



GUIZHOU WENJIABA CMM POWER GENERATION PROJECT



Document Prepared by TÜV NORD CERT GmbH

Project Title	Guizhou Wenjiaba CMM Power Generation Project
Report Title	Joint Validation and 1 st periodical VCS Verification report for Guizhou Wenjiaba CMM Power Generation Project
Version	1.0
Report ID	8003038525 - 21/095
Verification Period	24-September-2020 to 25-August-2021
Client	Climate Bridge (Shanghai) Ltd.
Pages	93
Date of Issue	22-November-2021
Prepared By	TÜV NORD CERT GmbH
Contact	TÜV NORD CERT GmbH JI/CDM Certification Program Am TÜV 1 45307 Essen, Germany Phone: +49-201-825-3335

	Fax: +49-201-825-3290 www.tuev-nord.de
Approved By	Christina Stöhr
Work Carried Out By	Zhao Xuejiao (TL& validator/verifier) Christina Stöhr, Rainer Winter (TR)

Summary:

- *A description of the project*

The project activity developed in Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P. R. China, is a Coal Mine Methane Power Generation Project. It utilizes the coal mine methane (CMM) with low methane concentration extracted from Wenjiaba coal mine located in Pingzai Village to generate electricity for captive use by coal mines and if surplus supply electricity to CSPG. The CMM power generation units were installed with a total installed capacity of 3.5 MW (2*0.75MW & 2*1MW), destroying estimated 5.645 million m³ of methane annually and the annual exported electricity will be 16,275 MWh. The project is expected to achieve 103,297 tCO₂e of emission reduction annually. The project started construction on 15-July-2018 and started operation on 24-September-2020, it was allocated with VCS ID 2383.

- *A description of the validation and verification*

The approved CDM methodology ACM0008 "Abatement of methane from coal mines" (version 08.0) is applied to quantify the GHG removals achieved in this project. The calculation of the project emission removals is carried out in a transparent and conservative manner. This project is being developed in conjunction with the validation and 1st periodic of verification.

- *The purpose and scope of validation and verification*

The validation objective is an independent assessment by a Third Party of a proposed project activity against all defined criteria set for the registration under the VCS. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria, the validation involves the assessment of: project conformance to VCS standards/programs, project conformance to the applied methodology, including the procedure for the demonstration of additionality specified in the methodology; and likelihood that methods a procedures set out in the project description will generate verifiable GHG data and information when implemented. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended generation of VCUs. Validation is part of the VCS project cycle and will finally result in a conclusion by the executing VVB whether a project activity is valid to be submitted for registration to VCS registry.

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

- *The method and criteria used for validation and verification*

Validation and Verification is conducted using TÜV NORD CERT GmbH procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques. The validation/verification team assessed the project activity's compliance against the VCS Standard Version 4.1, the selected CDM methodology and tools and the project description and monitoring report. The project is eligible under Project Scope 1 and 8. The validation/verification criteria followed the guidance documents provided by VCS included the following:

VCS Standard Version 4.1, VCS Program Guide Version 4.0 and the applied CDM methodology "Abatement of methane from coal mines" (version 08.0).

- *The number of findings raised during validation and verification*

In the course of the validation and verification, 9 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

- *Any uncertainties associated with the validation and verification*

There are no restrictions of uncertainty for both validation and verification.

- *Summary of the validation and verification conclusions*

Climate Bridge (Shanghai) Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Verified Carbon Standard (VCS) validation joint with 1st periodical verification of the project, “Guizhou Wenjiaba CMM Power Generation Project” (VCS ID 2383) with regard to the relevant requirements of VCS Standard Version 4.1. TÜV NORD confirms all validation and verification activities including objectives, scope and criteria, level of assurance, project description, monitoring and monitoring report adhere to VCS Standard Version 4.1 and all associated updated as documented in this report, are complete.

TÜV NORD concludes that the project activity “Guizhou Wenjiaba CMM Power Generation Project” in China, as described in the final Project Description version and final Monitoring Report version, meets all relevant requirements for VCS validation and verification activity and correctly applied the methodology ACM0008 Version 08. Hence TÜV NORD is able to provide positive validation and verification opinion as per the requirement of VCS and further certify that the GHG emission reduction from the project during the monitoring period from 24-September-2020 to 25-August-2021 amount to 49,822 tCO₂e VCUs.

CONTENTS

1	INTRODUCTION	7
1.1	Objective	7
1.2	Scope and Criteria	7
1.3	Level of Assurance	8
1.4	Summary Description of the Project	8
2	VALIDATION AND VERIFICATION PROCESS	9
2.1	Method and Criteria	9
2.2	Document Review	9
2.3	Interviews	10
2.4	Site Inspections	11
2.5	Resolution of Findings	12
3	VALIDATION FINDINGS	13
3.1	Project Details	13
3.2	Participation under Other GHG Programs	17
3.3	Safeguards	17
3.4	Application of Methodology	21
3.5	Non-Permanence Risk Analysis	49
4	VERIFICATION FINDINGS	50
4.1	Accuracy of GHG Emission Reduction and Removal Calculations	50
4.2	Quality of Evidence to Determine GHG Emission Reductions and Removals	55
5	VALIDATION AND VERIFICATION CONCLUSION	56
	APPENDIX 1: ABBREVIATIONS	57
	APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS	58
	APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED	59
	APPENDIX 4: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS	66

APPENDIX 5 MONITORED PARAMETERS.....	75
APPENDIX 6: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT	87
APPENDIX 7: ASSESSMENT OF FINANCIAL PARAMETERS	88

1 INTRODUCTION

1.1 Objective

Climate Bridge (Shanghai) Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Verified Carbon Standard (VCS) validation joint with 1st periodical verification of the project for the monitoring period from 24-September-2020 to 25-August-2021 (both days included).

The objective of validation is an independent assessment by a Third Party of a proposed project activity against all defined criteria set for the registration under the VCS. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria, the validation involves the assessment of: project conformance to VCS standards/programs, project conformance to the applied methodology, including the procedure for the demonstration of additionality specified in the methodology; and likelihood that methods and procedures set out in the project description will generate verifiable GHG data and information when implemented. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended generation of VCUs. Validation is part of the VCS project cycle and will finally result in a conclusion by the executing VVB whether a project activity is valid to be submitted for registration to VCS registry.

The objective of verification is to have an independent review ex-post determination by a DOE of the monitored GHG emission reductions that have occurred as a result of the project activity implemented during a defined monitoring period. The evaluation is done against the requirements of the VCS Standard Version 4.1 based on the monitoring report. In order to confirm that the GHG emission reductions sound reasonable and meet the identified criteria, the verification involves the assessment of monitoring plan conformance to VCS rules and applied methodology. Verification is a requirement and is seen as necessary to provide assurance on the generation of VCUs.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project design document (PD) to validate that (a) the project design is actual, (b) the baseline scenario is correctly defined as per the applied methodology and related tools, (c) the project is additional, (d) the monitoring plan can be implemented and is transparent and adequate and (e) all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature. The Joint-PD-MR is reviewed against the criteria stated in VCS Standard Version 4.1 and the approved baseline and monitoring methodology ACM0008 version 08.0. The validation was based on the requirements VCS Validation and Verification Manual and VCS program definitions and standards version 4.1 applying auditing techniques. The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The scope of the verification is to verify that: (a) the actual monitoring system and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; (b) the GHG emission reductions data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reductions data are free from material misstatement; (c) the reported GHG emissions data is sufficiently supported by evidence. Verification shall ensure that the reported GHG emission reductions are complete and accurate in accordance with the applicable VCS criteria in order to be certified. Verification is conducted using TÜV NORD procedures in line with the requirements specified in the VCS Program and ISO14064-3 requirements and applying auditing techniques. The verification team assessed and determined that the implementation and operation of the project activity, and steps to report GHG emission reductions comply with the VCS rules. The verification involved a

document review of relevant documentation and interview with the project participants. Verification is not meant to provide any consultancy towards the project participants; however, stated request for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All GHG sinks, sources and GHG emissions equal to or greater than 1% of the total GHG assertions are considered. The project is expected to generate average of 103,297 VCUs per year, and therefore can be considered as a project per the VCS rules, in regards to its scale, subject to a 2% materiality threshold. The assessment was conducted to provide a reasonable level of assurance of compliance against the defined audit criteria and materiality threshold within the audit scope. Based on the audit findings the validation and verification statement reasonably assure that the GHG assertion is materially correct and is a fair representation of the GHG data and information.

1.4 Summary Description of the Project

The project is implemented by Guizhou Shuikuang Orion Clean Energy Co., Ltd. and it aims to utilize the coal mine methane (CMM) with low methane concentration extracted from Wenjiaba coal mine to generate electricity for captive use by coal mines and surplus supply electricity to CSPG which is confirmed by checking the notification of tariff to the surplus supply electricity to CSPG of project^{/NTSE/}. The CMM power generation units will be installed with a total installed capacity of 3.5 MW (2*0.75MW & 2*1MW), destroying estimated 5.645 million m³ of methane annually. No coal bed methane (CBM) or ventilation air methane (VAM) utilization is involved in the project^{/FSR/} and it is located inside the Pingzai Village, Zhijin County, Bijie City, Guizhou Province, China.

The net electricity supplied to the coal mine for captive use and surplus supplied to CSPG, replaces the equivalent amount of electricity that would have been purchased from the China Southern Power Grid (CSPG). Waste heat from the generators has been recovered to provide heat to the coal mines. Emission reductions due to surplus electricity delivered to CSPG and heat replacement are not claimed, it is confirmed as conservative.

The baseline scenario is the same to the status prior to the implementation of the project, i.e. Wenjiaba coal mine was equipped with CMM extraction facilities and all extracted CMM was vented into the atmosphere directly; the electricity consumed at the coal mine was imported from China Southern Power Grid (CSPG); the heat was provided by waste coal fired boilers.

In the monitoring period from 24-September-2020 to 25-August-2021, total 1,831.37 tCH₄ Methane was captured and utilized and the net electricity supplied to the Wenjiaba coal mine for captive use is 7,497.440 MWh. The total verified carbon units (VCUs) achieved in the monitoring period are 49,822 tCO₂e, which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer.

The project activity generates GHG emission reductions by utilizes the low concentration coal mine methane (CMM), that otherwise would be vented into the atmosphere directly and generates electricity to supply to the coal mine that displace part of the electricity generated by the grid which is dominated by fossil fuel-fired power plants. Thus the project generates GHG emission reductions and produces financial, social and environmental benefits. The project has resulted in the local sustainable development as described in Section 1.17 of the Joint-PD-MR^{/JPM/}.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

A project specific validation and verification plan was developed to guide the validation and verification auditing process to ensure efficiency and effectiveness.

The purpose of the validation and verification is to present a risk assessment for determining the nature and extent of validation and verification procedures necessary to ensure the risk of auditing error is reduced to a reasonable level. According to the ISO14064-3, the criteria are the policy, procedure or requirement used as reference against which evidence is compared. Therefore, validation of the project description and verification of the monitoring plan and the reported project results were measured for compliance against the following criteria:

- VCS Standard, v4.1/^{VCSS/}
- VCS Program Guide, v4.0/^{VCSPG/}
- VCS Program Definitions, v4.1/^{VCSPD/}
- VCS-Joint-Project-Description-Monitoring-Report-Template-v4.0/^{JPMT/}

The validation and verification process derived from all items in the validation and verification criteria stated above. Field inspection and techniques based on the project parameters, scope and best professional judgement of the validation and verification team in order to meet a reasonable level of assurance. The validation and verification consisted of the following three phase:

- Document review
- On-site assessment
- The resolution of outstanding issues and the issuance of the final validation and verification report and certification.

The validation and verification process derived from all items in the validation and verification criteria stated above. Field inspection and techniques based on the project parameters, scope and best professional judgement of the validation and verification team in order to meet a reasonable level of assurance.

There is no sampling approach utilized by PP and VVB during validation and verification.

2.2 Document Review

The Joint-PD-MR/^{JPM/} and supporting background documents related to the project implementation were reviewed. Documents review was conducted to ensure consistency with and identify any deviation from VCS program requirements. Desk review included an examination of the project design details, baseline scenario, additionality, ex ante and monitoring data and parameters, and quantification of GHG emission reductions.

Furthermore, the validation and verification team used additional documentation by third parties like host party legislation, technical reports referring to the project design details, baseline scenario, additionality, monitoring or to the basic conditions and technical data.

The references used in the course of this validation and verification are summarized in Appendix 3.

The validation and verification was performed basing on the documents check and site inspection/measurements, refer to the section 3 and 4 of this report for the validation and verification process detail and corresponding documents review.

2.3 Interviews

Describe the interview process and identify personnel, including their roles, who were interviewed and/or provided information additional to that provided in the project description, monitoring report and any supporting documents.

