VCS verification reports for the previous monitoring periods, it is confirmed the cumulative emission reductions are 1,951,266 tCO_2e since operation of the project activity. This contributes to achieve one of China's stated sustainable development priorities "Actively adapt to climate change and strengthen resistance capacity to climate risks in agriculture, forestry, water resources and other key fields, as well as cities, coastal regions and ecologically vulnerable areas".

- SDG 17.7.0, Indicator Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.
  As verified by on-site inspection and by checking the nameplates, the verification team confirm that the model of GE JMS620GS-S.L 3MW level gas generators were installed to combust CMM and produce electricity, which contributes to introduce advanced CMM combustion technology to China.

In summary, CTI was able to conclude that the project has been implemented as described in the project description.

4.2 Safeguards

4.2.1 No Net Harm

According to the EIA report completed by Chonqing Dehe Environmental Engineering Co., Ltd. in July 2007 and approved by Yibin EPB on August 29th 2007, the main impacts include dust & NOx air pollution, noise, wastewater and solid waste during the construction and operation of the project.

CTI can confirm via EIA report and on site inspection that the project owner take measures, such as the installation of equipment, recycle and reuse of the wastewater, to mitigate the impacts. The verification team also confirmed the implementation of the project activities result in the CMM emission reduction, creating more job opportunities, providing clean and reliable electricity, Therefore, the proposed project has no negative environmental and socio-economic impacts .

Based on the on-site inspection and interview, etc.

4.2.2 Local Stakeholder Consultation

The project proponent collected the comments for the proposed project via the meetings with local residents before the implementation of the project. All of the participants supported the construction and operation of the proposed project.

A feedback book is used to allow the local stakeholders to leave their comments at each coal mine during the project implementation. CTI check the feedback books and confirmed that the project owner did not receive any comments in the past years.

4.3 AFOLU-Specific Safeguards

Not applicable, the proposed project is not an AFOLU project,

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

As per the applied methodology ACM0008 version 04 and the approved revised PDD, the GHG emission reductions achieved by the project activity are calculated using the following equation:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y = Emissions reductions of the project activity during the year y (tCO_2e)
BE_y = Baseline emissions during the year y (tCO_2e)
PE_y = Project emissions during the year y (tCO_2e)
LE_y = Leakage emissions in year y (tCO_2e)

Baseline emissions

The project activity includes the CMM capture and sent to power plants, no other technologies such as flaring, catalytic oxidation, etc., are being applied. As per the applied methodology ACM0008 version 04 and the approved revised CDM PDD, the baseline emissions are calculated as follows:

$$BE_y = = BE_{MD,y} + BE_{MR,y} + BE_{Use,y}$$

Where:

$BE_{MD,y}$ = Baseline emissions from destruction of methane in the baseline scenario in year y (tCO_2e)
$BE_{MR,y}$ = Baseline emissions from release of methane into the atmosphere in year y that is avoided by the project activity (tCO_2e)
$BE_{Use,y}$ = Baseline emissions from the production of power and supply to gas grid replaced by the project activity in year y (tCO_2e)

Methane destruction in the baseline

In the baseline scenario, a small portion of the extracted CMM is utilized by residential users through the gas grid. Emission reduction of $BE_{MD,y}$ is not considered and methane destruction in the baseline is set to zero. This is conservative.

Methane released into the atmosphere

$$BE_{MR,y} = GWP_{CH4} \times MM_{ELEC}$$

Where:

GWP_{CH4} = Global warming potential of methane ($28tCO_2e/tCH_4$)
MM_{ELEC} = Methane measured sent to power plant (tCH_4)

A common drainage system was installed for both pre-mining CMM and post-mining CMM, So, MM_{ELEC} includes the pre-mining CMM and post-mining CMM.

The verification team review the daily and monthly CMM consumption records (MM_{ELEC}), and confirmed the value of MM_{ELEC} in the following tables.

Table 4-2 Methane measured sent to Baijiao CMM power plant

Year	MM_{ELEC} (m^3)	MM_{ELEC} (tCH_4)	$BE_{MR,y}$ (tCO_2e)
	A	$B=A*Density_{CH4}$	$C=B*GWP_{CH4}$
01/01/2013-31/01/2013	527488.2	353.42	9,896
01/02/2013-28/02/2013	408917.6	273.97	7,671
01/03/2013-31/03/2013	573300	384.11	10,755
01/04/2013-30/04/2013	481870.74	322.85	9,040
01/05/2013-31/05/2013	820919.8	550.02	15,400
01/06/2013-30/06/2013	723410.24	484.68	13,571
01/07/2013-31/07/2013	287904.96	192.90	5,401
01/08/2013-31/08/2013	205882.18	137.94	3,862
01/09/2013-30/09/2013	410177.71	274.82	7,695
01/10/2013-31/10/2013	655389.75	439.11	12,295
01/11/2013-30/11/2013	287789.07	192.82	5,399
01/12/2013-31/12/2013	511619.39	342.78	9,598
01/01/2014-31/01/2014	474551.4	317.95	8,903
01/02/2014-28/02/2014	228691.51	153.22	4,290
01/03/2014-31/03/2014	560636.65	375.63	10,518
01/04/2014-30/04/2014	854872.48	572.76	16,037
01/05/2014-31/05/2014	751917.45	503.78	14,106
01/06/2014-30/06/2014	257292.07	172.39	4,827
01/07/2014-31/07/2014	725947.96	486.39	13,619
01/08/2014-31/08/2014	533732.53	357.60	10,013
01/09/2014-30/09/2014	226072.04	151.47	4,241
01/10/2014-31/10/2014	546433.39	366.11	10,251

01/11/2014-30/11/2014	632459.54	423.75	11,865
01/12/2014-31/12/2014	564908.83	378.49	10,598
01/01/2015-31/01/2015	394713.64	264.46	7,405
01/02/2015-28/02/2015	272191.01	182.37	5,106
01/03/2015-31/03/2015	480358.05	321.84	9,012
01/04/2015-30/04/2015	693053.79	464.35	13,002
01/05/2015-31/05/2015	428648.85	287.19	8,041
01/06/2015-30/06/2015	694579.6	465.37	13,030
01/07/2015-31/07/2015	676902.73	453.52	12,699
01/08/2015-31/08/2015	598785.74	401.19	11,233
01/09/2015-30/09/2015	463532.59	310.57	8,696
01/10/2015-31/10/2015	496339.65	332.55	9,311
01/11/2015-30/11/2015	507774.27	340.21	9,526
01/12/2015-31/12/2015	449818.19	301.38	8,439
01/01/2016-31/01/2016	434537.44	291.14	8,152
01/02/2016-29/02/2016	721934.41	483.70	13,543
01/03/2016-31/03/2016	480819.57	322.15	9,020
01/04/2016-30/04/2016	760129.56	509.29	14,260
01/05/2016-31/05/2016	325768.83	218.27	6,111
01/06/2016-30/06/2016	607865.73	407.27	11,404
01/07/2016-31/07/2016	396617.91	265.73	7,441
01/08/2016-31/08/2016	726056.16	486.46	13,621
01/09/2016-30/09/2016	657680.26	440.65	12,338
01/10/2016-31/10/2016	581029.81	389.29	10,900
01/11/2016-30/11/2016	285089.89	191.01	5,348
01/12/2016-31/12/2016	711498.66	476.70	13,348
01/01/2017-31/01/2017	592724.66	397.13	11,120

01/02/2017-28/02/2017	488570.55	327.34	9,166
01/03/2017-31/03/2017	320596.68	214.80	6,014
01/04/2017-30/04/2017	856069	573.57	16,060
01/05/2017-31/05/2017	618637.44	414.49	11,606
01/06/2017-30/06/2017	411864.61	275.95	7,727
01/07/2017-31/07/2017	737851.28	494.36	13,842
01/08/2017-31/08/2017	555097.33	371.92	10,414
01/09/2017-30/09/2017	449160.11	300.94	8,426
01/10/2017-31/10/2017	659964.18	442.18	12,381
01/11/2017-30/11/2017	673663.46	451.35	12,638
01/12/2017-31/12/2017	433893.75	290.71	8,140
Total	31896004.88	21370.32	598369

Table 4-3 Methane measured sent to Gongquan CMM power plant

Year	MM_{ELEC} (m^3)	MM_{ELEC} (tCH_4)	$BE_{MR,y}$ (tCO_2e)
	A	B=A*Density$_{CH4}$	C=B*GWP$_{CH4}$
01/01/2013-31/01/2013	334687.9	224.24	6,279
01/02/2013-28/02/2013	381773.18	255.79	7,162
01/03/2013-31/03/2013	302244.63	202.50	5,670
01/04/2013-30/04/2013	383461.91	256.92	7,194
01/05/2013-31/05/2013	330159.53	221.21	6,194
01/06/2013-30/06/2013	534321.1	358.00	10,024
01/07/2013-31/07/2013	522990.14	350.40	9,811
01/08/2013-31/08/2013	544400.78	364.75	10,213
01/09/2013-30/09/2013	248555.36	166.53	4,663
01/10/2013-31/10/2013	512422.54	343.32	9,613

01/11/2013-30/11/2013	449636.24	301.26	8,435
01/12/2013-31/12/2013	381199.7	255.40	7,151
01/01/2014-31/01/2014	433018.59	290.12	8,123
01/02/2014-28/02/2014	314938.02	211.01	5,908
01/03/2014-31/03/2014	214085.22	143.44	4,016
01/04/2014-30/04/2014	393370.06	263.56	7,380
01/05/2014-31/05/2014	555322.22	372.07	10,418
01/06/2014-30/06/2014	437108.31	292.86	8,200
01/07/2014-31/07/2014	366394.79	245.48	6,874
01/08/2014-31/08/2014	508628.23	340.78	9,542
01/09/2014-30/09/2014	268105.98	179.63	5,030
01/10/2014-31/10/2014	404322.26	270.90	7,585
01/11/2014-30/11/2014	567077.11	379.94	10,638
01/12/2014-31/12/2014	321722	215.55	6,036
01/01/2015-31/01/2015	402024.31	269.36	7,542
01/02/2015-28/02/2015	364437.4	244.17	6,837
01/03/2015-31/03/2015	464214.2	311.02	8,709
01/04/2015-30/04/2015	302577.15	202.73	5,676
01/05/2015-31/05/2015	282867.8	189.52	5,307
01/06/2015-30/06/2015	346094.83	231.88	6,493
01/07/2015-31/07/2015	275464.05	184.56	5,168
01/08/2015-31/08/2015	308488.97	206.69	5,787
01/09/2015-30/09/2015	350550.11	234.87	6,576
01/10/2015-31/10/2015	479067.33	320.98	8,987
01/11/2015-30/11/2015	457709.76	306.67	8,587
01/12/2015-31/12/2015	383131.3	256.70	7,188
01/01/2016-31/01/2016	260295.81	174.40	4,883

01/02/2016-29/02/2016	328860.43	220.34	6,169
01/03/2016-31/03/2016	326038.66	218.45	6,116
01/04/2016-30/04/2016	415303.45	278.25	7,791
01/05/2016-31/05/2016	386838.83	259.18	7,257
01/06/2016-30/06/2016	344743.62	230.98	6,467
01/07/2016-31/07/2016	421391.5	282.33	7,905
01/08/2016-31/08/2016	442559.52	296.51	8,302
01/09/2016-30/09/2016	490546.08	328.67	9,203
01/10/2016-31/10/2016	381856.07	255.84	7,164
01/11/2016-30/11/2016	316017.23	211.73	5,928
01/12/2016-31/12/2016	419158.07	280.84	7,863
01/01/2017-31/01/2017	497615.79	333.40	9,335
01/02/2017-28/02/2017	430972.98	288.75	8,085
01/03/2017-31/03/2017	286291.46	191.82	5,371
01/04/2017-30/04/2017	355503.03	238.19	6,669
01/05/2017-31/05/2017	376899.59	252.52	7,071
01/06/2017-30/06/2017	263415.94	176.49	4,942
01/07/2017-31/07/2017	459345.87	307.76	8,617
01/08/2017-31/08/2017	423768.35	283.92	7,950
01/09/2017-30/09/2017	422715.14	283.22	7,930
01/10/2017-31/10/2017	333827.19	223.66	6,263
01/11/2017-30/11/2017	410123.54	274.78	7,694
01/12/2017-31/12/2017	344852.23	231.05	6,469
Total	23265513.39	15587.89	436461

Table 4-4 Methane sent to Shanmushu CMM power plant

Year	MM_{ELEC} (m^3)	MM_{ELEC} (tCH_4)	$BE_{MR,y}$ (tCO_2e)