The objective of the interview process was to solicit important information from personnel related to project and relevant to the validation and verification process. Onsite interviews and information discussions were conducted with representatives from project implementer^{/11/}, local officer from EPB^{/12/}, local residents^{/13/} and Project VCS development consultant^{/14/}. The interviews were performed by the validation and verification team on-site (within the project area, in Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P.R. China) and the following is a list of the main interviewees and subject.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Li ^{/11/}	Peihai	Guizhou Shuikuang Orion Clean Energy Co., Ltd./Manager	12-October-2021	- General aspects of the project - Changes since validation / previous verifications - Calibration procedures - Power generation situation - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - Procedural aspects of the verification - Maintenance - Environmental aspects - Project ownership	Zhao Xuejiao
2.	Ye ^{/11/}	Wennian	Guizhou Shuikuang Orion Clean Energy Co., Ltd./Wenjiaba Plant Chief	12-October-2021		
3.	Zeng ^{/11/}	Zhengmin	Guizhou Shuikuang Orion Clean Energy Co., Ltd./ Operation Staff	12-October-2021		
4.	Qin ^{/12/}	Qin	Bijie City Environment Protection Bureau/ Section Chief	12-October-2021	- Local stakeholder communication - Stakeholder comments - Environmental aspects - Environmental protection measurements	Zhao Xuejiao

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
5.	Liao/ ^{12/}	Shangju	Local resident	12-October-2021	- Local stakeholder communication - Stakeholder comments	
6.	Guo/ ^{13/}	Yuqiong	Local resident	12-October-2021		
7.	Ye/ ^{14/}	Zongpei	Climate Bridge (Shanghai) Ltd./Project Manager	12-October-2021	- Financial aspects - Deviations - Monitoring period - Project activity starting date - Assumptions - Monitoring plan and implementation - Monitoring measurements - Editorial issues of the VCS MR	Zhao Xuejiao

2.4 Site Inspections

The validation and verification site inspection was conducted on 12-October-2021. A ground inspection of the project plan was conducted during the site visit and the validation and verification team interviewed project implementer representative and operation staffs.

During the site inspection, the plant was inspected and documents evidence were checked, details as following table,

Duration of on-site inspection: 12-October-2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting	Office of Project Owner in Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P.R. China	12-October-2021	Zhao Xuejiao
2	On-site inspection Interview with PP Representative and CMM plants Operation Staff	Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P.R. China	12-October-2021	Zhao Xuejiao
3	Documents check	Office of Project Owner in Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P.R. China	12-October-2021	Zhao Xuejiao
4	Finding Summary	Office of Project Owner in Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P.R. China	12-October-2021	Zhao Xuejiao
5	Close Meeting	Office of Project Owner in Pingzai Village, Zhijin County, Bijie City, Guizhou Province, P.R. China	12-October-2021	Zhao Xuejiao

2.5 Resolution of Findings

Material discrepancies identified in the course of the validation and verification are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) is established where:

The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

The VCS Standard Version 4.1 requirements have not been met;

There is a risk that the emission reductions cannot be monitored or calculated.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the next verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this validation and verification is included in Appendix 4 of this report.

In the course of the validation 9 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

2.5.1 Forward Action Requests

No FAR has been raised.

This is the joint validation and 1st VCS verification, thus there is no FAR raised previously.

3 VALIDATION FINDINGS

3.1 Project Details

- Project type, technologies and measures implemented, and eligibility of the project

Through the onsite visit, interviewing the project owner and reviewing the project design/^{FSR}/, it was confirmed that the project is implemented to generate electricity using low concentration coal mine methane (CMM) from coal mine and replace the electricity which would otherwise be generated by grid connected power plants. Therefore, it was confirmed that the sectoral scope is scope 01: Energy industries (renewable - / non-renewable sources) and scope 08: Mining/mineral production as per the UNFCCC Standard “Applicability of sectoral scopes version 01.0”/^{SASS}/. It was confirmed that the project is not a grouped project.

The information and descriptions reported in section 1.1 of the VCS Joint-PD-MR /^{JPM}/ have been checked.

Guizhou Wenjiaba CMM Power Generation Project (hereinafter referred to as the Project) is a Coal Mine Methane Power Generation Project, utilizes the coal mine methane (CMM) with low methane concentration less than 30% extracted from Wenjiaba coal mine located in Pingzai Village, Zhijin County, Bijie City, Guizhou Province to generate electricity for coal mine captive use where the Project is located and to China Southern Power Grid (CSPG) if there is any electricity surplus/^{PPA}/.

The Project is located in Pingzai Village, Zhijin County, Liu Panshui City, Guizhou Province, China. The Project includes one coalmine (Wenjiaba). No coal bed methane (CBM) or ventilation air methane (VAM) utilization is involved in the project. In accordance with the Joint-PD-MR, there are total 4 sets (2*0.75MW & 2*1MW) of CMM power generators with the total installed capacity of 3.5 MW has been installed to utilize CMM for power generation.

Via checking the Joint-PD-MR/^{JPM}/, it is confirmed that the scenario existing prior to the implementation of the project as stated in the Joint-PD-MR is Wenjiaba coal mine was equipped with CMM extraction facilities and all extracted CMM was vented into the atmosphere directly; the electricity was supplied from China Southern Power Grid (CSPG), that is dominated by fossil fuel-fired power plants; the heat was provided by waste coal boilers. The baseline scenario is the same as the scenario existing prior to the implementation of the project activity, which has been confirmed during the site interview with PP and checking the CMM extraction record for the Wenjiaba coal mine /^{CER}/ and records of electricity purchased from the grid by coal mines/^{REP}/. Thus it is verified that the baseline scenario is reasonable and correct.

The project activity generates GHG emission reductions by utilizes the low concentration coal mine methane (CMM), that otherwise would be vented into the atmosphere directly and generate electricity to supply to the coal mines displace part of the electricity generated by the grid which is dominated by fossil fuel-fired power plants thus generating GHG emission reductions and produce financial, social and environmental benefits. The waste heat from the generators will be recovered by waste heat boilers to provide free hot water to the coal mines, which was provided by waste coal fired boilers before the implementation of the Project. However, to be conservative, emission reductions related to heat will not be claimed for this part.

The expected total emission reduction of the Project in the crediting periods of 10 years (from 24-September-2020 to 23-September-2030) is 1,032,970 tCO₂e, and the annual emission reduction is estimated to be 103,297 tCO₂e.

In conclusion, it is verified that the summary description of the project in section 1.1 is in line with the Joint-PD-MR template requirements and all the information has been provided and verified as correct.

The PP has described and justified how the project is eligible under the scope of the VCS Program in Joint-PD-MR as per the section 2.1.1 of VCS Standard Version 4.1. The assessment is provided as below,

1. The project activity generates GHG emission reductions including CO₂ and CH₄ which belong to the six Kyoto Protocol greenhouse gases.
2. “The scope of the VCS Program excludes projects that can reasonably be assumed to have generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction.” Via checking the Joint-PD-MR of the project, it is verified that the project is implemented to generate electricity using low concentration coal mine methane (CMM) from a coal mine and replace the electricity which would otherwise be generated by grid connected power plants, and the additionality is verified as actual, thus there is no assumption of having generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction for this project.
3. The VCS Program also excludes the following project activities under the circumstances indicated in Table 1 of section 2.1.1 of VCS Standard Version 4.1, via checking all the excluded project activities in the table, it is verified that this project type is not excluded by the scope of VCS program.

In conclusion, the project is eligible to the scope of the VCS Program.

- Project design, including eligibility criteria for grouped projects

The project has not been designed to include a single installation of an activity, multiple project activity instances, or as a grouped project.

- Project proponent and other entities involved in the project

The project proponent (Guizhou Shuikuang Orion Clean Energy Co., Ltd.) and the contact information reported in section 1.5 of the VCS Joint-PD-MR have been confirmed to be correct through checking the business license of the company/^{BL/}, the Project approval/^{AP/} and interviewing with the PP representative through the on-site visit/^{I1/}.

The other entities involved in the Project (Climate Bridge (Shanghai) Ltd.) and the contact information reported in section 1.6 of the VCS Joint-PD-MR have been confirmed to be correct through checking the business license of the Climate Bridge (Shanghai) Ltd./^{BL/} and interviewing the representative of this company during the on-site visit/^{I1/}

- Ownership

The section 1.7 of the Joint-PD-MR has been checked, it is confirmed that the Project Proponent demonstrates that they have the legal right to control and operate project activity.

Via checking the National legal approval to the Environmental Impact Assessment (EIA)/^{AEIA/}, Project approval/^{AP/}, and the business license of the Guizhou Shuikuang Orion Clean Energy Co., Ltd./^{BL/}, it is verified that the PP has the legal right to control and operate the project activity. Furthermore, cross

checking the EPC contract/^{EPC/}, and the power purchasing agreement/^{PPA/}, it is verified that the ownership of the plant, equipment and power generating is with Guizhou Shuikuang Orion Clean Energy Co., Ltd. Thus, it is confirmed that the project owner has the ownership of the project.

- Project start date

The project start date is 24-September-2020 which is verified as the date on which the project began generating GHG emission reductions or removals as per the concept in VCS Standard Version 4.1.

Via checking the operation log/^{LOG/} and record of unit started operation/^{RUSO/}, it is verified that the start date is correct and in line with the VCS standard.

- Project crediting period

For the VCS crediting period, PP has chosen 10 years fixed crediting period started from 24-September-2020 to 23-September-2030 which is in line with the concept for crediting period in section 3.8.1 of the VCS standard 4.1.

- Project scale and estimated GHG emission reductions or removals

The average annual ERs of the project are 103,297 tCO₂e, which is lower than the threshold of large-projects (300,000 tCO₂e per year). Therefore the project falls in the category of “Project” as per definition in VCS standard. And the estimated total Estimated GHG Emission Reductions or Removals during the VCS crediting period (24-September-2020 to 23-September-2030) is 1,032,970 tCO₂e.

- Project location

The project site is located in Pingzai Village, Zhijin County, Bijie City, Guizhou Province P. R. China. The geographical coordinates for the project site are east longitude 105°40'53.93" and north latitude 26°39'24.99". The location of the project site is verified as consistent with on-site investigation by GPS devices.

- Conditions prior to project initiation

There is no power plant existing prior to the project at the project site, the project is the installation of new CMM extraction and power grid connected plant. The conditions prior to project initiation has been validated in the Joint-PD-MR to be the same as the baseline scenario identified in the Joint-PD-MR, i.e., 1) all the low concentration CMM extracted from the Wenjiaba coal mine in the Project would be vented into the atmosphere; 2) the CSPG provided the equivalent amount of electricity produced by the Project (as discussed above, the electricity generated by the Project will only replace electricity from CSPG) and 3) heat was provided by waste coal boilers (emission reductions due to heat replacement will not be claimed).

The baseline scenario is the same as the scenario existing prior to the implementation of the project activity, which has been confirmed during the site interview with PP and checking the CMM extraction record for the Wenjiaba coal mine/^{CER/} and records of electricity purchase from the grid by coal mines/^{REP/}. Thus it is verified that the baseline scenario is reasonable and correct.

Therefore, the project is confirmed not to be implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.

- Project compliance with applicable laws, statutes and other regulatory frameworks

The Joint-PD-MR has stated that the project is in the field of Mining/mineral production and the CMM extraction is confirmed as in line with the Renewable Energy Law and Regulations/^{L&R/}, Guidance Catalogue for the Development of Renewable Energy Industry/^{L&R/}, Opinions of the General Office of the State Council on Further Accelerating the Extraction and Utilization of Coalbed Methane (Coal Mine Gas)/^{L&R/}, Notice of the National Development and Reform Commission on the issuance of the twelfth Five-Year Plan for The Development and Utilization of Coalbed Methane (Coal Mine Gas)/^{L&R/} and Chinese National Coalmine Safety Regulation (valid in 2016)/^{CSR/}. For the power generation to the grid, via checking the power purchasing agreement/^{PPA/}, it is verified that the power generation and supply in line with the requirement of national laws and regulations as stated in the PPA/^{PPA/}. Also the project is legally approved by Local government by checking the Project approval/^{AP/}, which means that the project is in line with the national and local laws and regulations based on the local expertise of the VVB.

In conclusion, the project complies with all relevant local, regional and national laws, statutes and regulatory frameworks in China.

- Participation under other GHG programs:
- Projects registered (or seeking registration) under other GHG program(s)

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC/^{unfccc/}, GS/^{gs/}, VCS/^{vcs/} and other GHG schemes' website. It is verified that the project is seeking registration only in VCS program/^{vcs/}.

- Rejection by other GHG programs

The project has neither been rejected by any other GHG programs which has been confirmed via checking the UNFCCC/^{unfccc/}, GS/^{gs/}, VCS/^{vcs/} and other GHG schemes' website.

- Other forms of credit:
- Emissions trading programs and other binding limits

The project proponent is not part of any emission trading program which has been confirmed via checking the UNFCCC/^{unfccc/}, GS/^{gs/}, VCS/^{vcs/} and other GHG schemes' website. The net GHG emission reductions from the project will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions. The project activity has not participated under any other GHG programs which has been confirmed via checking the UNFCCC/^{unfccc/}, GS/^{gs/}, VCS/^{vcs/} and other GHG schemes' website.