	A	B=A*Density$_{CH4}$	C=B*GWP$_{CH4}$
01/01/2013-31/01/2013	0	0.00	0
01/02/2013-28/02/2013	0	0.00	0
01/03/2013-31/03/2013	0	0.00	0
01/04/2013-30/04/2013	0	0.00	0
01/05/2013-31/05/2013	0	0.00	0
01/06/2013-30/06/2013	0	0.00	0
01/07/2013-31/07/2013	0	0.00	0
01/08/2013-31/08/2013	0	0.00	0
01/09/2013-30/09/2013	175471.7	117.57	3,292
01/10/2013-31/10/2013	154046.75	103.21	2,890
01/11/2013-30/11/2013	265834.98	178.11	4,987
01/12/2013-31/12/2013	252469.73	169.15	4,736
01/01/2014-31/01/2014	288341.31	193.19	5,409
01/02/2014-28/02/2014	338642.64	226.89	6,353
01/03/2014-31/03/2014	278338.5	186.49	5,222
01/04/2014-30/04/2014	375832.16	251.81	7,051
01/05/2014-31/05/2014	312064.21	209.08	5,854
01/06/2014-30/06/2014	282799.21	189.48	5,305
01/07/2014-31/07/2014	378738.38	253.75	7,105
01/08/2014-31/08/2014	247620.39	165.91	4,645
01/09/2014-30/09/2014	231264.43	154.95	4,339
01/10/2014-31/10/2014	232818.92	155.99	4,368
01/11/2014-30/11/2014	275820.9	184.80	5,174
01/12/2014-31/12/2014	241368.63	161.72	4,528
01/01/2015-31/01/2015	293967.9	196.96	5,515
01/02/2015-28/02/2015	288290.62	193.15	5,408

01/03/2015-31/03/2015	380428.05	254.89	7,137
01/04/2015-30/04/2015	339470.57	227.45	6,368
01/05/2015-31/05/2015	271292.59	181.77	5,089
01/06/2015-30/06/2015	220450.58	147.70	4,136
01/07/2015-31/07/2015	353832.72	237.07	6,638
01/08/2015-31/08/2015	281768.52	188.78	5,286
01/09/2015-30/09/2015	350723.74	234.98	6,580
01/10/2015-31/10/2015	473815.83	317.46	8,889
01/11/2015-30/11/2015	543683.47	364.27	10,200
01/12/2015-31/12/2015	575347.79	385.48	10,794
01/01/2016-31/01/2016	547654.18	366.93	10,274
01/02/2016-29/02/2016	527952.69	353.73	9,904
01/03/2016-31/03/2016	651264.43	436.35	12,218
01/04/2016-30/04/2016	510143.62	341.80	9,570
01/05/2016-31/05/2016	541807.94	363.01	10,164
01/06/2016-30/06/2016	421520.7	282.42	7,908
01/07/2016-31/07/2016	338727.12	226.95	6,355
01/08/2016-31/08/2016	435798.37	291.98	8,176
01/09/2016-30/09/2016	406077.16	272.07	7,618
01/10/2016-31/10/2016	807659.81	541.13	15,152
01/11/2016-30/11/2016	413123.06	276.79	7,750
01/12/2016-31/12/2016	527851.31	353.66	9,902
01/01/2017-31/01/2017	693725.71	464.80	13,014
01/02/2017-28/02/2017	605153.48	405.45	11,353
01/03/2017-31/03/2017	583863.7	391.19	10,953
01/04/2017-30/04/2017	222545.76	149.11	4,175
01/05/2017-31/05/2017	251303.86	168.37	4,714

01/06/2017-30/06/2017	531974.09	356.42	9,980
01/07/2017-31/07/2017	495477.33	331.97	9,295
01/08/2017-31/08/2017	699234.02	468.49	13,118
01/09/2017-30/09/2017	558011.83	373.87	10,468
01/10/2017-31/10/2017	419695.86	281.20	7,873
01/11/2017-30/11/2017	680681.5	456.06	12,770
01/12/2017-31/12/2017	572897.78	383.84	10,748
Total	21148690.53	14169.62	396749

Emissions from power and heat generation replaced by the project

$BE_{use,y} = GEN_y \times CEF_{ELEC}$

In the baseline scenario the coal mine consumed electricity from both the on-site captive plant and the CCPG, thus the combined emission factor should be applied, however due to the fact that on-site captive plant was closed as per the local government requirements, only considering the electricity from the CCPG is displaced. So the CEF_{ELEC} is the same as CCPG emissions factor. CTI checked the approved revised CDM PDD and the Validation opinion prepared by ERM CVS for post registration changes dated 09 September 2013, and confirmed that it is conservative. Therefore the CEF_{ELEC} 0.9745 tCO_2/MWh is applied in the emission reduction calculations.

The verification team review the daily and monthly electricity meters readings record for the electricity generation and confirmed the values of GEN_y in the following tables.

Table 4-5 Emissions from electricity displaced by Baijiao CMM power plant

Year	GEN_y (MWh)	$BE_{use,y}$ (tCO_2e)
	D	$E=D* CEF_{ELEC}$
01/01/2013-31/01/2013	2032.896	1,981
01/02/2013-28/02/2013	1542.528	1,503
01/03/2013-31/03/2013	1910.400	1,862
01/04/2013-30/04/2013	1891.008	1,843
01/05/2013-31/05/2013	2702.592	2,634
01/06/2013-30/06/2013	2812.608	2,741

01/07/2013-31/07/2013	965.472	941
01/08/2013-31/08/2013	687.072	670
01/09/2013-30/09/2013	1572.672	1,533
01/10/2013-31/10/2013	2130.816	2,076
01/11/2013-30/11/2013	1123.008	1,094
01/12/2013-31/12/2013	1689.600	1,647
01/01/2014-31/01/2014	1677.696	1,635
01/02/2014-28/02/2014	865.248	843
01/03/2014-31/03/2014	1919.232	1,870
01/04/2014-30/04/2014	2784.480	2,713
01/05/2014-31/05/2014	2643.648	2,576
01/06/2014-30/06/2014	1008.672	983
01/07/2014-31/07/2014	2342.400	2,283
01/08/2014-31/08/2014	1970.880	1,921
01/09/2014-30/09/2014	799.968	780
01/10/2014-31/10/2014	2033.856	1,982
01/11/2014-30/11/2014	2421.120	2,359
01/12/2014-31/12/2014	1824.768	1,778
01/01/2015-31/01/2015	1426.272	1,390
01/02/2015-28/02/2015	924.384	901
01/03/2015-31/03/2015	1579.392	1,539
01/04/2015-30/04/2015	2710.560	2,641
01/05/2015-31/05/2015	1453.248	1,416
01/06/2015-30/06/2015	2631.456	2,564
01/07/2015-31/07/2015	2628.960	2,562
01/08/2015-31/08/2015	2239.968	2,183
01/09/2015-30/09/2015	1812.000	1,766

01/10/2015-31/10/2015	1930.656	1,881
01/11/2015-30/11/2015	1744.032	1,700
01/12/2015-31/12/2015	1523.136	1,484
01/01/2016-31/01/2016	1554.720	1,515
01/02/2016-29/02/2016	2351.616	2,292
01/03/2016-31/03/2016	1615.680	1,574
01/04/2016-30/04/2016	2714.496	2,645
01/05/2016-31/05/2016	1199.040	1,168
01/06/2016-30/06/2016	2319.648	2,260
01/07/2016-31/07/2016	1429.632	1,393
01/08/2016-31/08/2016	2376.864	2,316
01/09/2016-30/09/2016	2141.472	2,087
01/10/2016-31/10/2016	2018.112	1,967
01/11/2016-30/11/2016	1024.032	998
01/12/2016-31/12/2016	2310.144	2,251
01/01/2017-31/01/2017	2209.632	2,153
01/02/2017-28/02/2017	1792.896	1,747
01/03/2017-31/03/2017	1104.672	1,077
01/04/2017-30/04/2017	2766.816	2,696
01/05/2017-31/05/2017	2009.472	1,958
01/06/2017-30/06/2017	1541.664	1,502
01/07/2017-31/07/2017	2675.712	2,607
01/08/2017-31/08/2017	1888.128	1,840
01/09/2017-30/09/2017	1641.696	1,600
01/10/2017-31/10/2017	2254.752	2,197
01/11/2017-30/11/2017	2310.144	2,251
01/12/2017-31/12/2017	1481.952	1,444

Total	112689.696	109816

Table 4-6 Emissions from electricity displaced by Gongquan CMM power plant

Year	GEN_y (MWh)	$BE_{use,y}$ (tCO_2e)
	D	$E=D* CEF_{ELEC}$
01/01/2013-31/01/2013	891.036	868
01/02/2013-28/02/2013	906.228	883
01/03/2013-31/03/2013	782.604	763
01/04/2013-30/04/2013	925.524	902
01/05/2013-31/05/2013	764.568	745
01/06/2013-30/06/2013	1105.236	1,077
01/07/2013-31/07/2013	1347.768	1,313
01/08/2013-31/08/2013	1286.748	1,254
01/09/2013-30/09/2013	657.108	640
01/10/2013-31/10/2013	1328.976	1,295
01/11/2013-30/11/2013	1213.668	1,183
01/12/2013-31/12/2013	1058.868	1,032
01/01/2014-31/01/2014	1074.672	1,047
01/02/2014-28/02/2014	928.188	905
01/03/2014-31/03/2014	572.292	558
01/04/2014-30/04/2014	992.34	967
01/05/2014-31/05/2014	1234.512	1,203
01/06/2014-30/06/2014	1118.16	1,090
01/07/2014-31/07/2014	937.476	914
01/08/2014-31/08/2014	1297.404	1,264
01/09/2014-30/09/2014	763.74	744
01/10/2014-31/10/2014	1087.056	1,059

01/11/2014-30/11/2014	1304.784	1,272
01/12/2014-31/12/2014	892.116	869
01/01/2015-31/01/2015	974.376	950
01/02/2015-28/02/2015	871.92	850
01/03/2015-31/03/2015	1235.736	1,204
01/04/2015-30/04/2015	854.82	833
01/05/2015-31/05/2015	796.644	776
01/06/2015-30/06/2015	934.56	911
01/07/2015-31/07/2015	789.876	770
01/08/2015-31/08/2015	946.908	923
01/09/2015-30/09/2015	985.896	961
01/10/2015-31/10/2015	1106.82	1,079
01/11/2015-30/11/2015	1076.004	1,049
01/12/2015-31/12/2015	879.012	857
01/01/2016-31/01/2016	764.928	745
01/02/2016-29/02/2016	927.648	904
01/03/2016-31/03/2016	912.96	890
01/04/2016-30/04/2016	1101.96	1,074
01/05/2016-31/05/2016	949.824	926
01/06/2016-30/06/2016	777.996	758
01/07/2016-31/07/2016	1074.852	1,047
01/08/2016-31/08/2016	1155.528	1,126
01/09/2016-30/09/2016	1202.112	1,171
01/10/2016-31/10/2016	992.268	967
01/11/2016-30/11/2016	873.216	851
01/12/2016-31/12/2016	1098.504	1,070
01/01/2017-31/01/2017	1304.136	1,271

01/02/2017-28/02/2017	1233.972	1,203
01/03/2017-31/03/2017	740.772	722
01/04/2017-30/04/2017	846.54	825
01/05/2017-31/05/2017	991.116	966
01/06/2017-30/06/2017	648.972	632
01/07/2017-31/07/2017	1168.524	1,139
01/08/2017-31/08/2017	1052.748	1,026
01/09/2017-30/09/2017	1112.364	1,084
01/10/2017-31/10/2017	880.308	858
01/11/2017-30/11/2017	1034.676	1,008
01/12/2017-31/12/2017	982.224	957
Total	59751.792	58228

Table 4-7 Emissions from electricity displaced by Shanmushu CMM power plant

Year	GEN_y (MWh)	$BE_{use,y}$ (tCO_2e)
	D	$E=D* CEF_{ELEC}$
01/01/2013-31/01/2013	0.000	-
01/02/2013-28/02/2013	0.000	-
01/03/2013-31/03/2013	0.000	-
01/04/2013-30/04/2013	0.000	-
01/05/2013-31/05/2013	0.000	-
01/06/2013-30/06/2013	0.000	-
01/07/2013-31/07/2013	0.000	-
01/08/2013-31/08/2013	0.000	-
01/09/2013-30/09/2013	607.584	592
01/10/2013-31/10/2013	541.632	528
01/11/2013-30/11/2013	940.608	917

01/12/2013-31/12/2013	895.296	872
01/01/2014-31/01/2014	1022.880	997
01/02/2014-28/02/2014	1197.408	1,167
01/03/2014-31/03/2014	987.648	962
01/04/2014-30/04/2014	1333.344	1,299
01/05/2014-31/05/2014	1107.456	1,079
01/06/2014-30/06/2014	1003.392	978
01/07/2014-31/07/2014	1343.904	1,310
01/08/2014-31/08/2014	878.784	856
01/09/2014-30/09/2014	820.512	800
01/10/2014-31/10/2014	825.792	805
01/11/2014-30/11/2014	978.240	953
01/12/2014-31/12/2014	856.608	835
01/01/2015-31/01/2015	1043.520	1,017
01/02/2015-28/02/2015	1023.168	997
01/03/2015-31/03/2015	1349.664	1,315
01/04/2015-30/04/2015	1204.608	1,174
01/05/2015-31/05/2015	961.920	937
01/06/2015-30/06/2015	781.728	762
01/07/2015-31/07/2015	1254.720	1,223
01/08/2015-31/08/2015	999.840	974
01/09/2015-30/09/2015	1237.152	1,206
01/10/2015-31/10/2015	1678.656	1,636
01/11/2015-30/11/2015	1928.640	1,879
01/12/2015-31/12/2015	2041.824	1,990
01/01/2016-31/01/2016	1943.424	1,894
01/02/2016-29/02/2016	1873.344	1,826

01/03/2016-31/03/2016	2310.624	2,252
01/04/2016-30/04/2016	1809.408	1,763
01/05/2016-31/05/2016	1922.784	1,874
01/06/2016-30/06/2016	1495.392	1,457
01/07/2016-31/07/2016	1201.632	1,171
01/08/2016-31/08/2016	1546.944	1,507
01/09/2016-30/09/2016	1439.712	1,403
01/10/2016-31/10/2016	2867.232	2,794
01/11/2016-30/11/2016	1465.056	1,428
01/12/2016-31/12/2016	1871.424	1,824
01/01/2017-31/01/2017	2460.384	2,398
01/02/2017-28/02/2017	2147.712	2,093
01/03/2017-31/03/2017	2071.488	2,019
01/04/2017-30/04/2017	788.256	768
01/05/2017-31/05/2017	890.976	868
01/06/2017-30/06/2017	1886.688	1,839
01/07/2017-31/07/2017	1758.816	1,714
01/08/2017-31/08/2017	2481.600	2,418
01/09/2017-30/09/2017	1980.192	1,930
01/10/2017-31/10/2017	1488.960	1,451
01/11/2017-30/11/2017	2416.128	2,355
01/12/2017-31/12/2017	2032.416	1,981
Total	74997.12	73085

Therefore, the baseline emissions are as following:

Table 4-8 Baseline emissions of Baijiao CMM power plant

Year	BE_{MD} (tCO_2e)	$BE_{MR,y}$ (tCO_2e)	$BE_{use,y}$ (tCO_2e)	BE_y (tCO_2e)

	F	C	E	G=F+C+E
01/01/2013-31/01/2013	0	9,896	1,981	11,877
01/02/2013-28/02/2013	0	7,671	1,503	9,174
01/03/2013-31/03/2013	0	10,755	1,862	12,617
01/04/2013-30/04/2013	0	9,040	1,843	10,883
01/05/2013-31/05/2013	0	15,400	2,634	18,034
01/06/2013-30/06/2013	0	13,571	2,741	16,312
01/07/2013-31/07/2013	0	5,401	941	6,342
01/08/2013-31/08/2013	0	3,862	670	4,532
01/09/2013-30/09/2013	0	7,695	1,533	9,228
01/10/2013-31/10/2013	0	12,295	2,076	14,372
01/11/2013-30/11/2013	0	5,399	1,094	6,493
01/12/2013-31/12/2013	0	9,598	1,647	11,244
01/01/2014-31/01/2014	0	8,903	1,635	10,537
01/02/2014-28/02/2014	0	4,290	843	5,133
01/03/2014-31/03/2014	0	10,518	1,870	12,388
01/04/2014-30/04/2014	0	16,037	2,713	18,751
01/05/2014-31/05/2014	0	14,106	2,576	16,682
01/06/2014-30/06/2014	0	4,827	983	5,810
01/07/2014-31/07/2014	0	13,619	2,283	15,901
01/08/2014-31/08/2014	0	10,013	1,921	11,933
01/09/2014-30/09/2014	0	4,241	780	5,021
01/10/2014-31/10/2014	0	10,251	1,982	12,233
01/11/2014-30/11/2014	0	11,865	2,359	14,224
01/12/2014-31/12/2014	0	10,598	1,778	12,376
01/01/2015-31/01/2015	0	7,405	1,390	8,795
01/02/2015-28/02/2015	0	5,106	901	6,007

01/03/2015-31/03/2015	0	9,012	1,539	10,551
01/04/2015-30/04/2015	0	13,002	2,641	15,643
01/05/2015-31/05/2015	0	8,041	1,416	9,458
01/06/2015-30/06/2015	0	13,030	2,564	15,595
01/07/2015-31/07/2015	0	12,699	2,562	15,261
01/08/2015-31/08/2015	0	11,233	2,183	13,416
01/09/2015-30/09/2015	0	8,696	1,766	10,462
01/10/2015-31/10/2015	0	9,311	1,881	11,193
01/11/2015-30/11/2015	0	9,526	1,700	11,225
01/12/2015-31/12/2015	0	8,439	1,484	9,923
01/01/2016-31/01/2016	0	8,152	1,515	9,667
01/02/2016-29/02/2016	0	13,543	2,292	15,835
01/03/2016-31/03/2016	0	9,020	1,574	10,595
01/04/2016-30/04/2016	0	14,260	2,645	16,905
01/05/2016-31/05/2016	0	6,111	1,168	7,280
01/06/2016-30/06/2016	0	11,404	2,260	13,664
01/07/2016-31/07/2016	0	7,441	1,393	8,834
01/08/2016-31/08/2016	0	13,621	2,316	15,937
01/09/2016-30/09/2016	0	12,338	2,087	14,425
01/10/2016-31/10/2016	0	10,900	1,967	12,867
01/11/2016-30/11/2016	0	5,348	998	6,346
01/12/2016-31/12/2016	0	13,348	2,251	15,599
01/01/2017-31/01/2017	0	11,120	2,153	13,273
01/02/2017-28/02/2017	0	9,166	1,747	10,913
01/03/2017-31/03/2017	0	6,014	1,077	7,091
01/04/2017-30/04/2017	0	16,060	2,696	18,756
01/05/2017-31/05/2017	0	11,606	1,958	13,564

01/06/2017-30/06/2017	0	7,727	1,502	9,229
01/07/2017-31/07/2017	0	13,842	2,607	16,450
01/08/2017-31/08/2017	0	10,414	1,840	12,254
01/09/2017-30/09/2017	0	8,426	1,600	10,026
01/10/2017-31/10/2017	0	12,381	2,197	14,578
01/11/2017-30/11/2017	0	12,638	2,251	14,889
01/12/2017-31/12/2017	0	8,140	1,444	9,584
Total	0	598,369	109,816	708,185

Table 4-9 Baseline emissions of Gongquan CMM power plant

Year	BE_{MD} (tCO_2e)	$BE_{MR,y}$ (tCO_2e)	$BE_{use,y}$ (tCO_2e)	BE_y (tCO_2e)
	F	C	E	G=F+C+E
01/01/2013-31/01/2013	0	6,279	868	7,147
01/02/2013-28/02/2013	0	7,162	883	8,045
01/03/2013-31/03/2013	0	5,670	763	6,433
01/04/2013-30/04/2013	0	7,194	902	8,096
01/05/2013-31/05/2013	0	6,194	745	6,939
01/06/2013-30/06/2013	0	10,024	1,077	11,101
01/07/2013-31/07/2013	0	9,811	1,313	11,125
01/08/2013-31/08/2013	0	10,213	1,254	11,467
01/09/2013-30/09/2013	0	4,663	640	5,303
01/10/2013-31/10/2013	0	9,613	1,295	10,908
01/11/2013-30/11/2013	0	8,435	1,183	9,618
01/12/2013-31/12/2013	0	7,151	1,032	8,183
01/01/2014-31/01/2014	0	8,123	1,047	9,171
01/02/2014-28/02/2014	0	5,908	905	6,813
01/03/2014-31/03/2014	0	4,016	558	4,574

01/04/2014-30/04/2014	0	7,380	967	8,347
01/05/2014-31/05/2014	0	10,418	1,203	11,621
01/06/2014-30/06/2014	0	8,200	1,090	9,290
01/07/2014-31/07/2014	0	6,874	914	7,787
01/08/2014-31/08/2014	0	9,542	1,264	10,806
01/09/2014-30/09/2014	0	5,030	744	5,774
01/10/2014-31/10/2014	0	7,585	1,059	8,644
01/11/2014-30/11/2014	0	10,638	1,272	11,910
01/12/2014-31/12/2014	0	6,036	869	6,905
01/01/2015-31/01/2015	0	7,542	950	8,492
01/02/2015-28/02/2015	0	6,837	850	7,687
01/03/2015-31/03/2015	0	8,709	1,204	9,913
01/04/2015-30/04/2015	0	5,676	833	6,509
01/05/2015-31/05/2015	0	5,307	776	6,083
01/06/2015-30/06/2015	0	6,493	911	7,403
01/07/2015-31/07/2015	0	5,168	770	5,937
01/08/2015-31/08/2015	0	5,787	923	6,710
01/09/2015-30/09/2015	0	6,576	961	7,537
01/10/2015-31/10/2015	0	8,987	1,079	10,066
01/11/2015-30/11/2015	0	8,587	1,049	9,635
01/12/2015-31/12/2015	0	7,188	857	8,044
01/01/2016-31/01/2016	0	4,883	745	5,629
01/02/2016-29/02/2016	0	6,169	904	7,073
01/03/2016-31/03/2016	0	6,116	890	7,006
01/04/2016-30/04/2016	0	7,791	1,074	8,865
01/05/2016-31/05/2016	0	7,257	926	8,183
01/06/2016-30/06/2016	0	6,467	758	7,226

01/07/2016-31/07/2016	0	7,905	1,047	8,953
01/08/2016-31/08/2016	0	8,302	1,126	9,428
01/09/2016-30/09/2016	0	9,203	1,171	10,374
01/10/2016-31/10/2016	0	7,164	967	8,131
01/11/2016-30/11/2016	0	5,928	851	6,779
01/12/2016-31/12/2016	0	7,863	1,070	8,934
01/01/2017-31/01/2017	0	9,335	1,271	10,606
01/02/2017-28/02/2017	0	8,085	1,203	9,288
01/03/2017-31/03/2017	0	5,371	722	6,093
01/04/2017-30/04/2017	0	6,669	825	7,494
01/05/2017-31/05/2017	0	7,071	966	8,036
01/06/2017-30/06/2017	0	4,942	632	5,574
01/07/2017-31/07/2017	0	8,617	1,139	9,756
01/08/2017-31/08/2017	0	7,950	1,026	8,976
01/09/2017-30/09/2017	0	7,930	1,084	9,014
01/10/2017-31/10/2017	0	6,263	858	7,120
01/11/2017-30/11/2017	0	7,694	1,008	8,702
01/12/2017-31/12/2017	0	6,469	957	7,427
Total	0	436,461	58,228	494,689

Table 4-10 Baseline emissions of Shanmushu CMM power plant

Year	BE_{MD} (tCO_2e)	$BE_{MR,y}$ (tCO_2e)	$BE_{use,y}$ (tCO_2e)	BE_y (tCO_2e)
	F	C	E	G=F+C+E
01/01/2013-31/01/2013	0	0	0	0
01/02/2013-28/02/2013	0	0	0	0
01/03/2013-31/03/2013	0	0	0	0
01/04/2013-30/04/2013	0	0	0	0
01/05/2013-31/05/2013	0	0	0	0