Furthermore, based on validation and verification team's local expertise, China has a national emissions trading scheme only cover the high-emission industries, such as power generation sector that emitted at least 26,000 tons of CO₂e/year which has been verified in the public website/^{cets/}, and it is confirmed that the project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the project owner by checking the enforced company list in public information/^{ecl/}. Hence, it is confirmed that the emission reductions will not be double counted.

- Other forms of environmental credit sought or received and eligible to be sought or received

Via interview with the project owner/^{I1/} and based on above assessment, it is confirmed that the project has not created any other form of environmental credit.

- Additional information relevant to the project, including:
- Leakage management

According to the applied methodology ACM0008 (Version 08)^{/ACM0008/} and the demonstration in the Joint-PD-MR and section 4.4.5.3 of this report, the leakage of the project is zero. Thus no management involved.

- Commercially sensitive information

It is confirmed that no commercially sensitive information relevant to the project description has been excluded from the public version of the project description.

- Sustainable development

The Project is confirmed contributing to sustainable development in the following ways which have been stated in the Joint-PD-MR:

1. Achieving significant GHG emission reductions and other air pollutant reductions by methane destruction which has been confirmed and verified in ER calculation sheet^{/XLS/};
2. Displacing part of the grid electricity mainly generated by fossil fuel combustion, thus reducing the emission of CO₂ and other air pollutants which has been confirmed by checking the Power Purchase Agreement^{/PPA/};
3. Creating new job opportunities which has been confirmed by checking the labor contracts of the CMM power plant^{/LC/}.

Based on above assessment and demonstration, it is concluded that the description in the project description is accurate, complete, and the nature of the project is actual and understandable, and it is confirmed that the project has been implemented as described in the project description via site inspection.

CL 01, CAR 01 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.2 Participation under Other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC^{/unfccc/}, GS^{/gs/}, VCS^{/vcs/} and other GHG schemes' website. It is verified that the project is seeking registration only in VCS program^{/vcs/}.

3.3 Safeguards

3.3.1 No Net Harm

In China, an Environmental Impacts Assessment is required according to Chinese legislation. The EIA was designed by Chongqing Jiutian Environmental Impact Assessment Co., Ltd.^{/EIA/} and approved by Zhijin County Environmental Protection Bureau on 20-March-2017^{/AEIA/}. The analysis of the environmental impacts of the project activity is sufficiently described according to EIA report^{/EIA/}. The assessment is as below,

It is considered that the environmental impacts and the relevant mitigation methods have been comprehensively described in Section 2.1 and 2.3 of Joint-PD-MR including the air pollution and wastewater, noise, and solid waste impact on the ecosystem and environment of local area in project site according to the EIA report^{/EIA/}.

Associated with the review of EIA report/^{EIA/}, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures according to the EIA report/^{EIA/}. There was also no any endangered species found in the project location.

As per the approval of EIA/^{AEIA/}, it stated that the inspectors from the EPB have to carry out monitoring work for the environmental impact arisen from the project activity during CMM power plant commissioning periodically. Via interview with the local officer from EPB and environment supervision station/^{12/}, it is confirmed that they are satisfactory with the environmental protection and recovery work carried out by the project owner. The EPB also did not receive any public comment on the project activity during this monitoring period.

During the on-site interview, the local residents/^{13/} were interviewed if there was critical impact to their living environment. It is verified that the project activity does not cause adverse effect to their daily life.

Furthermore, via interview with local officer and stakeholders, it is confirmed that the implementation of the project will improve local socio-economic development through creating career opportunities and paying taxes to local government.

In conclusion, there were some impacts on environment during the construction and operation periods which has been demonstrated in the Joint-PD-MR and EIA, also the proper measurements have been carried out by project implementer to mitigate such impacts.

3.3.2 Local Stakeholder Consultation

A stakeholder survey was carried out by the project developer on 23-February-2017 which was prior to the start date of the construction.

Survey questionnaires were distributed to relevant personnel of Wenjiaba Coal Mine, local villagers and government officials by the Project owner on 23-February-2017, totally 50 copies of questionnaires were issued to relevant personnel of Wenjiaba Coal Mine, local villagers and government officials with 50 pieces of reply received. The stakeholders' background information and comments from questionnaires were summarized and recorded in the Joint-PD-MR, Section 2.2.

Via checking the 50 filled questionnaires/^{LSC/}, it is verified that all respondents know or heard about the Project. Most of them are supportive of the project construction, and think the Project will bring more benefit than loss. 80% of the respondents are willing to participate in the construction and operation of the Project. And some respondents have concerns about the potential noise pollution and water pollution caused by the Project, these impacts have already been considered in the EIA approval and the PP has taken related mitigation measures as per the EIA approval request so that the project can be implemented successfully.

The related mitigative actions have been carried out by and assessed by VVB as below:

1. The noise during operation is generated by the low-concentration CMM generators, circulating cooling tower and pumps, via site inspection, VVB confirmed that the plant buildings that contain machinery are all built from reinforced concrete, with soundproof materials installed inside, atop and at the openings. And the Noise emission from the project operation is confirmed as complies with the standard requirements of Category 2 (GB12348-2008) which is in line with the requirement of EIA/^{EIA/}.
2. There are wastewater generated during the operation including condensate water, cooling water and domestic wastewater and via site inspection, VVB confirmed that no pollutions in condensate water and

cooling water, and all the domestic wastewater has been properly handled and used as fertilizer which is verified by site inspection.

Finally, it is verified that there is no one who thinks that the Project will have a negative impact on the local life, local stakeholders are supportive of the project construction by checking the questionnaires/^{LSC/}, and thus no need to change the project design based on the stakeholder inputs.

During the implementation stage of this monitoring period, via checking the local communication survey records/^{LCSR/} and interview with the local officer/^{I2/} and local residents/^{I3/} during site visit, it is confirmed that the local authority has conducted follow-up interviews and ongoing communication with local stakeholders to collect any comments or inputs to the project implementation. Based on the VVB's local expertise, it is confirmed that the local government agencies and competent authorities will conduct spot checks on the implementation of the project from time to time as per the request from the local government's regulations.

Moreover, the project owner carried out a questionnaire survey for the local stakeholder to collect the relevant comments and suggestions on 15-January-2021 during this 1st monitoring period. Via checking the filled 30 questionnaires/^{LSCR-M/}, interview with the local officer and local resident during site visit, it is verified that 100 percent of the respondents believe that the Project will not have any negative environmental impact.

In addition, during the operation process, there were a few respondents who ask the project owner to pay attention and solve these issues caused by the Project including environmental pollution and ensure the security of the power station. Project Owner has brought up with corresponding approaches to minimize the impact of the Project on the environment and related mitigative actions have been carried out by Project Owner and assessed as above, furthermore, via checking the training records/^{TCR/}, it is verified that all the workers received the safety training regularly, hence, it is concluded that all the Project Owner has taken necessary measures and the issues are all tackled for this monitoring period.

All the mitigation actions have been verified by interview with local officer, the local officer from Zhijin County Environment Protection Bureau Environmental Monitoring Team/^{I2/} has confirmed that the project was under supervised and the implementation of the project is in line with the local environment protection regulations and EIA/^{EIA/}. And via checking the filled 30 questionnaires/^{LSCR-M/}, it is confirmed that no one thinks that the Project will have a negative impact on the local life.

Via interview with the local officer/^{I2/} and local residents/^{I3/} during site visit, it is verified that there were no comments and issues from the local stakeholders during the implementation period and the project passed all the periodic spot checks by local government. Hence there is no need to change the project design based on the stakeholder inputs.

CL 02, CAR 02 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.3.3 Environmental Impact

In China, an Environmental Impacts Assessment is required according to Chinese legislation. The EIA was designed by Chongqing Jiutian Environmental Impact Assessment Co., Ltd./^{EIA/} and approved by Zhijin County Environment Protection Bureau on 20-March-2017/^{AEIA/}. The analysis of the environmental

impacts of the project activity is sufficiently described according to EIA report/^{EIA/}. The assessment is as below,

It is considered that the environmental impacts and the relevant mitigation methods have been comprehensively described in Section 2.3 of Joint-PD-MR including the air pollution and wastewater, noise, solid waste and impact on the ecosystem in local area of project site according to the EIA report.

The environmental impacts of the project were sufficiently assessed by means of an Environmental Impact Assessment (EIA) study report according to the Chinese laws & regulations such as “Environmental Protection Law of P.R. China”/^{L&R/} and “Law of the People's Republic of China on the Environmental Impact Assessment”/^{L&R/}. The environmental impact assessment was completed in March 2017 by Chongqing Jiutian Environmental Impact Assessment Co., Ltd./^{EIA/}. The EIA report /^{EIA/}, which was approved by Zhijin County Environmental Protection Bureau (EPB) on 20-March-2017/^{AEIA/}, was inspected by the VVB to be valid/^{AEIA/}. Every aspect of environmental impact has been considered in the EIA report with corresponding measures during project development.

During the construction period, via interview with the local officer from EPB, it is confirmed that the potential environmental impacts have been sufficiently identified for the construction period, such as air pollution, wastewater, noise and solid waste etc. The conclusion of the analysis has been described in the Joint-PD-MR as per the EIA report/^{EIA/} and the related mitigation measures have been listed as per the approval of EIA report/^{AEIA/}. Due to the project has been implemented during the site inspection, it is confirmed that the impact during the construction period has been solved and no significant environmental impacts are expected from the project activity.

During the site inspection, the project was implemented normally. The validator revealed that noise during operation is generated by the low-concentration CMM generators, circulating cooling tower and pumps and the Noise emission from the project operation is confirmed during site inspection, PP has taken some mitigation measures including the generator and engine are installed in a semi-enclosed workshop which adopts brick and concrete structure, the inner wall is equipped with sound absorbing materials, and the inlet and outlet are equipped with mufflers which has been verified by VVB during the site inspection, and via interview with local officer from EPB, it is verified that the noise in the project site complies with the standard requirements of Category 2 of national standard “*Emission standard for industrial enterprise noise at boundary*”(GB12348-2008)/^{ESIE/}.

Associated with the review of EIA, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures according to the EIA report. There was also no any endangered species found in the project location.

As per the approval of EIA, it stated that the inspectors from the EPB have to carry out monitoring work for the environmental impact arisen from the project activity during CMM power plant commissioning periodically. Via interview with the local officer from EPB/^{12/}, it is confirmed that they are satisfactory with the environmental protection and recovery work carried out by the project owner. The EPB also did not receive any public comment on the project activity after the implementation of the project.

3.3.4 Public Comments

The project sought the registration with the VCS Program, according to VCS requirements the Project Description was submitted for public comment period. The project was allocated with VCS ID 2383. The

public comment period started on 26-November-2020 and ended on 26-December-2020 (<https://registry.verra.org/app/projectDetail/VCS/2383>).

No comments were received during this period which has been verified by checking the dedicated website. CAR 03 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.3.5 AFOLU-Specific Safeguards

N/A

3.4 Application of Methodology

3.4.1 Title and Reference

The approved consolidated methodology applied in the project activity is ACM0008 –“Abatement of methane from coal mines” (version 08.0)/ACM0008/.

This methodology also refers to the latest approved version of the following tools:

“Combined tool to identify the baseline scenario and demonstrate additionality” (version 07.0)/TBDA/;

“Tool to calculate the emission factor for an electricity system” (version 07.0)/TEF/;

“Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)/TBPL/;

“Common practice” (version 03.1)/TCP/;

“Investment analysis” (version 10.0)/TIA/.

3.4.2 Applicability

Demonstration regarding the applicability of the methodology, and any tools selected by the project proponent as provided in below table.