01/06/2013-30/06/2013	0	0	0	0
01/07/2013-31/07/2013	0	0	0	0
01/08/2013-31/08/2013	0	0	0	0
01/09/2013-30/09/2013	0	3,292	592	3,884
01/10/2013-31/10/2013	0	2,890	528	3,418
01/11/2013-30/11/2013	0	4,987	917	5,904
01/12/2013-31/12/2013	0	4,736	872	5,609
01/01/2014-31/01/2014	0	5,409	997	6,406
01/02/2014-28/02/2014	0	6,353	1,167	7,520
01/03/2014-31/03/2014	0	5,222	962	6,184
01/04/2014-30/04/2014	0	7,051	1,299	8,350
01/05/2014-31/05/2014	0	5,854	1,079	6,934
01/06/2014-30/06/2014	0	5,305	978	6,283
01/07/2014-31/07/2014	0	7,105	1,310	8,415
01/08/2014-31/08/2014	0	4,645	856	5,502
01/09/2014-30/09/2014	0	4,339	800	5,138
01/10/2014-31/10/2014	0	4,368	805	5,172
01/11/2014-30/11/2014	0	5,174	953	6,128
01/12/2014-31/12/2014	0	4,528	835	5,363
01/01/2015-31/01/2015	0	5,515	1,017	6,532
01/02/2015-28/02/2015	0	5,408	997	6,405
01/03/2015-31/03/2015	0	7,137	1,315	8,452
01/04/2015-30/04/2015	0	6,368	1,174	7,542
01/05/2015-31/05/2015	0	5,089	937	6,027
01/06/2015-30/06/2015	0	4,136	762	4,897
01/07/2015-31/07/2015	0	6,638	1,223	7,861
01/08/2015-31/08/2015	0	5,286	974	6,260

01/09/2015-30/09/2015	0	6,580	1,206	7,785
01/10/2015-31/10/2015	0	8,889	1,636	10,525
01/11/2015-30/11/2015	0	10,200	1,879	12,079
01/12/2015-31/12/2015	0	10,794	1,990	12,783
01/01/2016-31/01/2016	0	10,274	1,894	12,168
01/02/2016-29/02/2016	0	9,904	1,826	11,730
01/03/2016-31/03/2016	0	12,218	2,252	14,469
01/04/2016-30/04/2016	0	9,570	1,763	11,334
01/05/2016-31/05/2016	0	10,164	1,874	12,038
01/06/2016-30/06/2016	0	7,908	1,457	9,365
01/07/2016-31/07/2016	0	6,355	1,171	7,526
01/08/2016-31/08/2016	0	8,176	1,507	9,683
01/09/2016-30/09/2016	0	7,618	1,403	9,021
01/10/2016-31/10/2016	0	15,152	2,794	17,946
01/11/2016-30/11/2016	0	7,750	1,428	9,178
01/12/2016-31/12/2016	0	9,902	1,824	11,726
01/01/2017-31/01/2017	0	13,014	2,398	15,412
01/02/2017-28/02/2017	0	11,353	2,093	13,446
01/03/2017-31/03/2017	0	10,953	2,019	12,972
01/04/2017-30/04/2017	0	4,175	768	4,943
01/05/2017-31/05/2017	0	4,714	868	5,583
01/06/2017-30/06/2017	0	9,980	1,839	11,818
01/07/2017-31/07/2017	0	9,295	1,714	11,009
01/08/2017-31/08/2017	0	13,118	2,418	15,536
01/09/2017-30/09/2017	0	10,468	1,930	12,398
01/10/2017-31/10/2017	0	7,873	1,451	9,324
01/11/2017-30/11/2017	0	12,770	2,355	15,124

01/12/2017-31/12/2017	0	10,748	1,981	12,728
Total	0	396,749	73,085	469,834

Project emissions

Project emissions are defined by the following equation:

$PE_y = PE_{ME} + PE_{MD} + PE_{UM}$

Where:

PE_{ME} = Project emissions from energy use to capture and use methane (tCO_2e)
PE_{MD} = Project emissions from methane destroyed (tCO_2e)
PE_{UM} = Project emissions from un-combusted methane (tCO_2e)

Project emissions from energy use to capture and use methane

$PE_{ME} = CONS_{ELEC,PJ} \times CEF_{ELEC}$

Where:

$CONS_{ELEC,PJ}$ = Additional electricity consumption for capture and use of methane (MWh)
CEF_{ELEC} = Carbon emissions factor of electricity used by Furong coal mines (tCO_2e/MWh)

The verification team review the daily and monthly electricity meters readings record for $CONS_{Elec,PJ}$. and confirmed the project emissions from energy use to capture and use methane are as the following tables:

Table 4-11 PE_{ME} in Baijiao coal mine and Shanmushu coal mine*

Years	$CONS_{ELEC,PJ}$ (MWh)	CEF_{ELEC} (tCO_2e)
	H	I=H * CEF_{ELEC}
01/01/2013-31/01/2013	146.448	143
01/02/2013-28/02/2013	111.139	108
01/03/2013-31/03/2013	137.592	134
01/04/2013-30/04/2013	136.224	133
01/05/2013-31/05/2013	194.664	190

01/06/2013-30/06/2013	202.536	197
01/07/2013-31/07/2013	69.686	68
01/08/2013-31/08/2013	49.552	48
01/09/2013-30/09/2013	98.226	96
01/10/2013-31/10/2013	128.144	125
01/11/2013-30/11/2013	78.048	76
01/12/2013-31/12/2013	109.152	106
01/01/2014-31/01/2014	110.401	108
01/02/2014-28/02/2014	67.806	66
01/03/2014-31/03/2014	123.385	120
01/04/2014-30/04/2014	177.314	173
01/05/2014-31/05/2014	165.846	162
01/06/2014-30/06/2014	72.596	71
01/07/2014-31/07/2014	152.754	149
01/08/2014-31/08/2014	124.511	121
01/09/2014-30/09/2014	57.978	56
01/10/2014-31/10/2014	127.212	124
01/11/2014-30/11/2014	151.313	147
01/12/2014-31/12/2014	115.947	113
01/01/2015-31/01/2015	96.608	94
01/02/2015-28/02/2015	68.170	66
01/03/2015-31/03/2015	110.077	107
01/04/2015-30/04/2015	171.202	167
01/05/2015-31/05/2015	96.851	94
01/06/2015-30/06/2015	160.108	156
01/07/2015-31/07/2015	167.440	163
01/08/2015-31/08/2015	141.612	138

01/09/2015-30/09/2015	121.442	118
01/10/2015-31/10/2015	148.615	145
01/11/2015-30/11/2015	144.054	140
01/12/2015-31/12/2015	134.378	131
01/01/2016-31/01/2016	133.799	130
01/02/2016-29/02/2016	176.749	172
01/03/2016-31/03/2016	146.056	142
01/04/2016-30/04/2016	195.531	191
01/05/2016-31/05/2016	113.430	111
01/06/2016-30/06/2016	165.955	162
01/07/2016-31/07/2016	109.003	106
01/08/2016-31/08/2016	170.309	166
01/09/2016-30/09/2016	154.560	151
01/10/2016-31/10/2016	182.008	177
01/11/2016-30/11/2016	92.664	90
01/12/2016-31/12/2016	174.458	170
01/01/2017-31/01/2017	183.050	178
01/02/2017-28/02/2017	152.044	148
01/03/2017-31/03/2017	111.752	109
01/04/2017-30/04/2017	173.936	170
01/05/2017-31/05/2017	134.011	131
01/06/2017-30/06/2017	131.749	128
01/07/2017-31/07/2017	192.176	187
01/08/2017-31/08/2017	165.374	161
01/09/2017-30/09/2017	139.579	136
01/10/2017-31/10/2017	162.104	158
01/11/2017-30/11/2017	187.441	183

01/12/2017-31/12/2017	131.860	128
Total	8,148.626	7,941

* It is verified via the on-stie inspection and interview with PP, the CMM of Shanmushu coal mine was supplied to the CMM power plant in Bajiao coal mine before the operation of the CMM power plant in Shanmushu coal mine, so the project emissions of additional energy use in Baijiao coal mine and Shanmushu coal mine were combined as the project emission of the CMM power plant in Bajiao coal mine in the first verification. After the running of CMM power plant in Shanmushu coal mine, part of the CMM of Shanmushu coal mine is still supplied to the CMM power plant in Bajiao coal mine, therefore the project emissions from additional energy use in the CMM power plant of Baijiao coal mine cannot be separated from Shanmushu coal mine. Project emissions from additional energy use in the CMM power plant of Baijiao coal mine and Shanmushu coal mine were still considered as the project emission of the CMM power plant in Bajiao coal mine and the project emissions from additional energy use in Shanmushu coal mine was considered as Zero, which is consistent with the first verification.

Table 4-12 PE_{ME} in Gongquan coal mine

Years	$CONS_{ELEC,PJ}$ (MWh)	PE_{ME} (tCO_2e)
	H	$I=H * CEF_{ELEC}$
01/01/2013-31/01/2013	16.658	16
01/02/2013-28/02/2013	19.313	19
01/03/2013-31/03/2013	16.562	16
01/04/2013-30/04/2013	13.319	13
01/05/2013-31/05/2013	13.190	13
01/06/2013-30/06/2013	13.501	13
01/07/2013-31/07/2013	14.796	14
01/08/2013-31/08/2013	13.940	14
01/09/2013-30/09/2013	12.921	13
01/10/2013-31/10/2013	14.298	14
01/11/2013-30/11/2013	13.155	13
01/12/2013-31/12/2013	9.413	9
01/01/2014-31/01/2014	16.423	16
01/02/2014-28/02/2014	17.631	17

01/03/2014-31/03/2014	17.365	17
01/04/2014-30/04/2014	17.956	17
01/05/2014-31/05/2014	15.147	15
01/06/2014-30/06/2014	17.636	17
01/07/2014-31/07/2014	15.581	15
01/08/2014-31/08/2014	15.207	15
01/09/2014-30/09/2014	14.692	14
01/10/2014-31/10/2014	14.411	14
01/11/2014-30/11/2014	9.372	9
01/12/2014-31/12/2014	8.957	9
01/01/2015-31/01/2015	9.497	9
01/02/2015-28/02/2015	15.903	15
01/03/2015-31/03/2015	13.540	13
01/04/2015-30/04/2015	15.586	15
01/05/2015-31/05/2015	12.882	13
01/06/2015-30/06/2015	13.393	13
01/07/2015-31/07/2015	13.914	14
01/08/2015-31/08/2015	14.683	14
01/09/2015-30/09/2015	12.366	12
01/10/2015-31/10/2015	8.536	8
01/11/2015-30/11/2015	19.604	19
01/12/2015-31/12/2015	15.651	15
01/01/2016-31/01/2016	18.332	18
01/02/2016-29/02/2016	17.284	17
01/03/2016-31/03/2016	14.593	14
01/04/2016-30/04/2016	20.525	20
01/05/2016-31/05/2016	9.641	9

01/06/2016-30/06/2016	10.764	10
01/07/2016-31/07/2016	15.901	15
01/08/2016-31/08/2016	12.868	13
01/09/2016-30/09/2016	13.766	13
01/10/2016-31/10/2016	9.509	9
01/11/2016-30/11/2016	16.940	17
01/12/2016-31/12/2016	16.762	16
01/01/2017-31/01/2017	13.559	13
01/02/2017-28/02/2017	11.194	11
01/03/2017-31/03/2017	14.183	14
01/04/2017-30/04/2017	14.283	14
01/05/2017-31/05/2017	11.936	12
01/06/2017-30/06/2017	14.621	14
01/07/2017-31/07/2017	8.824	9
01/08/2017-31/08/2017	9.708	9
01/09/2017-30/09/2017	9.652	9
01/10/2017-31/10/2017	15.470	15
01/11/2017-30/11/2017	13.420	13
01/12/2017-31/12/2017	14.659	14
Total	845.394	824

Project emissions from methane destroyed

$PE_{MD} = MD_{ELEC} \times (CEF_{CH4} + r \times CEF_{NMHC})$

$r = PC_{NMHC} / Pc_{CH4}$

Where:

MD_{ELEC} = Methane destroyed through power generation (tCH_4)

CEF_{CH4} = Carbon emission factor for combusted methane (2.75 tCO_2/tCH_4)

CEF_{NMHC} = Carbon emission factor for combusted non methane hydrocarbons (the concentration varies and, therefore, to be obtained through periodical analysis of captured methane) ($tCO_2/tNMHC$)
r = Relative proportion of NMHC compared to methane
PC_{NMHC} = Concentration (in mass) of methane in extracted gas (%)
PC_{CH4} = NMHC concentration (in mass) in extracted gas (%)

The verification team has reviewed the extracted gas analysis reports (PC_{NMHC}) and confirmed that the concentration of NMHC in extracted CMM from Furong coal mines only accounts no more than 0.016% in volume according to the annual tests, which is much lower than 1%. Therefore, the combustion emission from NMHC is ignored in ex ante emission calculations.

Thus

$$PE_{MD} = MD_{ELEC} \times CEF_{CH4}$$

$$MD_{ELEC} = MM_{ELEC} \times Eff_{ELEC}$$

The IPCC default value of Eff_{ELEC} is the efficiency of methane destruction in power plant, the default value of Eff_{ELEC} is taken as 99.5% from IPCC. And the value of 2.75 tCO_2/tCH_4 is applied for the parameter of CEF_{CH4} based on the registered PDD. Therefore, PE_{MD} is calculated in the table below.

Table 4-13 PE_{MD} in Baijiao coal mines

Years	MM_{ELEC} (tCH_4)	MD_{ELEC} (tCH_4)	PE_{MD} (tCO_2e)
	B	J=B* Eff_{ELEC}	K =J* CEF_{CH4}
01/01/2013-31/01/2013	353.42	351.65	967
01/02/2013-28/02/2013	273.97	272.60	750
01/03/2013-31/03/2013	384.11	382.19	1,051
01/04/2013-30/04/2013	322.85	321.24	883
01/05/2013-31/05/2013	550.02	547.27	1,505
01/06/2013-30/06/2013	484.68	482.26	1,326
01/07/2013-31/07/2013	192.90	191.93	528
01/08/2013-31/08/2013	137.94	137.25	377
01/09/2013-30/09/2013	274.82	273.44	752
01/10/2013-31/10/2013	439.11	436.92	1,202

01/11/2013-30/11/2013	192.82	191.85	528
01/12/2013-31/12/2013	342.78	341.07	938
01/01/2014-31/01/2014	317.95	316.36	870
01/02/2014-28/02/2014	153.22	152.46	419
01/03/2014-31/03/2014	375.63	373.75	1,028
01/04/2014-30/04/2014	572.76	569.90	1,567
01/05/2014-31/05/2014	503.78	501.27	1,378
01/06/2014-30/06/2014	172.39	171.52	472
01/07/2014-31/07/2014	486.39	483.95	1,331
01/08/2014-31/08/2014	357.60	355.81	978
01/09/2014-30/09/2014	151.47	150.71	414
01/10/2014-31/10/2014	366.11	364.28	1,002
01/11/2014-30/11/2014	423.75	421.63	1,159
01/12/2014-31/12/2014	378.49	376.60	1,036
01/01/2015-31/01/2015	264.46	263.14	724
01/02/2015-28/02/2015	182.37	181.46	499
01/03/2015-31/03/2015	321.84	320.23	881
01/04/2015-30/04/2015	464.35	462.02	1,271
01/05/2015-31/05/2015	287.19	285.76	786
01/06/2015-30/06/2015	465.37	463.04	1,273
01/07/2015-31/07/2015	453.52	451.26	1,241
01/08/2015-31/08/2015	401.19	399.18	1,098
01/09/2015-30/09/2015	310.57	309.01	850
01/10/2015-31/10/2015	332.55	330.88	910
01/11/2015-30/11/2015	340.21	338.51	931
01/12/2015-31/12/2015	301.38	299.87	825
01/01/2016-31/01/2016	291.14	289.68	797

01/02/2016-29/02/2016	483.70	481.28	1,324
01/03/2016-31/03/2016	322.15	320.54	881
01/04/2016-30/04/2016	509.29	506.74	1,394
01/05/2016-31/05/2016	218.27	217.17	597
01/06/2016-30/06/2016	407.27	405.23	1,114
01/07/2016-31/07/2016	265.73	264.41	727
01/08/2016-31/08/2016	486.46	484.03	1,331
01/09/2016-30/09/2016	440.65	438.44	1,206
01/10/2016-31/10/2016	389.29	387.34	1,065
01/11/2016-30/11/2016	191.01	190.06	523
01/12/2016-31/12/2016	476.70	474.32	1,304
01/01/2017-31/01/2017	397.13	395.14	1,087
01/02/2017-28/02/2017	327.34	325.71	896
01/03/2017-31/03/2017	214.80	213.73	588
01/04/2017-30/04/2017	573.57	570.70	1,569
01/05/2017-31/05/2017	414.49	412.41	1,134
01/06/2017-30/06/2017	275.95	274.57	755
01/07/2017-31/07/2017	494.36	491.89	1,353
01/08/2017-31/08/2017	371.92	370.06	1,018
01/09/2017-30/09/2017	300.94	299.43	823
01/10/2017-31/10/2017	442.18	439.97	1,210
01/11/2017-30/11/2017	451.35	449.10	1,235
01/12/2017-31/12/2017	290.71	289.26	795
Total	21370.32	21263.47	58475

Table 4-14 PE_{MD} in Gongquan coal mine

Years	MM_{ELEC} (tCH_4)	MD_{ELEC} (tCH_4)	PE_{MD} (tCO_2e)

	B	J=B* Eff_{ELEC}	K =J* CEF_{CH4}
01/01/2013-31/01/2013	224.24	223.12	614
01/02/2013-28/02/2013	255.79	254.51	700
01/03/2013-31/03/2013	202.50	201.49	554
01/04/2013-30/04/2013	256.92	255.63	703
01/05/2013-31/05/2013	221.21	220.10	605
01/06/2013-30/06/2013	358.00	356.21	980
01/07/2013-31/07/2013	350.40	348.65	959
01/08/2013-31/08/2013	364.75	362.92	998
01/09/2013-30/09/2013	166.53	165.70	456
01/10/2013-31/10/2013	343.32	341.61	939
01/11/2013-30/11/2013	301.26	299.75	824
01/12/2013-31/12/2013	255.40	254.13	699
01/01/2014-31/01/2014	290.12	288.67	794
01/02/2014-28/02/2014	211.01	209.95	577
01/03/2014-31/03/2014	143.44	142.72	392
01/04/2014-30/04/2014	263.56	262.24	721
01/05/2014-31/05/2014	372.07	370.21	1,018
01/06/2014-30/06/2014	292.86	291.40	801
01/07/2014-31/07/2014	245.48	244.26	672
01/08/2014-31/08/2014	340.78	339.08	932
01/09/2014-30/09/2014	179.63	178.73	492
01/10/2014-31/10/2014	270.90	269.54	741
01/11/2014-30/11/2014	379.94	378.04	1,040
01/12/2014-31/12/2014	215.55	214.48	590
01/01/2015-31/01/2015	269.36	268.01	737
01/02/2015-28/02/2015	244.17	242.95	668

01/03/2015-31/03/2015	311.02	309.47	851
01/04/2015-30/04/2015	202.73	201.71	555
01/05/2015-31/05/2015	189.52	188.57	519
01/06/2015-30/06/2015	231.88	230.72	634
01/07/2015-31/07/2015	184.56	183.64	505
01/08/2015-31/08/2015	206.69	205.65	566
01/09/2015-30/09/2015	234.87	233.69	643
01/10/2015-31/10/2015	320.98	319.37	878
01/11/2015-30/11/2015	306.67	305.13	839
01/12/2015-31/12/2015	256.70	255.41	702
01/01/2016-31/01/2016	174.40	173.53	477
01/02/2016-29/02/2016	220.34	219.23	603
01/03/2016-31/03/2016	218.45	217.35	598
01/04/2016-30/04/2016	278.25	276.86	761
01/05/2016-31/05/2016	259.18	257.89	709
01/06/2016-30/06/2016	230.98	229.82	632
01/07/2016-31/07/2016	282.33	280.92	773
01/08/2016-31/08/2016	296.51	295.03	811
01/09/2016-30/09/2016	328.67	327.02	899
01/10/2016-31/10/2016	255.84	254.56	700
01/11/2016-30/11/2016	211.73	210.67	579
01/12/2016-31/12/2016	280.84	279.43	768
01/01/2017-31/01/2017	333.40	331.74	912
01/02/2017-28/02/2017	288.75	287.31	790
01/03/2017-31/03/2017	191.82	190.86	525
01/04/2017-30/04/2017	238.19	237.00	652
01/05/2017-31/05/2017	252.52	251.26	691

01/06/2017-30/06/2017	176.49	175.61	483
01/07/2017-31/07/2017	307.76	306.22	842
01/08/2017-31/08/2017	283.92	282.51	777
01/09/2017-30/09/2017	283.22	281.80	775
01/10/2017-31/10/2017	223.66	222.55	612
01/11/2017-30/11/2017	274.78	273.41	752
01/12/2017-31/12/2017	231.05	229.90	632
Total	15587.89	15509.95	42652

Table 4-15 PE_{MD} in Shanmushu coal mine

Years	MM_{ELEC} (tCH_4)	MD_{ELEC} (tCH_4)	PE_{MD} (tCO_2e)
	B	$J=B* Eff_{ELEC}$	$K =J* CEF_{CH4}$
01/01/2013-31/01/2013	0.00	0.00	0
01/02/2013-28/02/2013	0.00	0.00	0
01/03/2013-31/03/2013	0.00	0.00	0
01/04/2013-30/04/2013	0.00	0.00	0
01/05/2013-31/05/2013	0.00	0.00	0
01/06/2013-30/06/2013	0.00	0.00	0
01/07/2013-31/07/2013	0.00	0.00	0
01/08/2013-31/08/2013	0.00	0.00	0
01/09/2013-30/09/2013	117.57	116.98	322
01/10/2013-31/10/2013	103.21	102.70	282
01/11/2013-30/11/2013	178.11	177.22	487
01/12/2013-31/12/2013	169.15	168.31	463
01/01/2014-31/01/2014	193.19	192.22	529
01/02/2014-28/02/2014	226.89	225.76	621
01/03/2014-31/03/2014	186.49	185.55	510

01/04/2014-30/04/2014	251.81	250.55	689
01/05/2014-31/05/2014	209.08	208.04	572
01/06/2014-30/06/2014	189.48	188.53	518
01/07/2014-31/07/2014	253.75	252.49	694
01/08/2014-31/08/2014	165.91	165.08	454
01/09/2014-30/09/2014	154.95	154.17	424
01/10/2014-31/10/2014	155.99	155.21	427
01/11/2014-30/11/2014	184.80	183.88	506
01/12/2014-31/12/2014	161.72	160.91	442
01/01/2015-31/01/2015	196.96	195.97	539
01/02/2015-28/02/2015	193.15	192.19	529
01/03/2015-31/03/2015	254.89	253.61	697
01/04/2015-30/04/2015	227.45	226.31	622
01/05/2015-31/05/2015	181.77	180.86	497
01/06/2015-30/06/2015	147.70	146.96	404
01/07/2015-31/07/2015	237.07	235.88	649
01/08/2015-31/08/2015	188.78	187.84	517
01/09/2015-30/09/2015	234.98	233.81	643
01/10/2015-31/10/2015	317.46	315.87	869
01/11/2015-30/11/2015	364.27	362.45	997
01/12/2015-31/12/2015	385.48	383.56	1,055
01/01/2016-31/01/2016	366.93	365.09	1,004
01/02/2016-29/02/2016	353.73	351.96	968
01/03/2016-31/03/2016	436.35	434.17	1,194
01/04/2016-30/04/2016	341.80	340.09	935
01/05/2016-31/05/2016	363.01	361.20	993
01/06/2016-30/06/2016	282.42	281.01	773

01/07/2016-31/07/2016	226.95	225.81	621
01/08/2016-31/08/2016	291.98	290.52	799
01/09/2016-30/09/2016	272.07	270.71	744
01/10/2016-31/10/2016	541.13	538.43	1,481
01/11/2016-30/11/2016	276.79	275.41	757
01/12/2016-31/12/2016	353.66	351.89	968
01/01/2017-31/01/2017	464.80	462.47	1,272
01/02/2017-28/02/2017	405.45	403.43	1,109
01/03/2017-31/03/2017	391.19	389.23	1,070
01/04/2017-30/04/2017	149.11	148.36	408
01/05/2017-31/05/2017	168.37	167.53	461
01/06/2017-30/06/2017	356.42	354.64	975
01/07/2017-31/07/2017	331.97	330.31	908
01/08/2017-31/08/2017	468.49	466.14	1,282
01/09/2017-30/09/2017	373.87	372.00	1,023
01/10/2017-31/10/2017	281.20	279.79	769
01/11/2017-30/11/2017	456.06	453.78	1,248
01/12/2017-31/12/2017	383.84	381.92	1,050
Total	14169.62	14098.77	38772

Project emissions from un-combusted methane(PE_{UM})

The project emissions from un-combusted methane are calculated as following:

$PE_{UM} = GWP_{CH4} \times MM_{ELEC} \times (1\text{-}Eff_{ELEC})$

According to VCS Standard V4.2, for GHG emission reductions occurring on or before 31 December 2020, all ex-ante estimates and ex-post calculations may be converted to CO_2e using either the GWP values from the IPCC Fourth Assessment Report (AR4) or those from AR5. The GWP_{CH4} value in AR5 of 28 was applied for the proposed project.