Table 3-1 Assessment of Applicability conditions of ACM0008

No.	Applicability conditions	Validation Assessment	Conclusion
1	This methodology applies to project activities that aim for the use and/or destruction of the methane extracted/obtained from a working or abandoned coal mine(s). The project activities include any of the following methods to treat the methane captured: (a) The methane is destroyed without energy production, for example through flaring; (b) The methane is used to produce energy. This may include electricity, heat, vehicle fuel, etc.	The proposed project aims to use methane (CMM) extracted from working Wenjiaba coal mine. The methane is used for electricity generation. This situation belongs to category (b) of this requirement. This is verified by site inspection.	Applicable

No.	Applicability conditions	Validation Assessment	Conclusion
2	Emission reductions can be claimed for displacing or avoiding energy from other sources;	It is confirmed that generated electricity is supplied to coal mines for displacing power purchase from grid. Emission reductions from grid electricity displacement are claimed in the Project.	Applicable
3	Methane used in the project activities shall be extracted using the following techniques: (a) Surface drainage boreholes to capture coal bed methane (CBM) or methane from open cast mines; (b) Underground boreholes in the mine, surface goaf wells, underground boreholes, gas drainage galleries or other goaf gas capture techniques, including gas from sealed areas, to capture coal mine methane (CMM); (c) Mine ventilation system to dilute and remove ventilation air methane (VAM); (d) Surface drainage boreholes in the case of sealed abandoned mines or ventilation system in the case of ventilated mines to capture abandoned mine methane (AMM).	In the project: (a) CBM is not implemented on these mines; (b) CMM are extracted by underground boreholes in the mine, surface goaf wells, underground boreholes, gas drainage galleries or other goaf gas capture techniques, including gas from sealed areas (c) The Project does not involve VAM utilization. (d) The Project does not involve abandoned mine methane (AMM) utilization. This is verified by site inspection and checking the FSR/FSR/ and its approval/AP/. Therefore, this situation belongs to category (b) of this requirement.	Applicable
4	The remaining share of the methane, to be diluted for safety reason, may still be vented.	The remaining share of the methane is still vented into the atmosphere for safety reason. This is verified by site inspection and checking the FSR/FSR/ and its approval/AP/.	Applicable
5	In the case of open cast mines, in addition to the conditions listed above, project activities should meet the following requirements: (a) The mines should have had a working mining concession for at least three years prior to the start of project; (b) Only pre-mining drainage from wells placed within the area to be mined are eligible for crediting; (c) For the calculation of emission reductions, all provisions for CBM should be followed for the open cast mine methane.	Methane used in the Project is not from opencast mines. This is verified by site inspection and checking the FSR/FSR/ and its approval/AP/	Not involved
6	The methodology does not apply to project activities with any of the following features:	In the proposed project, no virgin coal bed methane capture, CBM drainage,	Not involved

No.	Applicability conditions	Validation Assessment	Conclusion
	(a) Capture/use of virgin coal bed methane, e.g. methane extracted from coal seams for which there is no valid coal mining concession; (b) Use CO₂ or any other fluid/gas to enhance CBM drainage before mining takes place; (c) Methane extraction from abandoned mines that are flooded due to regulation;	and abandoned coalmines are involved. This is verified by site inspection and checking the FSR/^{FSR}/ and its approval/^{AP}/	
7	The methodology does not apply to project activities that involve use and/or destruction of CBM or OCM if the baseline scenario identification resulted in partial use and/or destruction of CBM or OCM.	In the proposed project, no CBM or OCM use and/or destruction are involved. This is verified by site inspection and checking the FSR/^{FSR}/ and its approval/^{AP}/	Not involved
8	Emission reductions due to the use and/or destruction of CBM or OCM cannot be claimed if surface drainage to capture CBM or methane from open cast mine(s) is used within the project boundaries prior to the implementation of the project activity.	In the proposed project, no CBM or OCM use and/or destruction are involved. This is verified by site inspection and checking the FSR/^{FSR}/ and its approval/^{AP}/	Not involved
Conclusion: Methodology ACM0008 (Version 08.0) is applicable to the project activity.			

In addition, the project meets the applicability conditions of the applied tools as follow table,

Tool	Criteria	Validation Assessment	Conclusion
(a) "Combined tool to identify the baseline scenario and demonstrate additionality" (Version 07.0)	The tool is applicable to all types of proposed project activities.	The tool is applicable to all types of proposed project activities	Applicable
(b) "Tool to calculate the emission factor for an electricity system" (Version 07.0)	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects)	The Project is the installation of CMM power plants for power generation to supply electricity to the coal mines that would otherwise be purchased from CSPG. Therefore the tool is confirmed as applied to estimated the OM, BM and /or CM when calculating baseline emissions for the project.	Applicable

Tool	Criteria	Validation Assessment	Conclusion
	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option II a and option II b. If option II a is chosen, the conditions specified in “Appendix 1: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Emission factor for the project electricity system is calculated only for the grid power plants in China. Thus, this applicability criterion is satisfied	Applicable
	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project electricity system is located in a non-Annex I country.	Applicable
	Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The project is not involved in biofuels.	Not involved
(c) “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (Version 03.0)	If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at	For the project, emissions are calculated for electricity consumption, and the sources of electricity consumption belongs to (a) Scenario A: Electricity consumption from the grid. This is confirmed by site inspection and checking the PPA/PPA/.	Applicable

Tool	Criteria	Validation Assessment	Conclusion
	the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer; (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid; or (c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer can be provided with electricity from the captive power plant(s) and the grid.		
	This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated: (a) Scenario I: Electricity is supplied to the grid; (b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or (c) Scenario III: Electricity is supplied to the grid and	For the project, electricity is supplied to consumers/electricity consuming facilities in the coalmines, which belongs to (b) Scenario III due to surplus electricity will be supplied to CSPG. This is confirmed by site inspection and checking the PPA^{PPA/}.	Applicable

Tool	Criteria	Validation Assessment	Conclusion
	consumers/electricity consuming facilities.		
	This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO ₂ emissions.	There are no captive renewable power generation technologies installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage.	Applicable
(d) Common practice (version 03.1)	This methodological tool is applicable to project activities that apply the methodological tool “Tool for the demonstration and assessment of additionality”, the methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality”, or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality.	The project activity uses “Combined tool to identify the baseline scenario and demonstrate additionality” for additionality demonstration, thus this tool is applicable.	Applicable
	In case the applied approved baseline and monitoring methodology defines approaches for the conduction of the common practice test that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	ACM0008 (version 08.0) refers to “Combined tool to identify the baseline scenario and demonstrate additionality”, which required using the latest version of the “Methodological tool: Common practice” for available on the UNFCCC. Therefore, this tool is applicable.	Applicable
(e) Investment analysis” (version 10.0)	This methodological tool is applicable to project activities that apply the methodological tool “Tool for the demonstration and assessment of additionality”, the methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality”, the guidelines “Non-binding best practice examples to demonstrate additionality for SSC project	Since the project activity uses “Combined tool to identify the baseline scenario and demonstrate additionality”, the tool is applicable.	Applicable

Tool	Criteria	Validation Assessment	Conclusion
	activities”, or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.		
	In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	ACM0008 (version 08.0) refers to “Combined tool to identify the baseline scenario and demonstrate additionality”. Therefore, this tool is applicable.	Applicable
Conclusion: All the relevant methodological tools are applicable to the project activity.			

3.4.3 Project Boundary

Based on ACM0008 (version 08.0), the Project boundary for this Project activity includes:

- (a) The Wenjiaba coal mine from where the methane is extracted;
- It is confirmed via site inspection and checking the FSR/^{FSR}/ and Approval of project/^{AP}/.
- (b) There is no equipment installed for the CMM treatment and transportation at the project site due to these devices owned by the coal mine and are used primarily to maintain underground mining safety, i.e. they were existed in the baseline which has been verified by site inspection and checking the gas supply agreement/^{GSA}/.
- (c) CMM power plants including CMM delivery system, power generation units and waste heat recovery units installed for captive electricity generation (if surplus supplied to CSPG) which has been verified by site inspection and checking the main EPC contract/^{EPC}/ and PPA/^{PPA}/.
- (d) All the power plants connected to the CSPG which connected to CCPG and ECPG, thus power plants connected to CSPG, CCPG and ECPG are all included in the project boundary, which has been verified by site inspection and checking the PPA/^{PPA}/ and “2019 Baseline Emission Factors for Regional Power Grids in China” published by DNA of China/^{BEF}/.

The main emission sources and gases included in the project boundary are determined as per the applied methodology, GHG sources included and excluded from the project boundary is defined as correct and corresponding to the actual status of the project, via on-site inspection and checking the project design/^{FSR}/ and PPA/^{PPA}/, it is verified that all the relevant sources have been selected.

It is concluded that the project boundary and selected sources are correctly justified for the project.

CAR 04 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.4.4 Baseline Scenario

The Joint-PD-MR applies the stepwise approach in "Combined tool to identify the baseline scenario and demonstrate additionality" (Version 07.0)/^{TDA}/ as approach given by section 5.1.1 of the ACM0008/^{ACM0008}/.

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

The project activity is not the first-of-its-kind.

Step 1: Identification of alternative scenario

The Joint-PD-MR follows the methodology by listing 5 alternatives to handle methane to comply with safety regulations, 4 alternatives to deal with methane and 4 alternatives for energy production that should be considered at least. No further scenario is considered reasonable under the given context.

Only CMM is involved in the project activity and is applicable, therefore other methane gases are eliminated from the baseline determination in the Joint-PD-MR.

The alternative scenario that is economically the most attractive course of action is considered as the baseline scenario.

Step 1a: Define alternative scenarios to the proposed project

i. ACM0008 Version 08.0 requires discussion of plausible **5 alternative scenarios to handle methane** to comply with safety regulations as the following:

- (a) Extraction of methane prior to the mining (CBM/OCM);
- (b) Extraction of methane during and after the mining (CMM);
- (c) Extraction of methane through ventilation during the mining;
- (d) Extraction of methane from the abandoned mine;
- (e) Possible combinations of options (a) to (d) with the relative shares of gas specified.

ii. ACM0008 Version 08.0 requires discussion of plausible **4 alternative scenarios to deal with methane** as the following:

- (a) Venting of methane;
- (b) Flaring of methane;
- (c) Use of methane for energy production, e.g. electricity generation, heat generation, vehicle fuel, gas production, etc.
- (d) Possible combinations of options (a) to (c) with the relative shares of gas specified.

iii. Furthermore, all possible options for electricity production at the coal mines in the project include:

- P1. Equivalent quantity of electricity supply from CSPG;
- P2. The proposed project activity not undertaken as a VCS project activity;
- P3. Construction of a coal-fired captive power plant with equivalent power supply; or construction of a captive power plant using other fossil fuels;
- P4. Power generation using renewable energy resources e.g. hydro, solar or wind power.

Step 1b: Consistency with mandatory applicable laws and regulations

It is confirmed that any of the alternatives which are not in compliance with the relevant laws and regulations of the People's Republic of China have been eliminated, assessment is as following,

1. Eliminate options to handle methane

The latest version of national regulation of the coalmine safety "National Coalmine Safety Regulation (2016)" /CSR/ has been checked, it is confirmed that the it is not permitted to carry out pre-mining or post-mining extraction separately, the combination of the two methods must be adopted and based on the regulation, extraction of methane to avoid the risk of explosion is in line with the rules. Furthermore, due to

the Wenjiaba coal mine is not an abandoned mine which has been confirmed by site inspection, thus, options (a), (b), (c) and (d) are excluded.

In conclusion, option (e) combinations of options (a) to (c) is confirmed as in compliance with legal and regulatory requirements after this step.

2. Eliminate options to deal with methane

According to No. 184 of the latest National Coalmine Safety Regulation (2016)^{/CSR/}, CMM with methane concentration of below 30% is forbidden to be combusted directly, but can be either vented or utilized for power generation by internal combustion engines. According to the FSR^{/FSR/}, the average methane concentration of the Project is 6%. Hence, the project, which is a low concentration CMM power generation project, is still in compliance with the host country laws and regulations. But flaring of methane with direct combustion of methane concentration of below 30% is prohibited. Hence option (b) Flaring of methane is eliminated.

Furthermore, for option (c), due to there is no additional heat demand by the mining area as the demand has been satisfied by boiler of the waste heat which has been confirmed by site inspection, checking the FSR^{/FSR/} and interview with the project owner, so option (c) use of methane for heat generation is excluded. And due to the low concentration of the CH₄ in CMM which has been confirmed by site inspection, checking the FSR^{/FSR/} and interview with the project owner, it may need large investment to produce the gas production and transport to end users, so use of methane for energy generation, e.g. vehicle fuel, gas production is excluded.

For option (d), based on above assessment, it is confirmed that this is contradictory for methane venting and methane use for electricity, thus is excluded.

In conclusion, options (a) venting of methane and part of (c) use of methane for electricity generation to deal with methane are in compliance with legal and regulatory requirements.

3. Eliminate options for energy production

Via site inspection and checking the FSR^{/FSR/} and EPC contract^{/EPC/}, it is confirmed that the installed capacity of the project is 3.5 MW CMM-fired power plant. Hence, alternative P3 is eliminated which is validated to be consistent with the Chinese regulation, Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or Below issued by the General Office of the State Council, decree no. 2002-6 [Doc-32]^{/NSP/}, stipulating the prohibition of the construction of fossil fuel-fired power plants with an installed unit capacity equal to or lower than 135 MW in the areas which can be covered by large grids such as provincial grids.

In conclusion, options P1, P2 and P4 for energy production are in compliance with legal and regulatory requirements.

Finally, based on above demonstration, the baseline alternative options that are technically feasible and comply with all legal and regulatory requirements are listed below:

Scenario ID	CMM extraction	CMM treatment	Energy production
Scenario 1 (e+a+P1)	Combinations of options (a) to (b)	Venting	Equivalent quantity of electricity supply from CSPG

Scenario ID	CMM extraction	CMM treatment	Energy production
Scenario 2 (e+a+P2)	Combinations of options (a) to (b)	Venting	The proposed project activity not undertaken as a VCS project activity;
Scenario 3 (e+a+P4)	Combinations of options (a) to (b)	Venting	Power generation using renewable energy resources e.g. hydro, solar or wind power
Scenario 4 (e+c+P1)	Combinations of options (a) to (b)	Use of methane for electricity production	Equivalent quantity of electricity supply from CSPG
Scenario 5 (e+c+P2)	Combinations of options (a) to (b)	Use of methane for electricity production	The proposed project activity not undertaken as a VCS project activity;
Scenario 6 (e+ c + P4)	Combinations of options (a) to (b)	Use of methane for electricity production	Power generation using renewable energy resources e.g. hydro, solar or wind power

Step 2: Barrier analysis

Step 2a: Identify barriers that would prevent the implementation of alternative scenarios

1. Eliminate options to deal with methane

- For scenario 1, this is the continuation of business as usual faces no barrier. It remains as a possible baseline scenario alternative for this step.
- For scenario 2, it is verified that this scenario is a conflicted scenario for the methane is venting conflicted with methane utilized for electricity generation.
- For scenario 3 which involves power generation using renewable energy resources e.g. hydro, solar or wind power is eliminated as below reason:

There is no good hydropower, wind power and geothermal resources in the project area in mining area, which has been confirmed by site inspection and interview with local officers.

Furthermore, solar source is not abundant in Guizhou province based on local expertise of validation team and checking the public information, annual radiation hours of only 988.9h~1,740h^{ss/} which is too low to get profit from the investment solar power plants.

Finally, the biomass materials in project location, i.e. coal mine area is confirmed as barely for generation of electricity power based on local expertise of validation team and site inspection.

- For Scenario 4, this is a conflicted scenario for use of methane for electricity production conflicted with equivalent quantity of electricity supply from CSPG.
- For Scenario 5: This is the project activity not implemented as a VCS project. This scenario faces investment barriers, which will be discussed in below section.
- For Scenario 6: As shown scenario 3. The electricity generation using renewable energy sources in local area is facing kinds of barrier.

Step 2b: Eliminate alternative scenarios which are prevented by the identified barriers

After step 2a, based on the scenarios not eliminated, the options to form the baseline scenario alternative that do not face barriers are verified listed as below:

Table 3-2: Baseline scenario alternatives

Scenario ID	CMM extraction	CMM treatment	Energy production
Scenario 1 (e+a+P1)	Combinations of options (a) to (b)	Venting	Equivalent quantity of electricity supply from CSPG
Scenario 5 (e+c+P2)	Combinations of options (a) to (b)	Use of methane for electricity generation	The proposed project activity not undertaken as a VCS project activity

There are no barriers identified that would prevent the implementation of either of the two alternative scenarios above. Therefore, neither of the two combined scenarios is eliminated by the step 2. The two combined scenarios need to be further discussed in Step 3 as listed in the section 3.4.5 of this report for additionality assessment.

3.4.5 Additionality

Based on the above assessment of the baseline scenario, due to the “Combined tool to identify the baseline scenario and demonstrate additionality” is used, so the Step 1 and 2 of demonstration of additionality has been assessed in the above section 3.4.4. and no need to repeat in this section.

Besides, validation team checked the timeline of the milestones of the project, PP decided the project would be developed as VCS project in February 2017 via checking the board meeting minute^{/BMM/}, and it is verified that the consideration of VCS revenue has been decided by the PP prior to the project construction start date of 15-July-2018.

Project construction start date of 15-July-2018 is verified by checking the record of started construction^{/RSC/}. This date is confirmed as the earliest date of the project owner commit to making expenditures for the construction or modification of the main equipment or facility, it is verified that the project construction started date of 15-July-2018 is the earliest date of the project owner making expenditures for the construction.

Hence, it is confirmed that the VCS revenues have played an important role for the investment decision of the project by PP. and thus the prior consideration is verified as satisfied.

In conclusion based on the assessment of baseline scenario in above step, it is verified that there are no barriers identified that would prevent the implementation of either of the two alternative scenarios above. The step below is used to analyze the additionality of the project by conducting an investment analysis and common practice using the related methodological tools.

Step 3: Investment analysis

The investment analysis is conducted in the following steps following the guidance for the investment analysis in the latest approved version of the “Combined tool to identify the baseline scenario and demonstrate additionality”^{/TBDA/}, and Investment analysis (version 10.0)^{/TIA/}.

Based on above assessment, the alternative scenarios of the project include:

Scenario 1 is the business as usual scenario, venting CMM does not create economic benefits, but no investment required for this scenario.

Scenario 5 is CMM used for electricity generation, i.e, implement the Project without VCS.

A step-wise assessment is presented in Table below for the investment analysis for scenario 5.

Table 3-3: Investment Analysis

Step	Argument by PP	Assessment of the validation team
a	Due to the two alternative scenarios remaining after step 2 as scenario 1 and 2, thus a benchmark analysis from the Investment analysis (version 10.0) ^{/TIA/} is used for the investment analysis. Therefore, Option III: benchmark analysis is selected for the investment analysis.	In accordance with the Additionality Tool, the option III benchmark analysis is selected.
b	The benchmark of project IRR for the construction project is 8% (after tax) referred to the “Economic Evaluation Method and Parameters for Construction Projects” ^{/EEMP/} is determined as the benchmark. The benchmark IRR for power generation sector projects in China is regulated as 8% of the total investment (for post-tax project IRR). The benchmark is relevant for the project activity, given that the benchmark is applicable to the power generation sector in China.	The “Economic Evaluation Method and Parameters for Construction Projects” ^{/EEMP/} is widely used in China for financial evaluation of power generation sector project. The choice of benchmark as 8% for newly constructed power generation project is assessed to be appropriate, since it is in compliance with national regulation and applied for many registered CDM projects in the past using meth ACM0008.
c	The project IRR post-tax (without UER revenue) is 3.30% ^{/IRR/} which is less than the identified benchmark of 8%.	PP has calculated IRR in spreadsheet ^{/IRR/} for the project activity on post-tax basis and compared the same with the benchmark 8%. PP has demonstrated that the project IRR is lower than the benchmark and hence the project is not financially attractive. The IRR calculation was reproduced by the validation team. The parameters used for the IRR calculation ^{/IRR/} were derived from the FSR, which was approved by local government ^{/AP/} . The assumptions stated in the report are assessed to be reasonable. Each parameter is assessed individually by the validators in Appendix 7 of this report. The assessment is strictly following the latest Investment Analysis (version 10.0) ^{/TIA/} .
d	The sensitivity analysis was demonstrated through two manners: 1. Varying $\pm 10\%$ of four critical parameters (Total static investment, Electricity tariff, Annual O&M cost, Annual Electricity exported). The selection is checked as in line with the requirements in Investment analysis (version 10.0) of “Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to	The sensitivity analysis concludes that the project activity is unlikely to be financially attractive. Threshold analysis is also used in sensitivity analysis. The sensitivity analysis was reproduced by the validation team and evaluated to be correct. The sensitivity analysis and threshold analysis of each parameter is assessed individually by the validation team in Appendix 7 of this report.

Step	Argument by PP	Assessment of the validation team
	reasonable variation”, the Total static investment is checked as constitutes more than 20% of total project costs. The Electricity tariff and Annual Electricity exported are checked as constitute more than 20% of the total revenue of the project. The total O&M throughout the project lifetime is checked as accounts for more than 20% of the project cost. 2. Threshold analysis by varying the above four parameters to make the IRR meet benchmark 8%/IRR/. Based above, it can confirm that the financial unattractiveness of the project is robust.	

Step 4: Common practice analysis

The common practice analysis was checked strictly followed Methodological tool “Common practice” (Version 03.1)^{TCP/}.

Step 1: calculate applicable capacity or output range as +/-50% of the design capacity or output of the proposed project activity

The total installation capacity of the Project is 3.5 MW. Capacity range of +/- 50% is defined from 1.75 MW to 5.25 MW.

Step 2: identify similar projects (both CDM and non-CDM) which fulfill all of the following conditions:

- The projects are located in the applicable geographical area;
- The projects apply the same measure as the proposed project activity;
- The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
- The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
- The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;
- The projects started commercial operation before the project design document is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Demonstration as follow,

- The region selected for common practice of Guizhou Province is assessed as appropriate and reasonable. A province is the second administrative level of China after central government and it is authorized to execute administrative examination and approval for construction projects considering local regulations;
- Same measures are defined as: projects provided power generation based on CMM
- Project uses CMM;
- Project with electricity generation;
- Out range: capacity ranging from 1.75 MW to 5.25 MW are chosen
- Commercial operation started before 24-September-2020.

Thus, the projects operated before 24-September-2020 uses CMM to generate electricity with installed capacity range from 1.75 MW to 5.25 MW in Guizhou Province are determined similar projects.

The information source China Electric Power Yearbooks/^{CEPY/} and low concentration CMM project news from Electric Power News Network/^{epnn/}, for the common practice analysis is publicly available and checked by the validation team. The information used is evaluated to be credible.

Step 3: within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all} .

Above data source and China's DNA website/^{dna/} and UNFCCC website/^{unfccc/} are checked by the validation team, it is confirmed that all CMM power projects with capacity of 1.75 MW to 5.25 MW operated before 24-September-2020 in Guizhou Province are registered as CDM/VCS/CCER projects or undergoing validation via checking the UNFCCC/^{unfccc/}, VCS/^{vcs/} and China CER(CCER)/^{ccer/} public websites, however there are two projects have not been successfully registered as CDM projects Hence $N_{all}=2$.

Step 4: within similar projects identified in Step 3, identify those that are different to the technology applied in the proposed project activity. Note their number N_{diff} .

As per the tool of common practice, different technologies are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed CDM project and applicable geographical area):

- (a) Energy source/fuel;
- (b) Feed stock;
- (c) Size of installation (power capacity):
 - (i) Micro;
 - (ii) Small;
 - (iii) Large;
- (d) Investment climate on the date of the investment decision, inter alia:
 - (i) Access to technology;
 - (ii) Subsidies or other financial flows;
 - (iii) Promotional policies;
 - (iv) Legal regulations;
- (e) Other features, inter alia:
 - (i) Nature of the investment (example: unit cost of capacity or output is considered different if the costs differ by at least 20%);

For project, based on the step 3, it is verified there are no projects that apply technologies that are different to the technology applied in the proposed project activity, so $N_{diff} = 0$.

Step 5: calculate factor $F=1-N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

For this project, $N_{all}=2$ while $N_{diff}=0$, hence, $N_{all} - N_{diff} = 2$ which is less than 3.

And $F=1-N_{diff}/N_{all}=1-0=1$.

Based on the common practice analysis was checked strictly followed Methodological tool "Common practice" (Version 03.1)^{TCP/}, it can be concluded that the project is not a common practice.

Outcome of Step 4:

In conclusion, based on above stepwise assessments, the baseline scenario is finally determined as

Methane extraction: Combinations of methane extraction of prior to, during and after the mining, and through ventilation during the mining; Wenjiaba coal mine was equipped with CMM extraction facilities and all extracted CMM was vented into the atmosphere directly; The electricity consumed at coal mine was imported from China Southern Power Grid (CSPG).

The proposed project is additional.

It is verified that the baseline scenario is defined correct and reasonable based on the applied methodology and related tools.

3.4.6 Quantification of GHG Emission Reductions and Removals

For validation of the estimated GHG emission reductions in the Joint-PD-MR/^{JPM}/ and ER calculation sheet/^{XLS}/,

Further, the validation team has downloaded from the UNFCCC website the applicable version of the CDM methodology and all referenced methodological tools/^{unfccc}/.

Via verify the Joint-PD-MR, it is confirmed the calculation of ERs is done as per the applied methodology (ACM0008 ver. 08.0) and “Tool to calculate the emission factor for an electricity system” (version 07.0)/^{TEF}/ and “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)/^{TBPL}/ with follow steps listed below.

The calculation of ERs is done as per the applied methodology (ACM0008, Ver.08.0)/^{ACM0008}/.

Baseline emissions:

According to the methodology, Baseline emissions would have occurred because:

- (a) Methane eligible for crediting would have been either destroyed or vented in a baseline, and
- (b) Production of power, heat and/or other forms of useful energy that is produced due to the project activity would have been produced using baseline technologies and fuels.

Hence, Baseline emissions are determined in two steps:

Step A. Determination of methane eligible for crediting;

CBM/COM/VAM/AMM is not applicable to the Project activity. Therefore, all captured CMM is eligible for the Project activity.

Step B. Determination of baseline emissions.

The following sources are applicable:

- (i) Emissions from the destruction of methane;
- (ii) Emissions from the release of methane into the atmosphere;
- (iii) Emissions from the production of power, heat or other forms of useful energy.