Table 4-16 PE_{UM} in Baijiao coal mines

Year	MM_{ELEC} (tCH_4)	Total CH_4 emissions (tCH_4)	PE_{UM} (tCO_2e)
	B	$L=B*(1- Eff_{ELEC})$	$M=L* GWP_{CH4}$
01/01/2013-31/01/2013	353.42	1.77	49
01/02/2013-28/02/2013	273.97	1.37	38
01/03/2013-31/03/2013	384.11	1.92	54
01/04/2013-30/04/2013	322.85	1.61	45
01/05/2013-31/05/2013	550.02	2.75	77
01/06/2013-30/06/2013	484.68	2.42	68
01/07/2013-31/07/2013	192.90	0.96	27
01/08/2013-31/08/2013	137.94	0.69	19
01/09/2013-30/09/2013	274.82	1.37	38
01/10/2013-31/10/2013	439.11	2.20	61
01/11/2013-30/11/2013	192.82	0.96	27
01/12/2013-31/12/2013	342.78	1.71	48
01/01/2014-31/01/2014	317.95	1.59	45
01/02/2014-28/02/2014	153.22	0.77	21
01/03/2014-31/03/2014	375.63	1.88	53
01/04/2014-30/04/2014	572.76	2.86	80
01/05/2014-31/05/2014	503.78	2.52	71
01/06/2014-30/06/2014	172.39	0.86	24
01/07/2014-31/07/2014	486.39	2.43	68
01/08/2014-31/08/2014	357.60	1.79	50
01/09/2014-30/09/2014	151.47	0.76	21
01/10/2014-31/10/2014	366.11	1.83	51
01/11/2014-30/11/2014	423.75	2.12	59

01/12/2014-31/12/2014	378.49	1.89	53
01/01/2015-31/01/2015	264.46	1.32	37
01/02/2015-28/02/2015	182.37	0.91	26
01/03/2015-31/03/2015	321.84	1.61	45
01/04/2015-30/04/2015	464.35	2.32	65
01/05/2015-31/05/2015	287.19	1.44	40
01/06/2015-30/06/2015	465.37	2.33	65
01/07/2015-31/07/2015	453.52	2.27	63
01/08/2015-31/08/2015	401.19	2.01	56
01/09/2015-30/09/2015	310.57	1.55	43
01/10/2015-31/10/2015	332.55	1.66	47
01/11/2015-30/11/2015	340.21	1.70	48
01/12/2015-31/12/2015	301.38	1.51	42
01/01/2016-31/01/2016	291.14	1.46	41
01/02/2016-29/02/2016	483.70	2.42	68
01/03/2016-31/03/2016	322.15	1.61	45
01/04/2016-30/04/2016	509.29	2.55	71
01/05/2016-31/05/2016	218.27	1.09	31
01/06/2016-30/06/2016	407.27	2.04	57
01/07/2016-31/07/2016	265.73	1.33	37
01/08/2016-31/08/2016	486.46	2.43	68
01/09/2016-30/09/2016	440.65	2.20	62
01/10/2016-31/10/2016	389.29	1.95	55
01/11/2016-30/11/2016	191.01	0.96	27
01/12/2016-31/12/2016	476.70	2.38	67
01/01/2017-31/01/2017	397.13	1.99	56
01/02/2017-28/02/2017	327.34	1.64	46

01/03/2017-31/03/2017	214.80	1.07	30
01/04/2017-30/04/2017	573.57	2.87	80
01/05/2017-31/05/2017	414.49	2.07	58
01/06/2017-30/06/2017	275.95	1.38	39
01/07/2017-31/07/2017	494.36	2.47	69
01/08/2017-31/08/2017	371.92	1.86	52
01/09/2017-30/09/2017	300.94	1.50	42
01/10/2017-31/10/2017	442.18	2.21	62
01/11/2017-30/11/2017	451.35	2.26	63
01/12/2017-31/12/2017	290.71	1.45	41
Total	21370.32	106.85	2992

Table 4-17 PE_{UM} in Gongquan coal mine

Year	MM_{ELEC} (tCH_4)	Total CH_4 emissions (tCH_4)	PE_{UM} (tCO_2e)
	B	$L=B*(1- Eff_{ELEC})$	$M=L* GWP_{CH4}$
01/01/2013-31/01/2013	224.24	1.12	31
01/02/2013-28/02/2013	255.79	1.28	36
01/03/2013-31/03/2013	202.50	1.01	28
01/04/2013-30/04/2013	256.92	1.28	36
01/05/2013-31/05/2013	221.21	1.11	31
01/06/2013-30/06/2013	358.00	1.79	50
01/07/2013-31/07/2013	350.40	1.75	49
01/08/2013-31/08/2013	364.75	1.82	51
01/09/2013-30/09/2013	166.53	0.83	23
01/10/2013-31/10/2013	343.32	1.72	48
01/11/2013-30/11/2013	301.26	1.51	42
01/12/2013-31/12/2013	255.40	1.28	36

01/01/2014-31/01/2014	290.12	1.45	41
01/02/2014-28/02/2014	211.01	1.06	30
01/03/2014-31/03/2014	143.44	0.72	20
01/04/2014-30/04/2014	263.56	1.32	37
01/05/2014-31/05/2014	372.07	1.86	52
01/06/2014-30/06/2014	292.86	1.46	41
01/07/2014-31/07/2014	245.48	1.23	34
01/08/2014-31/08/2014	340.78	1.70	48
01/09/2014-30/09/2014	179.63	0.90	25
01/10/2014-31/10/2014	270.90	1.35	38
01/11/2014-30/11/2014	379.94	1.90	53
01/12/2014-31/12/2014	215.55	1.08	30
01/01/2015-31/01/2015	269.36	1.35	38
01/02/2015-28/02/2015	244.17	1.22	34
01/03/2015-31/03/2015	311.02	1.56	44
01/04/2015-30/04/2015	202.73	1.01	28
01/05/2015-31/05/2015	189.52	0.95	27
01/06/2015-30/06/2015	231.88	1.16	32
01/07/2015-31/07/2015	184.56	0.92	26
01/08/2015-31/08/2015	206.69	1.03	29
01/09/2015-30/09/2015	234.87	1.17	33
01/10/2015-31/10/2015	320.98	1.60	45
01/11/2015-30/11/2015	306.67	1.53	43
01/12/2015-31/12/2015	256.70	1.28	36
01/01/2016-31/01/2016	174.40	0.87	24
01/02/2016-29/02/2016	220.34	1.10	31
01/03/2016-31/03/2016	218.45	1.09	31

01/04/2016-30/04/2016	278.25	1.39	39
01/05/2016-31/05/2016	259.18	1.30	36
01/06/2016-30/06/2016	230.98	1.15	32
01/07/2016-31/07/2016	282.33	1.41	40
01/08/2016-31/08/2016	296.51	1.48	42
01/09/2016-30/09/2016	328.67	1.64	46
01/10/2016-31/10/2016	255.84	1.28	36
01/11/2016-30/11/2016	211.73	1.06	30
01/12/2016-31/12/2016	280.84	1.40	39
01/01/2017-31/01/2017	333.40	1.67	47
01/02/2017-28/02/2017	288.75	1.44	40
01/03/2017-31/03/2017	191.82	0.96	27
01/04/2017-30/04/2017	238.19	1.19	33
01/05/2017-31/05/2017	252.52	1.26	35
01/06/2017-30/06/2017	176.49	0.88	25
01/07/2017-31/07/2017	307.76	1.54	43
01/08/2017-31/08/2017	283.92	1.42	40
01/09/2017-30/09/2017	283.22	1.42	40
01/10/2017-31/10/2017	223.66	1.12	31
01/11/2017-30/11/2017	274.78	1.37	38
01/12/2017-31/12/2017	231.05	1.16	32
Total	15587.89	77.94	2182

Table 4-18 PE_{UM} in Shanmushu coal mine

Year	MM_{ELEC} (tCH_4)	Total CH_4 emissions (tCH_4)	PE_{UM} (tCO_2e)
	B	$L=B*(1- Eff_{ELEC})$	$M=L* GWP_{CH4}$
01/01/2013-31/01/2013	0.00	0.00	0

01/02/2013-28/02/2013	0.00	0.00	0
01/03/2013-31/03/2013	0.00	0.00	0
01/04/2013-30/04/2013	0.00	0.00	0
01/05/2013-31/05/2013	0.00	0.00	0
01/06/2013-30/06/2013	0.00	0.00	0
01/07/2013-31/07/2013	0.00	0.00	0
01/08/2013-31/08/2013	0.00	0.00	0
01/09/2013-30/09/2013	117.57	0.59	16
01/10/2013-31/10/2013	103.21	0.52	14
01/11/2013-30/11/2013	178.11	0.89	25
01/12/2013-31/12/2013	169.15	0.85	24
01/01/2014-31/01/2014	193.19	0.97	27
01/02/2014-28/02/2014	226.89	1.13	32
01/03/2014-31/03/2014	186.49	0.93	26
01/04/2014-30/04/2014	251.81	1.26	35
01/05/2014-31/05/2014	209.08	1.05	29
01/06/2014-30/06/2014	189.48	0.95	27
01/07/2014-31/07/2014	253.75	1.27	36
01/08/2014-31/08/2014	165.91	0.83	23
01/09/2014-30/09/2014	154.95	0.77	22
01/10/2014-31/10/2014	155.99	0.78	22
01/11/2014-30/11/2014	184.80	0.92	26
01/12/2014-31/12/2014	161.72	0.81	23
01/01/2015-31/01/2015	196.96	0.98	28
01/02/2015-28/02/2015	193.15	0.97	27
01/03/2015-31/03/2015	254.89	1.27	36
01/04/2015-30/04/2015	227.45	1.14	32

01/05/2015-31/05/2015	181.77	0.91	25
01/06/2015-30/06/2015	147.70	0.74	21
01/07/2015-31/07/2015	237.07	1.19	33
01/08/2015-31/08/2015	188.78	0.94	26
01/09/2015-30/09/2015	234.98	1.17	33
01/10/2015-31/10/2015	317.46	1.59	44
01/11/2015-30/11/2015	364.27	1.82	51
01/12/2015-31/12/2015	385.48	1.93	54
01/01/2016-31/01/2016	366.93	1.83	51
01/02/2016-29/02/2016	353.73	1.77	50
01/03/2016-31/03/2016	436.35	2.18	61
01/04/2016-30/04/2016	341.80	1.71	48
01/05/2016-31/05/2016	363.01	1.82	51
01/06/2016-30/06/2016	282.42	1.41	40
01/07/2016-31/07/2016	226.95	1.13	32
01/08/2016-31/08/2016	291.98	1.46	41
01/09/2016-30/09/2016	272.07	1.36	38
01/10/2016-31/10/2016	541.13	2.71	76
01/11/2016-30/11/2016	276.79	1.38	39
01/12/2016-31/12/2016	353.66	1.77	50
01/01/2017-31/01/2017	464.80	2.32	65
01/02/2017-28/02/2017	405.45	2.03	57
01/03/2017-31/03/2017	391.19	1.96	55
01/04/2017-30/04/2017	149.11	0.75	21
01/05/2017-31/05/2017	168.37	0.84	24
01/06/2017-30/06/2017	356.42	1.78	50
01/07/2017-31/07/2017	331.97	1.66	46

01/08/2017-31/08/2017	468.49	2.34	66
01/09/2017-30/09/2017	373.87	1.87	52
01/10/2017-31/10/2017	281.20	1.41	39
01/11/2017-30/11/2017	456.06	2.28	64
01/12/2017-31/12/2017	383.84	1.92	54
Total	14169.62	70.85	1984

Therefore the project emissions are as following:

$PE_y = PE_{ME} + PE_{MD} + PE_{UM}$

Table 4-19 Project emissions of Baijiao coal mine

Year	PE_{ME} (tCO_2e)	PE_{MD} (tCO_2e)	PE_{UM} (tCO_2e)	PE_y (tCO_2e)
	I	K	M	N=I+K+M
01/01/2013-31/01/2013	143	967	49	1,159
01/02/2013-28/02/2013	108	750	38	896
01/03/2013-31/03/2013	134	1,051	54	1,239
01/04/2013-30/04/2013	133	883	45	1,061
01/05/2013-31/05/2013	190	1,505	77	1,772
01/06/2013-30/06/2013	197	1,326	68	1,591
01/07/2013-31/07/2013	68	528	27	623
01/08/2013-31/08/2013	48	377	19	445
01/09/2013-30/09/2013	96	752	38	886
01/10/2013-31/10/2013	125	1,202	61	1,388
01/11/2013-30/11/2013	76	528	27	631
01/12/2013-31/12/2013	106	938	48	1,092
01/01/2014-31/01/2014	108	870	45	1,022
01/02/2014-28/02/2014	66	419	21	507
01/03/2014-31/03/2014	120	1,028	53	1,201