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

Where:

BE_y	=	Baseline emissions in year y (t CO ₂ e)
$BE_{MD,y}$	=	Baseline emissions from destruction of methane in the baseline scenario in year y (t CO ₂ e)
$BE_{MR,y}$	=	Baseline emissions from release of methane into the atmosphere in year y that is avoided by the project activity (t CO ₂ e)
$BE_{Use,y}$	=	Baseline emissions from the production of power, heat or other forms of useful energy replaced by the project activity in year y (t CO ₂ e)

Methane destruction in the baseline - $BE_{MD,y}$

Via on-site investigation and checking the project design/^{FSR}/ and actual implementation/^{LOG}/, it is confirmed that the project contains only one source CMM, no CBM, VAM, AMM or OCM utilization is involved, and no methane is destructed in baseline scenario, thus

$$BE_{MD,y} = 0 \text{ tCO}_2\text{e}.$$

Methane venting in the baseline - $BE_{MR,y}$

According to the methodology,

$$BE_{MR,y} = \sum_i \sum_s (MT_{PJ,s,i,y} - MT_{BL,s,i,y}) \times GWP_{CH_4}$$

Where:

$MT_{PJ,s,i,y}$	=	Methane from source s captured and destroyed by use i in the project activity in year y (t CH ₄)
$MT_{BL,s,i,y}$	=	Methane from source s that would have been captured and destroyed by use i in the baseline scenario in the year y (t CH ₄)
i	=	Use of methane (flaring, power generation, etc.)
s	=	Source of methane that would have been captured, sent to and destroyed by use i in the baseline scenario in the year y . This may include eligible CBM, CMM, VAM, eligible AMM and eligible OCM
GWP_{CH_4}	=	Global warming potential of methane (tCO ₂ e/tCH ₄)

Via on-site investigation against checking the registered Joint-PD-MR, it is confirmed that for this project, no CMM is captured and destructed under the baseline scenario. Hence, $MT_{BL,s,i,y}$ is 0 and actual value of $MT_{PJ,s,i,y}$ will be monitored.

Baseline emissions from the production of power, heat or vehicle fuels - $BE_{Use,y}$

According to the methodology,

$$BE_{Use,y} = \sum_k (EG_{use,k,y} \times EF_{k,y})$$

Where:

- $BE_{Use,y}$ = Baseline emissions from energy displaced by the project activity in year y (tCO₂)
- $EG_{Use,k,y}$ = Energy of type k displaced by the project activity in year y (energy unit)
- $EF_{k,y}$ = Baseline emissions factor for energy type k production in year y (tCO₂/ energy unit)
- k = Energy type displaced by the project activity

Via on-site investigation and checking the project design^{/FSR/} and actual implementation^{/LOG/}, it is confirmed that for this project, the waste heat from the generators of the project will be recovered by waste heat boilers to provide free hot water to the coal mines, which was provided by waste coal fired boilers before the implementation of the Project. However, to be conservative, emission reductions will not be claimed for this part. And there is no vehicle fuel supply is involved, thus only the Baseline emissions from the production of power is considered.

According to the methodological tool “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)^{/TBPL/},

$EG_{Use,k,y} = EG_{PJ,grid,y}$, and

$EF_{k,y} = EF_{grid,CM,y}$, thus

$BE_{Use,y} = EG_{PJ,grid,y} \times EF_{grid,CM,y}$

where:

- $EG_{PJ,grid,y}$ = The quantity of electricity generated and supplied by the project power plant to the grid in year y (MWh/yr)
- $EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for the project electricity system in year y (tCO₂e/MWh)

$EG_{PJ,grid,y}$ is ex-ante determined from the FSR, and will be monitored during the verification process.

Calculation of $EG_{grid,CM,y}$

As per the applied methodology (ACM0008 ver. 08.0) and “Tool to calculate the emission factor for an electricity system” (version 07.0)^{/TEF/},

The $EF_{grid,CM,y}$ calculation refers to the latest version of “2019 Baseline Emission Factors for Regional Power Grids in China” published by China’s DNA on 29-December-2020^{1/BEF/}. The Joint-PD-MR was submitted for validation in October 2021, $EF_{grid,CM,y}$ of year 2019 is the latest valid available data at the time of the validation.

Baseline emission factor $EF_{grid,CM,y}$ is determined by follow sub-steps according to the “Tool to calculate the emission factor for an electricity system” (version 07.0).

¹ “2019 Baseline Emission Factors for Regional Power Grids in China” published by China’s DNA on 29-December-2020. Refer to the website <https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/W020201229610353816665.pdf>

Sub-Step 1. - Identify the relevant electricity systems.

China Southern Power Grid (CSPG), which the project directly connected, is selected as the electric power system of the Project.

According to the Chinese DNA guidance, CSPG is composed of Guangdong, Guangxi, Yunnan, Guizhou and Hainan Provincial Power Grids.

Besides, there is net electricity imported from the Central China Power grid (CCPG) and East China Power Grid (ECPG) to the South China Power grid. Therefore, Central China Power grid (CCPG) and East China Power Grid (ECPG) are chosen as the connected electric power system.

The validation team verified the data sources of “2019 Baseline Emission Factors for Regional Power Grids in China” published by China’s DNA/^{BEF}/, and confirms that the identified electric power system is appropriate.

Sub-Step 2. -Choose whether to include off-grid power plants in the project electricity system.

Option I: Only grid power plants are included in the calculation.

Sub-Step 3. -Select a method to determine the operating margin (OM).

For the calculation of the OM emission factor, the simple OM emission factor calculation method is selected because low cost/must-run projects constitute less than 50% of the total grid generation during the last 5 years (2013-2017). And the ex-ante option is selected for the calculation of the simple OM emission factor.

The validation team has checked the calculation for low cost/must-run constitution of the total grid generation and confirmed the calculation is correct. Therefore, simple OM emission factor calculation method is selected reasonable. Data from China Electric Power Yearbook 2014-2018 has been applied correctly/^{BEF}/[&]/^{CEPY}/.

Sub-Step 4. -Calculate the operating margin emission factor according to the selected method.

Since only on-grid power is included, and the necessary data for Option A is unavailable, option B (44 a)) “Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system” is selected for the calculation of the simple OM emission factor.

The data on electricity generation and auxiliary electricity consumption are obtained from the China Electric Power Yearbook from 2016 to 2018/^{CEPY}/. The data on different fuel consumptions for power generation and the net caloric values of the fuels are obtained from the China Energy Statistical Yearbook from 2016 to 2018/^{CESY}/. The emission factors of the fuels adopted are obtained from Table 1-2 and Table 1-4 of the “2006 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook.”/^{IPCC}/

The renewable crediting period is adopted for the Project and the OM will be fixed for the 10 years fixed crediting period as the ex-ante option is selected for the calculation of the simple OM emission factor.

The data sources are checked as reasonable and the validation team confirms that the calculation is able to be replicated using the data and parameter provided in the Joint-PD-MR.

Sub-Step 5.- Calculate the build margin (BM) emission factor.

Considering data availability, deviation accepted by EB was used in the Joint-PD-MR i.e.

1) Use of capacity additions during the last 1~3 years for estimating the build margin emission factor for grid electricity.

2) Use of weights estimated using installed capacity in place of annual electricity generation.

The BM emission factor of the power grid is calculated by multiplying the emission factor of the thermal power with the share of the thermal power in the most recently added approach to 20% of total installed capacity. The emission factor for thermal power is determined based on the most advanced and commercially available technology endorsed by China's DNA.

The validation team hereby confirms that the data source and approaches taken are deemed reliable and the calculation is appropriate.

Sub-Step 6.-Calculate the combined margin (CM) emissions factor.

According to the "Tool to calculate the emission factor for an electricity system" (version 07.0)^{TEF/}, the default weights: $\omega_{OM}=0.5$ for Operating Margin and $\omega_{BM}=0.5$ for Build Margin in the first crediting period of CMM projects are adopted for the project using fixed crediting period.

In accordance to the "Tool to calculate the emission factor for an electricity system" (version 07.0)^{TEF/}, the Simple OM emission factor ($EF_{grid,OM,y}$) of CSPG is calculated ex-ante as 0.8042 tCO₂e/MWh which is issued by China DNA/^{BEF/}. Similarly, the build margin emission factor ($EF_{grid,BM,y}$) of the CSPG is calculated ex-ante as 0.2135 tCO₂e/MWh/^{BEF/}. Hence,

$$\begin{aligned} EF_{grid,CM,y} &= 0.8042 \text{ tCO}_2\text{e/MWh} \times 0.5 + 0.2135 \text{ tCO}_2\text{e/MWh} \times 0.5 \\ &= 0.5088 \text{ tCO}_2\text{e/MWh} \end{aligned}$$

Therefore the combined baseline emission factor is determined ex-ante and will remain fixed during the fixed 10 years crediting period.

Project emissions:

Project emissions comprise the following sources:

- (a) Emissions from the energy use to capture and use methane;
- (b) Emissions from destruction of captured methane through production of various energy types and/or flaring and/or flameless oxidation;
- (c) Emissions from the un-combusted methane.

$$\text{Hence, } PE_y = PE_{ME,y} + PE_{MD,y} + PE_{UM,y}$$

Where:

$$PE_y = \text{Project emissions in year } y \text{ (tCO}_2\text{e)}$$

$$PE_{ME,y} = \text{Project emissions from energy use to capture and use methane (tCO}_2\text{e)}$$

$PE_{MD,y}$ = Project emissions from destruction of captured methane (tCO₂e)

$PE_{UM,y}$ = Project emissions from un-combusted methane in year y (tCO₂e)

Project emissions from the energy use to capture and to use methane - $PE_{ME,y}$

For the proposed project, according to the methodology, emissions due to electricity consumption should be determined using the latest version of the “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)^{TBPL/},

$$PE_{ME,y} = PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EF,j,y} \times (1 + TDL_{j,y})$$

Where:

$PE_{EC,y}$ = Project emissions from electricity consumption in year y (t CO₂/yr)

$EC_{PJ,j,y}$ = Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr)

$EF_{EF,j,y}$ = Emission factor for electricity generation for source j in year y (t CO₂/MWh)

$TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to source j in year y

$EC_{PJ,j,y}$ is the electricity used for emergency in case the project is not generated power for itself, it is ex-ante determined as 0 and actual value will be monitored.

According to the tool, the PP choose $EF_{EF,j,y} = EF_{grid,CM,y}$. while $EF_{grid,CM,y}$ is equal to the CSPG emission factor which is stated in the above BE calculation section. According to the Tool, the project belongs to the scenario A, the Electricity consumption from the grid. Thus, $TDL_{j,y}$ is determined as 3% which is the default value for project or leakage electricity consumption sources.

Thus $PE_{ME,y}$ is ex-ante determined as 0.

Project emissions from destruction of captured methane - $PE_{MD,y}$

According to the methodology,

$$PE_{MD,y} = \sum_i MD_{i,y} \times CEF_{CH_4}$$

Where:

$MD_{i,y}$ = Methane destroyed through use i (t CH₄), i is only electricity, hence $MD_{i,y} = MD_{ELEC,y}$

i = Use of methane (power generation, heat generation, supply to gas grid to various combustion end uses), for this project i is only electricity

CEF_{CH_4} = Carbon emission factor for combusted methane. Set as 2.75 (t CO₂/t CH₄)

In each end-use, the amount of methane destroyed depends on the efficiency of combustion of each end use and should be determined as follows.

$$MD_{i,y} = MM_{i,y} \times Eff_{i,y}$$

Where:

- $MD_{i,y}$ = Methane destroyed through use i in year y (t CH₄), (i is only electricity, thus $MD_{i,y}$ is $MD_{ELEC,y}$)
- $MM_{i,y}$ = Methane measured sent to use i in year y (t CH₄), (i is only electricity, thus $MM_{i,y}$ is $MM_{ELEC,y}$)
- $Eff_{i,y}$ = Efficiency of methane destruction in use i in year y (%), i is only electricity, thus $Eff_{i,y}$ is $Eff_{ELEC,y}$)

$$\text{Therefore, } PE_{MD,y} = MD_{ELEC,y} \times CEF_{CH_4} = MM_{ELEC,y} \times Eff_{ELEC,y} \times CEF_{CH_4}$$

Via on-site investigation and checking the project design/^{FSR}/, it is confirmed that the waste heat from the generators of the project will be recovered by waste heat boilers to provide free hot water to the coal mines, which was provided by waste coal fired boilers before the implementation of the Project. However, to be conservative, emission reductions will not be claimed for this part. And there is no gas supply involved in the project, thus the only use of methane is for power generation. $MM_{i,y}$ (i is only electricity, thus $MM_{i,y}$ is $MM_{ELEC,y}$) is ex-ante derived from the FSR, and actual value will be monitored. According to the methodology, for power and heat generation, the efficiency $Eff_{i,y}$ (i is only electricity, thus $Eff_{i,y}$ is $Eff_{ELEC,y}$) should be derived from the latest IPCC Report.

Project emissions from un-combusted methane - $PE_{UM,y}$

According to the methodology,

$$PE_{UM,y} = GWP_{CH_4} \times \sum_i MM_{i,y} \times (1 - Eff_{i,y})$$

Where:

- GWP_{CH_4} = Global warming potential of methane (t CO₂e/t CH₄)
- i = Use of methane (power generation, heat generation, supply to gas grid to various combustion end uses)
- $MM_{i,y}$ = Methane measured sent to use i in year y (t CH₄), i is only for electricity, so $MM_{i,y} = MM_{ELEC,y}$
- $Eff_{i,y}$ = Efficiency of methane destruction in use i in year y (%), i is only for electricity, so $Eff_{i,y} = Eff_{ELEC,y}$

$$\text{Therefore, } PE_{UM,y} = GWP_{CH_4} \times MM_{ELEC,y} \times (1 - Eff_{ELEC,y})$$

Via on-site investigation and checking the project design/^{FSR}/, it is confirmed that the waste heat from the generators of the project will be recovered by waste heat boilers to provide free hot water to the coal mines, which was provided by waste coal fired boilers before the implementation of the Project. However, to be conservative, emission reductions will not be claimed for this part. And there is no gas supply involved in

the project, thus the only use of methane is for power generation. $MM_{i,y}$ (i is only electricity, thus $MM_{i,y}$ is $MM_{ELEC,y}$) is ex-ante derived from the FSR, and actual value will be monitored. According to the methodology, for power and heat generation, the efficiency $Eff_{i,y}$ (i is only electricity, thus $Eff_{i,y}$ is $Eff_{ELEC,y}$) should be derived from the latest IPCC Report. GWP_{CH_4} is updated to 28 tCO_2e/CH_4 based on EB's regulation for 2nd commitment period.

Leakage

According to the methodology, Leakage may occur if the project activity prevents methane from being used to meet baseline thermal energy demand, whether as a result of physical constraints on delivery, or price changes.

Via the Joint-PD-MR and site inspection, and checking the baseline scenario evidence/^{CER/./REP/}, it is confirmed that baseline scenario of the project does not include thermal energy use. Thus, there is no leakage occurred due to displacement of baseline thermal energy demand. Hence, for the project activity,

$$LE_y = 0 \text{ tCO}_2e$$

Emission reductions:

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ &= BE_y - PE_y \\ &= (BE_{MR,y} + BE_{Use,y}) - (PE_{MD,y} + PE_{UM,y}) \\ &= (MT_{PJ,s,i,y} \times GWP_{CH_4} + EF_{grid,CM,y} \times EG_{PJ,grid,y}) - (ME_{ELEC,y} \times CEF_{CH_4} + GWP_{CH_4} \times MM_{ELEC,y} \times (1 - Eff_{ELEC,y})) \\ &= (MT_{PJ,s,i,y} \times GWP_{CH_4} + EF_{grid,CM,y} \times EG_{PJ,grid,y}) - (MM_{ELEC,y} \times Eff_{ELEC,y} \times CEF_{CH_4} + GWP_{CH_4} \times MM_{ELEC,y} \times (1 - Eff_{ELEC,y})) \end{aligned}$$

For the ex ante calculation of ER_y , the estimated annual CMM measured sent to power plant is derived from FSR/^{FSR/}, it is confirmed that quantity is 5.645 million m^3 CMM, by considering the density of methane is $0.67 \text{ kg}/m^3$, the methane measured sent to power plant annually is $5.645 \times 10^6 \text{ m}^3 \times 0.67 \text{ kg}/m^3 / 1000 \text{ kg}/t = 3,782 \text{ tCH}_4$

$$\begin{aligned} ER_y &= (3,782 \text{ tCH}_4 \times 28 \text{ tCO}_2e/\text{tCH}_4 + 0.5088 \text{ tCO}_2e/\text{MWh} \times 16,275 \text{ MWh}) - (3,782 \text{ tCH}_4 \times 99.5\% \times 2.75 \text{ tCO}_2/\text{tCH}_4 + 28 \text{ tCO}_2/\text{tCH}_4 \times 3,782 \text{ tCH}_4 \times (1 - 99.5\%)) \\ &= (105,896 \text{ tCO}_2e + 8,280 \text{ tCO}_2e) - (10,349 \text{ tCO}_2e + 530 \text{ tCO}_2e) \\ &= 114,176 \text{ tCO}_2e/\text{yr} - 10,879 \text{ tCO}_2e/\text{yr} \\ &= 103,297 \text{ tCO}_2e/\text{yr} \end{aligned}$$

The estimated amount of GHG emission reductions of the project is **1,032,970 tCO_{2e}** during the fixed crediting period (10 years) from 24-September-2020 to 23-September-2030, resulting in estimated average annual emission reductions of **103,297 tCO_{2e}**.

The XLS ER calculation/^{XLS/} has been duly checked. Further it has been checked whether the results have been correctly calculated in Joint-PD-MR for determination of ex-ante ER. The validation team has further

checked the Joint-PD-MR against the latest version of the applicable methodology incl. the referenced methodological tools for consistency.

3.4.7 Methodology Deviations

There are no any methodology deviations applied to the project.

3.4.8 Monitoring Plan

1. Data and parameters available at validation

Please refer to the following tables for assessment of each parameter determined ex-ante:

MT_{BL,s,i,y}	Methane from source s that would have been captured and destroyed by use i in the baseline scenario in the year y
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is FSR
Correct value provided?	Yes – 0 tCH ₄
Has this value been verified?	Yes. There is no methane captured and destroyed in the baseline scenario
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

CEF_{CH4}	Carbon emission factor for combusted methane
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is ACM0008 (Version 08.0) which is appropriate
Correct value provided?	Yes – 2.75 tCO ₂ e/ tCH ₄
Has this value been verified?	Yes. It is a default value. The value has been verified against the applied methodology
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

D_{CH4}	Density of methane under normal conditions of temperature and pressure
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Correct value provided?	Yes – 0.67 kg/m ³
Has this value been verified?	Yes. This parameter is used to calculate the methane from source s captured and destroyed by the project activity in mass unit. For MT _{PJ,s,i,y} (MM _{ELEC,y}) is monitored by flow meter

	in volume unit, which will be converted to mass unit with the parameter of D_{CH4} .
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$EF_{k,y}$, $EF_{EF,j,y}$ ($EF_{grid,CM,y}$)	Combined margin emission factor for the grid in year y (CSPG)
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	"2019 Baseline Emission Factors for Regional Power Grids in China" published by DNA of China/ ^{BEF/}
Correct value provided?	0.5088 tCO ₂ e/MWh
Has this value been verified?	Yes. The value has been verified against "2019 Baseline Emission Factors for Regional Power Grids in China" published by DNA of China/ ^{BEF/}
Choice of data correctly justified?	Yes
Measurement method correctly described?	Calculated as per the latest version of "Tool to calculate the emission factor for an electricity system" (version 07.0)/ ^{TEF/} by DNA of China, the ex ante option is selected.

$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	Methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Ver 03.0)/ ^{TBPL/}
Correct value provided?	3%
Has this value been verified?	Yes. According to the tool, the project belongs to scenario A, thus the option 3 was chosen by PP: "Use as default values of 3% for project and leakage electricity consumption sources due to the electricity consumption by all project and leakage electricity consumption sources is smaller than the electricity consumption of all baseline electricity consumption sources." By checking the $FSR/FSR/$, it is confirmed that the electricity consumption by project is 0 in ex-ante phase and will be monitored in verification process, which is smaller than the electricity consumption in baseline of the project (16,275MWh/yr as confirmed in FSR). Hence, 3% is applicable to the project
Choice of data correctly justified?	Yes
Measurement method correctly described?	From the tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Ver 03.0)/ ^{TBPL/}

2. Data and Parameters Monitored

The monitoring parameters required by the methodology and applicable tools for the project are summarized in the below table.

MT_{Pj,s,i,y}	Methane from source s captured and destroyed by use i in the project activity in year y
Title in line with Methodology?	Yes
Ex-ante Value	3,782 t CH ₄
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The ex ante source is FSR/FSR/
Correct value provided?	Yes
Has this value been verified?	Yes. The value has been verified against the FSR/FSR/
Choice of data correctly justified?	Yes
Measurement method correctly described?	Measured using gas flow meter and gas analyzer and is calculated by the gas flow rate, pressure, temperature and CH ₄ concentration of CMM. Flow meter will record gas volumes, pressure and temperature. Density of methane under normal conditions of temperature and pressure (defined as 1 atm, 293.15K) is 0.67kg/m ³ (2006 IPCC Guidelines for National Greenhouse Gas Inventories)
Monitoring frequency correctly described?	Continuously measurement and monthly recording verified as per the applied methodology
QA/QC procedure correctly described?	Yes Flow meter and gas analyzer will be periodically checked and calibrated
Purpose of data?	BE _y calculation

MM_{ELEC,y}	Methane measured sent to use of power generation in year y
Title in line with Methodology?	Yes
Ex-ante Value	3,782 t CH ₄
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The ex ante source is FSR/FSR/
Correct value provided?	Yes
Has this value been verified?	Yes. The value has been verified against the FSR/FSR/
Choice of data correctly justified?	Yes
Measurement method correctly described?	Measured using gas flow meter(s) and gas analyzer(s) and is calculated by the gas flow rate, pressure, temperature and CH ₄ concentration of CMM. Flow meter will record gas volumes, pressure and temperature. Density of methane under normal conditions of temperature and pressure (defined as 1 atm, 293.15K) is 0.67kg/m ³ (2006 IPCC Guidelines for National Greenhouse Gas Inventories)
Monitoring frequency correctly described?	Continuously measurement verified as per the applied methodology
QA/QC procedure correctly described?	Yes

	Flow meter and gas analyzer will be periodically checked and calibrated
Purpose of data?	PE _y calculation

GWP_{CH4}	Global warming potential of methane
Title in line with Methodology?	Yes
Ex-ante Value	28 tCO ₂ e/ tCH ₄
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	IPCC Fifth Assessment Report (AR5) ^{/AR5/}
Correct value provided?	Yes
Has this value been verified?	Yes. The value has been verified against the IPCC Fifth Assessment Report (AR5) ^{/AR5/} and this value is requested by VERRA in VCS standard version 4.1 ^{/VCS/} .
Choice of data correctly justified?	Yes
Measurement method correctly described?	IPCC Fifth Assessment Report (AR5) ^{/AR5/}
Monitoring frequency correctly described?	Will be updated according to the relevant documents
QA/QC procedure correctly described?	N/A for default value
Purpose of data?	BE _y and PE _y calculation

EG_{use,k,y} (EG_{PJ,grid,y})	Energy of type k displaced by the project activity in year y
Title in line with Methodology?	Yes
Ex-ante Value	16,275 MWh
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The ex ante source is FSR ^{/FSR/}
Correct value provided?	Yes
Has this value been verified?	Yes. The value has been verified against the FSR ^{/FSR/}
Choice of data correctly justified?	Yes
Measurement method correctly described?	Measured by electricity meter(s) and monthly recorded.
Monitoring frequency correctly described?	Continuously measurement verified as per the applied methodology
QA/QC procedure correctly described?	Yes Calibration will be carried out once a year to ensure normal operation. The data will be cross checked with Electricity Transaction Note.
Purpose of data?	BE _y calculation

EC_{PJ,j,y}	Quantity of electricity consumed by the project electricity consumption source j in year y
Title in line with Methodology?	Yes
Ex-ante Value	0 MWh
Data unit correctly expressed?	Yes
Appropriate description?	Yes

Source clearly referenced? (appropriate?)	The ex ante source is FSR/FSR/
Correct value provided?	Yes
Has this value been verified?	Yes. The value has been verified against the FSR/FSR/
Choice of data correctly justified?	Yes
Measurement method correctly described?	Measured by electricity meter(s) and monthly recorded.
Monitoring frequency correctly described?	Continuously measurement verified as per the applied methodology
QA/QC procedure correctly described?	Yes Calibration will be carried out once a year to ensure normal operation. The data will be cross checked with Electricity Transaction Note.
Purpose of data?	PE _y calculation

Eff_{i,y} (Eff_{ELEC,y})	Efficiency of methane destruction in use i (for the project, i represents power generation)
Title in line with Methodology?	Yes
Ex-ante Value	99.5%
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	For power and heat generation efficiency should be derived from the latest IPCC Report ^{/IPCC/}
Correct value provided?	Yes
Has this value been verified?	Yes. The value has been verified as derived from the latest IPCC Report ^{/IPCC/}
Choice of data correctly justified?	Yes
Measurement method correctly described?	From the latest IPCC Report ^{/IPCC/}
Monitoring frequency correctly described?	Annually checking the latest IPCC data
QA/QC procedure correctly described?	N/A
Purpose of data?	PE calculation

3. Monitoring plan

The validation team has checked the monitoring plan of the Joint-PD-MR against the applied methodology and methodological tools.

The monitoring plan in the Joint-PD-MR has been designed to comply with the latest applicable version of the monitoring methodology (ACM0008 version 08.0) and “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)^{/TBPL/}.

Monitoring system

Data and parameters to be monitored as above tables are confirmed in line with the methodology and tool, also corresponding to the formula used for ER calculation.