01/04/2014-30/04/2014	173	1,567	80	1,820
01/05/2014-31/05/2014	162	1,378	71	1,611
01/06/2014-30/06/2014	71	472	24	567
01/07/2014-31/07/2014	149	1,331	68	1,548
01/08/2014-31/08/2014	121	978	50	1,150
01/09/2014-30/09/2014	56	414	21	492
01/10/2014-31/10/2014	124	1,002	51	1,177
01/11/2014-30/11/2014	147	1,159	59	1,366
01/12/2014-31/12/2014	113	1,036	53	1,202
01/01/2015-31/01/2015	94	724	37	855
01/02/2015-28/02/2015	66	499	26	591
01/03/2015-31/03/2015	107	881	45	1,033
01/04/2015-30/04/2015	167	1,271	65	1,502
01/05/2015-31/05/2015	94	786	40	920
01/06/2015-30/06/2015	156	1,273	65	1,495
01/07/2015-31/07/2015	163	1,241	63	1,468
01/08/2015-31/08/2015	138	1,098	56	1,292
01/09/2015-30/09/2015	118	850	43	1,012
01/10/2015-31/10/2015	145	910	47	1,101
01/11/2015-30/11/2015	140	931	48	1,119
01/12/2015-31/12/2015	131	825	42	998
01/01/2016-31/01/2016	130	797	41	968
01/02/2016-29/02/2016	172	1,324	68	1,563
01/03/2016-31/03/2016	142	881	45	1,069
01/04/2016-30/04/2016	191	1,394	71	1,655
01/05/2016-31/05/2016	111	597	31	738
01/06/2016-30/06/2016	162	1,114	57	1,333

01/07/2016-31/07/2016	106	727	37	871
01/08/2016-31/08/2016	166	1,331	68	1,565
01/09/2016-30/09/2016	151	1,206	62	1,418
01/10/2016-31/10/2016	177	1,065	55	1,297
01/11/2016-30/11/2016	90	523	27	640
01/12/2016-31/12/2016	170	1,304	67	1,541
01/01/2017-31/01/2017	178	1,087	56	1,321
01/02/2017-28/02/2017	148	896	46	1,090
01/03/2017-31/03/2017	109	588	30	727
01/04/2017-30/04/2017	170	1,569	80	1,819
01/05/2017-31/05/2017	131	1,134	58	1,323
01/06/2017-30/06/2017	128	755	39	922
01/07/2017-31/07/2017	187	1,353	69	1,609
01/08/2017-31/08/2017	161	1,018	52	1,231
01/09/2017-30/09/2017	136	823	42	1,002
01/10/2017-31/10/2017	158	1,210	62	1,430
01/11/2017-30/11/2017	183	1,235	63	1,481
01/12/2017-31/12/2017	128	795	41	965
Total	7941	58475	2992	69407

Table 4-20 Project emissions of Gongquan coal mine

Year	PE_{ME} (tCO_2e)	PE_{MD} (tCO_2e)	PE_{UM} (tCO_2e)	PE_y (tCO_2e)
	I	K	M	N=I+K+M
01/01/2013-31/01/2013	16	614	31	661
01/02/2013-28/02/2013	19	700	36	755
01/03/2013-31/03/2013	16	554	28	599
01/04/2013-30/04/2013	13	703	36	752

01/05/2013-31/05/2013	13	605	31	649
01/06/2013-30/06/2013	13	980	50	1,043
01/07/2013-31/07/2013	14	959	49	1,022
01/08/2013-31/08/2013	14	998	51	1,063
01/09/2013-30/09/2013	13	456	23	492
01/10/2013-31/10/2013	14	939	48	1,001
01/11/2013-30/11/2013	13	824	42	879
01/12/2013-31/12/2013	9	699	36	744
01/01/2014-31/01/2014	16	794	41	850
01/02/2014-28/02/2014	17	577	30	624
01/03/2014-31/03/2014	17	392	20	429
01/04/2014-30/04/2014	17	721	37	776
01/05/2014-31/05/2014	15	1,018	52	1,085
01/06/2014-30/06/2014	17	801	41	860
01/07/2014-31/07/2014	15	672	34	721
01/08/2014-31/08/2014	15	932	48	995
01/09/2014-30/09/2014	14	492	25	531
01/10/2014-31/10/2014	14	741	38	793
01/11/2014-30/11/2014	9	1,040	53	1,102
01/12/2014-31/12/2014	9	590	30	629
01/01/2015-31/01/2015	9	737	38	784
01/02/2015-28/02/2015	15	668	34	718
01/03/2015-31/03/2015	13	851	44	908
01/04/2015-30/04/2015	15	555	28	598
01/05/2015-31/05/2015	13	519	27	558
01/06/2015-30/06/2015	13	634	32	680
01/07/2015-31/07/2015	14	505	26	544

01/08/2015-31/08/2015	14	566	29	609
01/09/2015-30/09/2015	12	643	33	688
01/10/2015-31/10/2015	8	878	45	932
01/11/2015-30/11/2015	19	839	43	901
01/12/2015-31/12/2015	15	702	36	754
01/01/2016-31/01/2016	18	477	24	519
01/02/2016-29/02/2016	17	603	31	651
01/03/2016-31/03/2016	14	598	31	643
01/04/2016-30/04/2016	20	761	39	820
01/05/2016-31/05/2016	9	709	36	755
01/06/2016-30/06/2016	10	632	32	675
01/07/2016-31/07/2016	15	773	40	828
01/08/2016-31/08/2016	13	811	42	865
01/09/2016-30/09/2016	13	899	46	959
01/10/2016-31/10/2016	9	700	36	745
01/11/2016-30/11/2016	17	579	30	626
01/12/2016-31/12/2016	16	768	39	824
01/01/2017-31/01/2017	13	912	47	972
01/02/2017-28/02/2017	11	790	40	841
01/03/2017-31/03/2017	14	525	27	566
01/04/2017-30/04/2017	14	652	33	699
01/05/2017-31/05/2017	12	691	35	738
01/06/2017-30/06/2017	14	483	25	522
01/07/2017-31/07/2017	9	842	43	894
01/08/2017-31/08/2017	9	777	40	826
01/09/2017-30/09/2017	9	775	40	824
01/10/2017-31/10/2017	15	612	31	658

01/11/2017-30/11/2017	13	752	38	803
01/12/2017-31/12/2017	14	632	32	679
Total	824	42652	2182	45659

Table 4-21 Project emissions of Shanmushu coal mine

Year	PE_{ME} (tCO_2e)	PE_{MD} (tCO_2e)	PE_{UM} (tCO_2e)	PE_y (tCO_2e)
	I	K	M	N=I+K+M
01/01/2013-31/01/2013	0	0	0	0
01/02/2013-28/02/2013	0	0	0	0
01/03/2013-31/03/2013	0	0	0	0
01/04/2013-30/04/2013	0	0	0	0
01/05/2013-31/05/2013	0	0	0	0
01/06/2013-30/06/2013	0	0	0	0
01/07/2013-31/07/2013	0	0	0	0
01/08/2013-31/08/2013	0	0	0	0
01/09/2013-30/09/2013	0	322	16	338
01/10/2013-31/10/2013	0	282	14	297
01/11/2013-30/11/2013	0	487	25	512
01/12/2013-31/12/2013	0	463	24	487
01/01/2014-31/01/2014	0	529	27	556
01/02/2014-28/02/2014	0	621	32	653
01/03/2014-31/03/2014	0	510	26	536
01/04/2014-30/04/2014	0	689	35	724
01/05/2014-31/05/2014	0	572	29	601
01/06/2014-30/06/2014	0	518	27	545
01/07/2014-31/07/2014	0	694	36	730
01/08/2014-31/08/2014	0	454	23	477

01/09/2014-30/09/2014	0	424	22	446
01/10/2014-31/10/2014	0	427	22	449
01/11/2014-30/11/2014	0	506	26	532
01/12/2014-31/12/2014	0	442	23	465
01/01/2015-31/01/2015	0	539	28	567
01/02/2015-28/02/2015	0	529	27	556
01/03/2015-31/03/2015	0	697	36	733
01/04/2015-30/04/2015	0	622	32	654
01/05/2015-31/05/2015	0	497	25	523
01/06/2015-30/06/2015	0	404	21	425
01/07/2015-31/07/2015	0	649	33	682
01/08/2015-31/08/2015	0	517	26	543
01/09/2015-30/09/2015	0	643	33	676
01/10/2015-31/10/2015	0	869	44	913
01/11/2015-30/11/2015	0	997	51	1,048
01/12/2015-31/12/2015	0	1,055	54	1,109
01/01/2016-31/01/2016	0	1,004	51	1,055
01/02/2016-29/02/2016	0	968	50	1,017
01/03/2016-31/03/2016	0	1,194	61	1,255
01/04/2016-30/04/2016	0	935	48	983
01/05/2016-31/05/2016	0	993	51	1,044
01/06/2016-30/06/2016	0	773	40	812
01/07/2016-31/07/2016	0	621	32	653
01/08/2016-31/08/2016	0	799	41	840
01/09/2016-30/09/2016	0	744	38	783
01/10/2016-31/10/2016	0	1,481	76	1,556
01/11/2016-30/11/2016	0	757	39	796

01/12/2016-31/12/2016	0	968	50	1,017
01/01/2017-31/01/2017	0	1,272	65	1,337
01/02/2017-28/02/2017	0	1,109	57	1,166
01/03/2017-31/03/2017	0	1,070	55	1,125
01/04/2017-30/04/2017	0	408	21	429
01/05/2017-31/05/2017	0	461	24	484
01/06/2017-30/06/2017	0	975	50	1,025
01/07/2017-31/07/2017	0	908	46	955
01/08/2017-31/08/2017	0	1,282	66	1,347
01/09/2017-30/09/2017	0	1,023	52	1,075
01/10/2017-31/10/2017	0	769	39	809
01/11/2017-30/11/2017	0	1,248	64	1,312
01/12/2017-31/12/2017	0	1,050	54	1,104
Total	0	38772	1984	40755

Leakage

According to the applied methodology and approved revised CDM PDD, leakage (LEy) does not need to be accounted for. Hence, zero is applied.

Therefore, the net emission reductions are as following:

Table 4-22 Emission reductions of the proposed project

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
Year 2013	254,286	24,077	0	230,209
Year 2014	320,025	29,771	0	290,254
Year 2015	328,692	30,485	0	298,207
Year 2016	380,717	35,380	0	345,337
Year 2017	388,986	36,110	0	352,876

Total	1,672,706	155,823	0	1,516,883

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The meters have been installed and calibrated in accordance with the revised monitoring plan in the approved updated PDD. The calibration is conducted at the frequency of once a year, as specified in revised monitoring plan, this complies with the applied methodology.

The verification team review the calibration reports for electricity meters, gas flow meters, methane concentration meters, and the certificates for the calibration organizations, and confirmed the summarized calibration information of the meters in the below tables.

Table 4-23 Calibration of meters installed for additional electric power consumption ($CONS_{ELEC,PJ}$)

Location	Baijiao	Shanmushu	Gongquan
Accuracy class	0.5s/0.5	0.5	0.5
Serial No.	0045641220/ 45386238	13442301/ 13442265	45386237
Calibration frequency	yearly	yearly	yearly
Date of calibration	10/01/2012 05/01/2013 03/01/2014 25/12/2014 20/12/2015 15/12/2016 10/12/2017	10/01/2012 05/01/2013 03/01/2014 25/12/2014 20/12/2015 15/12/2016 10/12/2017	10/01/2012 05/01/2013 03/01/2014 25/12/2014 20/12/2015 15/12/2016 10/12/2017
Calibration Entity	Electric Energy Metrological Station of Gongxian Quality Supervision Bureau with the certification paper, which was accredited by Sichuan Yinbin Quality Supervision Bureau on 20/11/2015 and 16/11/2018, validity for 3 years.		

Table 4-24 Calibration information of meters installed for electricity generation by CMM power plants (GENy)

location	Baijiao	Gongquan	Shanmushu
Accuracy class	0.5/0.5/0.2	0.5	0.5S
Serial No.	2510034/13260114/ 10050317770071	13260124	190970070
Calibration frequency	yearly	yearly	yearly
Date of calibration	25/04/2012 20/04/2013 15/04/2014 10/04/2015 05/04/2016 01/04/2017	25/04/2012 20/04/2013 15/04/2014 10/04/2015 05/04/2016 01/04/2017	20/08/2013 15/04/2014 10/04/2015 05/04/2016 01/04/2017
Calibration Entity	Electric Energy Metrological Station of Gongxian Quality Supervision Bureau with the certification paper, which was accredited by Sichuan Yinbin Quality Supervision Bureau on 20/11/2015 and 16/11/2018, validity for 3 years.		

Table 4-25 Calibration information of gas flow meters installed at the inlet pipeline

Location	Baijiao	Gongquan	Shanmushu
Accuracy class	0.5	0.5	0.5
Serial number	1553/ 120894 (1553 was replaced by 120894 on 10/07/2012)	1528	09005/ 09001
Calibration frequency	yearly	yearly	yearly
Date of last calibration	20/06/2012(for 1553) 03/07/2012 (for 120894) 19/06/2013 19/06/2014 19/06/2015 19/06/2016 19/06/2017	20/06/2012 19/06/2013 19/06/2014 19/06/2015 19/06/2016 19/06/2017	20/06/2012 19/06/2013 19/06/2014 19/06/2015 19/06/2016 19/06/2017
Calibration Entity	Chongqing Substation of National Petroleum & Natrual-Gas Measuring Station With High Flux with the certification No. 201700062		

Table 4-25 Calibration information of gas flow meters installed at the pipeline emergency vent valve

Location	Baijiao	Gongquan	Shanmushu
Accuracy class	0.5	0.5	0.5
Serial number	1566	1527	09004
Calibration frequency	yearly	yearly	yearly
Date of last calibration	20/06/2012 19/06/2013	20/06/2012 19/06/2013	20/06/2012 19/06/2013

	19/06/2014 19/06/2015 19/06/2016 19/06/2017	19/06/2014 19/06/2015 19/06/2016 19/06/2017	19/06/2014 19/06/2015 19/06/2016 19/06/2017
Calibration Entity	Chongqing Substation of National Petroleum & Natrual-Gas Measuring Station With High Flux with the certification No. 201700062		

Table 4-26 Calibration information of methane concentration meters

Location	Baijiao	Gongquan	Shanmushu
Accuracy class	0.5	0.5	0.5
Serial number	2484/1101 (2484 was replaced by 1101 on 28/12/2012)	1245/1243 (1245 was replaced by 1243 on 24/12/2012)	1414
Calibration frequency	yearly	yearly	yearly
Date of last calibration	09/01/2012(for 2484) 15/03/2012(for 1101) 14/03/2013 14/03/2014 14/03/2015 19/06/2015 19/06/2016 19/06/2017	20/06/2012(for 1245) 20/06/2012 (for 1243) 19/06/2013 19/06/2014 19/06/2015 19/06/2016 19/06/2017	19/06/2013 19/06/2014 19/06/2015 19/06/2016 19/06/2017
Calibration Entity	Chongqing Substation of National Petroleum & Natrual-Gas Measuring Station With High Flux with the certification No. 201700062		

Table 4-27 NMHC Concentration analysis reports

Year	Baijiao CMM power plant	Gongquan CMM power plant	Shanmushu CMM power plant
2013	0.015%	0.015%	0.016%
2014	0.016%	0.015%	0.016%
2015	0.016%	0.016%	0.015%
2016	0.016%	0.015%	0.016%
2017	0.015%	0.016%	0.016%
Calibration Entity	Sichuan Gaseous Products Quality Supervision and Inspection Station.		

As required by the VVS, the verification team is able to confirm that the monitoring has been carried out in accordance with the approved methodology ACM0008 version 04 which was applied by the proposed CDM project activity and the monitoring plan contained in the CDM PDD and VCS PD. All parameters are appropriately monitored. The actual project activity does not contain changes which may impact the additionality or scale of the project activity or applicability of baseline methodology. Thus no deviation of methodology, modification of monitoring plan or report of changes is needed. The value of parameters has been verified against the monitoring plan and monitoring report, and found complete and accurate.

The verification team has verified the reported data and procedures implemented by the PP during document review and on site verification and confirmed that: the monitoring actions have been carried out in accordance with the approved methodology ACM0008 version 04 which was applied by the proposed CDM project activity and the monitoring plan contained in the approved CDM PDD and VCS PD. The actual project activity does not contain changes which may impact the additionality or scale of the project activity or applicability of baseline methodology. Thus, no deviation of methodology, modification of monitoring plan or report changes are needed.

The operational and management structure was checked via reviewing CDM Monitoring Manual and interviewing relevant staffs of the project owner, the verification team confirms that the management system of the project is in place and the responsibilities are properly identified based on monitoring plan in approved revised CDM PDD, VCS PD and the MR for this period. Key parameters and date are measured and reviewed periodically as per the procedures in CDM PDD and VCS PD.

According to the applied methodology, there are no other external data required for determining the emission reductions of the project as the emission factor of the first crediting period has been determined ex-ante in the CDM PDD and VCS PD. The verification team has verified and confirmed that the emission factor used in the monitoring report is in compliance with the CDM PDD and VCS PD.

The verification team checked and confirmed that the operation logs, and confirmed that the actual operation hours of units are less than the estimated operation hours in the CDM PDD and VCS PD in this monitoring period.

CTI has ensured that:

- The data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan without conservative assumption;
- The relevant commercial receipts have been cross checked and found consistent;
- The appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been properly followed the methodology, VCS PD and the updated monitoring plan contained in the approved revised CDM-PDD;

- The emission factor of CCPG determined ex-ante in the registered VCS PD is applied in the monitoring report and the calculations have been justified.

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out. On site assessment was granted to the only and all installations of the plant which are relevant for the project performance and the monitoring activities.

There are no open issues regarding the implementation of the project activity and the steps to claim emission reductions which might not be in compliance with the UNFCCC criteria and relevant guidance provided by the COP/MOP and the CDM EB (clarifications and/or guidance)

4.6 Non-Permanence Risk Analysis

No non-permanence risk determined by the project proponent.

5 VERIFICATION CONCLUSION

Shenzhen CTI International Certification Co., Ltd (CTI) was commissioned by Sichuan Furong Group's Limited Industrial Company to validate the VCS PD and to verify the emission reductions reported for the period from 01 January 2013 to 31 December 2017, under the Verified Carbon Standard (VCS) Version 4.2, as set out in the monitoring report of the VCS project activity "Sichuan Furong Coal Mine Methane Utilization Project", registered as a CDM project under UNFCCC reference number 2677.

CTI verified the VCS monitoring report version 2.0, dated 24 May 2015 for the reporting period and confirms that the project is implemented as described in the approved revised CDM PDD and VCS PD. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the Project is ready to generate GHG emission reductions (VCUs). CTI can confirm that the GHG emission reduction is calculated without material misstatements.

Based on the assessments performed and the historical evidence collected, CTI concludes:

- the project is conformance with the Verified Carbon Standard (VCS) Version 4.2 and the CDM methodology "Consolidated baseline methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction by flaring or catalytic oxidation" ACM0008 version 04;

- without qualification or limitation, that the project complies with the verification criteria for projects and their GHG emission reductions or removals set out in VCS Version 4.2

- the project implementation is in line with the approved revised CDM-PDD and project monitoring plan contained in the revised CDM PDD (version 08, 28 August 2013);

- VCS PD version 02 dated 24 May 2015 complies with criteria for projects set out in VCS Version 4.2;

- the verification period of 01 January 2013 to 31 December 2017;

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
Year 2013	254,286	24,077	0	230,209
Year 2014	320,025	29,771	0	290,254
Year 2015	328,692	30,485	0	298,207
Year 2016	380,717	35,380	0	345,337
Year 2017	388,986	36,110	0	352,876
Total	1,672,706	155,823	0	1,516,883

APPENDIX A: REFERENCE DOCUMENTS

1. VCS Monitoring Report version 01, version 02 and version 03

2. VER calculation spreadsheet version 01, version 02 and version 03

3. CDM registered PDD version 07 and approved revised PDD version 08 dated 28 August 2013

4. CDM validation report prepared by DNV,12 April 2010

5. Validation opinion prepared by ERM CVS for post registration changes, 09 September 2013

6. VCS PD version 01 and version 02

7. CDM methodology: Consolidated baseline methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction by flaring or catalytic oxidation, ACM0008 version 04

8. Construction completion acceptance report for 500GF1-2RW generator sets at Baijiao CMM power plant, issued by Sichuan Furong Group's Limited Industrial Company, 16 December 2007

9. Construction completion acceptance report for JMS620GS-S.L generator sets at Baijiao CMM power plant, issued by Sichuan Furong Group's Limited Industrial Company, 25 September 2009

10. Construction completion acceptance report at Gongquan CMM power plant, issued by Sichuan Furong Group's Limited Industrial Company, 15 May 2009

11. Calibration reports for electricity meters installed at CMM power plants, by Electric Energy Metrological Station of Gongxian Quality Supervision Bureau

12. Calibration reports for electricity meters for electricity meters installed at pump stations for additional electricity consumptions, by Electric Energy Metrological Station of Gongxian Quality Supervision Bureau

13. Calibration reports for gas flow meters, Chongqing Substation of National Petroleum & Natrual-Gas Measuring Station With High Flux

14. Calibration reports for methane concentration meters, Chongqing Substation of National Petroleum & Natrual-Gas Measuring Station With High Flux

15. Certificate of Electric Energy Metrological Station of Gongxian Quality Supervision Bureau, by Sichuan Yinbin Quality Supervision Bureau

16. Verification Regulation of Electrical Energy Meters with Electronics (JJG 596-1999), by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China

17. Verification Regulation of Electromechanical Meters for Measuring Alternating-current Electrical Energy (JJG 307-2006), by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China

18. CDM Project Management Manual

19. CDM monitoring training records

20. Extracted Gas analysis reports for Baijiao and Gongquan, Sichuan Gaseous Products Quality Supervision and Inspection Station

21. Certificate of Sichuan Gaseous Products Quality Supervision and Inspection Station, by Sichuan Quality Supervision Bureau

22. Daily electricity meters readings record for the electricity generation (GENy) at Baijiao, Shanmushu and Gongquan CMM power plant

23. Monthly electricity generation (GENy) report at Baijiao, Shanmushu and Gongquan CMM power plant

24. Daily electricity meters readings record for $CONS_{Elec,PJ}$ at Baijiao, Shanmushu and Gongquan pump stations

25. Daily CMM consumption records at Baijiao, Shanmushu and Gongquan power plants

26. Monthly CMM consumption records at Baijiao, Shanmushu and Gongquan power plants

27. 2006 IPCC Guidelines for National Greenhouse Gas Inventories

28. PP VCS issuance representation

29. Regulation of Carbon Emission Trading, issued by Ministry of Ecology and Environment of China

30. Enforced company list in China ETS trade scheme, issued by Ministry of Ecology and Environment of China

APPENDIX B: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Mr. Dezheng TONG

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	-	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 8: Mining/mineral production	TA 8.1: Mining/mineral production
SS 10: Fugitive emissions from fuels (solid, oil and gas)	TA 10.1: Fugitive emissions from oil and gas

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/07/2019

Ms. Shu'E JIANG

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	-	-	-	-	-	√

Scope	Technical Area
SS 6: Construction	TA 6.1: Construction
SS 8: Mining/mineral production	TA 8.1: Mining/mineral production
SS 10: Fugitive emissions from fuels (solid, oil and gas)	TA 10.1: Fugitive emissions from oil and gas

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

Ms. Shunrong LIN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification					
GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
√	√	√	√	√	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation
SS 15: Agriculture	TA 15.1: Agriculture

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

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

Draft report clarifications and corrective action requests by validation team	Summary of project participant response	Validation team conclusion
CAR01 was raised that the value of $BE_{MR,y}$, $BE_{Use,y}$, PE_{ME}, PE_{MD} and PE_{UM} in the MR version 01 is not consistent with the value in the ER spreadsheet.	The ER spreadsheet has been revised due to GWP of CH_4 from 25 to 28 for calculation of PE_{um}. All the values on the baseline emissions and project emissions in the whole MR have been conformed and revised in order to be consistent with the values in the ER spreadsheet. Please see the latest ER spreadsheet and MR.	The revised ER spreadsheet has been validated. And the revised MR has been validated. The baseline emissions and project emissions in MR are consistent with these in the ER spreadsheet. CAR01 is closed