For the monitoring system and points, via on-site investigation, it is confirmed that the methane monitoring system is installed between the pre-treatment system and gas engine, four parameters (concentration, measure flow, pressures and temperature) are measured on-time by the system. The electricity generated

is supplied to the other coal mines under the Power Purchase Agreement/^{PPA}. And the meters have been installed between the generator and substation/grid to measure electricity exported and consumed.

All meters will be calibrated by qualified third parties in line with the national calibration standard.

Operational and management structure:

The Joint-PD-MR contains a diagram illustrating the Management structure of VCS monitoring to be implemented by the PP in order to implement the project activity. The VCS manager will take the responsibility for the overall monitoring of the project, and there will be monitoring officers for installation and maintenance of monitoring equipment, record and collect monitoring results and monitoring data. Besides, internal verifiers appointed by VCS manager will be responsible for internal check of the measurement, collection of relevant sheets, and the calculation of the emission reductions. The organizational structure is considered sufficient to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.

Data collection procedure

The Joint-PD-MR contains a description of data collection procedure which has been confirmed as actual and reasonable via site inspection. The monitoring officers collect the measured methane and electricity data regularly and complete the corresponding records. And all the monitored data has been recorded and collected properly by computer system and monitoring officers. All the cross-check evidence such as ETNs has been collected for checking the data and archived properly.

QA/QC procedure

Authorities and responsibilities regarding monitoring plan have been described in section 5.3 of the Joint-PD-MR.

The accuracy of electricity meters should not be less than 0.5S and installed as per the requirements of DL/T448-2016 Technical Administrative Code of Electric Energy Metering/^{DLT}. The installation of flow meter(s) and gas analyzer(s) will fulfill the national standard MT448-2008 and JJG 1138-2017/^{SFG}. Calibration of metering equipment should be implemented periodically by qualified party according to national standards and rules. All the records should be documented by the project owner.

Emergency Procedure

Project participant and meter supplier will take actions to maintain or will replace the broken meter(s) if any malfunction, and the monitoring data will be calculated conservatively for emission calculations during the meter troubleshooting period.

Data management

All data files, relevant electricity balance sheets will be collected by a designated monitoring officer, who will prepare backup in time and archive all documents properly.

All the relevant data records will be kept by the Project owner during the crediting period and two years after for VVB's verification.

In detail all parameters, ex-ante values and applicable formulae have been checked to determine the required changes for the next crediting period.

Besides, based on conducted interviews with related personnel the validation team has assessed the feasibility of the required changes.

Based on interview with site personnel and validation team's local and sectoral knowledge, the measurement methods, recording procedures, meter maintenance and QA/QC procedures described in the monitoring plan are feasible in China and can fully meet the requirements of the methodology. No difficulties are anticipated in implementing the operational and management structure nor the monitoring plan as a whole.

CAR 05 and CL 03 were raised and successfully closed. Refer to Appendix 4 for detail assessment

3.5 Non-Permanence Risk Analysis

N/A

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

1. Assessment of Project implementation status during this monitoring period

By means of on-site inspection and documents review, the verification team can ensure that during this monitoring period, in accordance with the Joint-PD-MR, there are total 4 sets of CMM power generators with the total installed capacity of 3.5 MW installed to utilize CMM for power generation.

This verification covers the period from 24-September-2020 to 25-August-2021 (including both days). 49,822 tCO₂e emission reductions are achieved during this monitoring period.

The main timeline of the project is as below table, which has been confirmed in the record of started construction^{/RSC/}, daily operational log^{/LOG/} against the record of unit started operation^{/RUSO/}.

Table 4-1 Commissioning date of each plant

Milestone	Commissioning Date
Start date of construction	15-July-2018 ^{/RSC/}
Start date of commissioning	24-September-2020 ^{/RUSO/}
Start date of the crediting period	24-September-2020 ^{/RUSO/}

The project supplies electricity to the coal mines for captive use (if surplus supplied to CSPG)^{/PPA/}, replacing the equivalent amount of electricity that would have been purchased from the CSPG and the captive power plants. Waste heat from the generators have been recovered to provide heat to the coal mines. Emission reductions due to surplus electricity delivered to CSPG and heat replacement are not claimed, it is confirmed as conservative.

Via on-site investigation, it is confirmed that during this monitoring period, only 2.0MW (2 sets of 1MW) CMM generators have been operated to generate the electricity due to the gas source for extraction is insufficient caused by coal mine has temporarily stopped mining which has been confirmed by checking the statement of unit operation for this monitoring period^{/SUO/}. And via site inspection and checking the operation log^{/LOG/}, it is confirmed that for the operation of 2MW units, there were no events for the normal operation occurred.

On the basis of site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as applied monitoring methodology and monitoring plan described in the Joint-PD-MR.

Via on-site interview with the project implementer and on-site inspection, it is verified that the implementation of the project is consistent with the description in the Joint-PD-MR and the monitoring system is fully functional to generate Verified Carbon Units (VCUs) without any double counting for this monitoring period from 24-September-2020 to 25-August-2021.

Basic technical details of the project are summarized in table 4-2 which has been verified during site visit /PHT/.

Table 4-2: Technical data of the project activity

Parameter	Unit	Value	
CMM generators			
Type:	-	P750GF	P1000GF
Quantity	-	2	2
Rated Power	kW	750	1,000
Rated Current	A	48	82
Rated voltage	V	10,500	10,500
Rated speed	r/min	1,000	1,500
Frequency	Hz	50	50
Power factor	-	0.8	0.8
Lifetime	year	10	10
Manufacturer	-	Henan Diesel Engine Industry Co., Ltd.	

There are no any methodology deviations relevant.

In conclusion, the verification Team was able to confirm that the project implementation is in accordance with the project description contained in the Joint-PD-MR, except only 2.0MW (2 sets of 1MW) CMM generators have been operated.

CL 04 was raised and successfully closed. Refer to Appendix 4 for detail assessment

2. Assessment of Data and parameters available at validation

Via checking the MR, it is confirmed that all the ex-ante data and parameters are same to the Joint-PD-MR which is verified as correct. Refer to section 3.4.8 for the detail assessment of ex ante parameters.

3. Assessment of Data and parameters monitored

During the verification all relevant monitoring parameters (as listed in chapter 3.4.8 of the report) have been verified with regard to the

- (i) appropriateness of the applied measurement / determination method,
- (ii) the correctness of the values applied for ER calculation,
- (iii) the accuracy, and applied QA/QC measures.

The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).

CAR 07, CAR 08 and CAR 09 were raised and successfully closed. Refer to Appendix 4 for detail assessment

4. Assessment of Compliance with monitoring plan

By means of comparison of the Joint-PD-MR with the applied CDM methodology and all applicable CDM Meth tools, the verification team has checked whether the monitoring implementation during this monitoring period is in compliance with the monitoring plan related requirements of the applied methodology/tools and Joint-PD-MR.

Methane sent to the power generators $MT_{PJ,s,l,y}$ and $MM_{ELEC,y}$ and Concentration are measured continuously by the Flow meter (with temperature and pressure transmitter) and gas analyser. Flow meter (with

temperature and pressure transmitter) and gas analyser are installed at this CMM power plant. $MT_{PJ,s,l,y}$ and $MM_{ELEC,y}$ is continuously measured and hourly recorded by DCS system automatically. The Flow meter (with temperature and pressure transmitter) and gas analyzer monitors the Methane sent to the power generators. And the calculation is done by the DCS system automatically. Electricity generation by the project $EG_{use,k,y}$ and electricity consumption for the project activity $EC_{PJ,l,y}$ is continuously monitored by electric meter installed at CMM power plant.

During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the Joint-PD-MR and/or the applicable calibration standards.

The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6).

Furthermore, via site inspection and checking the calibration records/^{CAL}, it is verified that there is no emergency procedures and no change of the meters occurred during this monitoring period.

5. Assessment of GHG emission reductions Quantity

During the verification the calculation of GHG emission reductions has been checked. In detail the following has been verified:

- *Transparency:* It has been checked whether the calculation of emission reductions is fully traceable and, where used, the Excel calculation provides all calculation formulae.
- *Parameter consistency:* It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.
- *Correctness:* It has been checked whether the applied formulae and methods for calculating emission reductions are in accordance with the monitoring plan and the approved methodology.
- *Completeness:* It has been checked whether all calculations are complete and without omissions.

Baseline Emissions Calculation Assessment:

The formula used for the determination of baseline emissions is consistent with the latest approved Joint-PD-MR and methodology ACM0008 (version 08.0):

$$\begin{aligned} BE_y &= BE_{MD,y} + BE_{MR,y} + BE_{Use,y} \\ &= 0 + 51,277 \text{ tCO}_2\text{e} + 3,814 \text{ tCO}_2\text{e} \\ &= 55,091 \text{ tCO}_2\text{e} \end{aligned}$$

For this monitoring period:

24-September-2020 to 31-December-2020	01-January-2021 to 25-August-2021
$BE_y = 0 + 12,496 \text{ tCO}_2\text{e} + 937 \text{ tCO}_2\text{e} = 13,433 \text{ tCO}_2\text{e}$	$BE_y = 0 + 38,781 \text{ tCO}_2\text{e} + 2,877 \text{ tCO}_2\text{e} = 41,658 \text{ tCO}_2\text{e}$

a. $BE_{MD,y}$

Via checking the Joint-PD-MR, it is confirmed that the baseline scenario does not involve any methane destruction, therefore, there is no methane destruction in the baseline. So, destruction of methane in the baseline scenario is 0.

b. $BE_{MR,y}$

According to the Joint-PD-MR and methodology,

$$BE_{MR,y} = \sum_i \sum_s (MT_{PJ,s,i,y} - MT_{BL,s,i,y}) \times GWP_{CH_4}$$

According to the Joint-PD-MR, it is confirmed that in the baseline scenario, no CMM is captured and destructed in the baseline scenario. Hence, $MT_{BL,s,i,y}$ is 0.

$$\begin{aligned} BE_{MR,y} &= MT_{PJ,s,i,y} \times GWP_{CH_4} \\ &= MM_{ELEC,y} \times GWP_{CH_4} \\ &= 1,831.37 \text{ tCH}_4 \times 28 \text{ tCO}_2\text{e/tCH}_4 \\ &= 51,277 \text{ tCO}_2\text{e} \end{aligned}$$

For this monitoring period:

24-September-2020 to 31-December-2020	01-January-2021 to 25-August-2021
$BE_{MR,y} = 446.3 \text{ tCH}_4 \times 28 \text{ tCO}_2\text{e/tCH}_4$ $= 12,496 \text{ tCO}_2\text{e}$	$BE_{MR,y} = 1,385.07 \text{ tCH}_4 \times 28 \text{ tCO}_2\text{e/tCH}_4$ $= 38,781 \text{ tCO}_2\text{e}$

Where:

$MT_{PJ,s,i,y}$	= Methane from source s captured and destroyed by use i in the project activity in year y (t CH ₄)
$MT_{BL,s,i,y}$	= Methane from source s that would have been captured and destroyed by use i in the baseline scenario in the year y (t CH ₄)
i	= Use of methane (flaring, power generation, etc.)
s	= Source of methane that would have been captured, sent to and destroyed by use i in the baseline scenario in the year y . This may include eligible CBM, CMM, VAM, eligible AMM and eligible OCM
GWP_{CH_4}	= Global warming potential of methane (tCO ₂ e/tCH ₄)

c. $BE_{Use,y}$

According to the Joint-PD-MR and methodology,

$$\begin{aligned} BE_{Use,y} &= \sum_k (EG_{Use,k,y} \times EF_{k,y}) \\ &= EG_{Use,k,y} \times EF_{grid,CM,y} \\ &= EG_{PJ,grid,y} \times EF_{grid,CM,y} \\ &= 7,497.44 \text{ MWh} \times 0.5088 \text{ tCO}_2/\text{MWh} \\ &= 3,814 \text{ tCO}_2\text{e} \end{aligned}$$

For this monitoring period:

24-September-2020 to 31-December-2020	01-January-2021 to 25-August-2021
$BE_{Use,y} = 1,842.337 \text{ MWh} \times 0.5088$ $\text{tCO}_2/\text{MWh} = 937 \text{ tCO}_2\text{e}$	$BE_{Use,y} = 5,655.103 \text{ MWh} \times 0.5088 \text{ tCO}_2/\text{MWh}$ $= 2,877 \text{ tCO}_2\text{e}$

Project Emission Calculation Assessment:

The formula used for the determination of project emissions is consistent with the latest approved Joint-PD-MR and methodology:

$$\begin{aligned} PE_y &= PE_{ME,y} + PE_{MD,y} + PE_{UM,y} \\ &= 0 \text{ tCO}_2\text{e} + 5,012 \text{ tCO}_2\text{e} + 257 \text{ tCO}_2\text{e} \\ &= 5,269 \text{ tCO}_2\text{e} \end{aligned}$$

For this monitoring period:

24-September-2020 to 31-December-2020	01-January-2021 to 25-August-2021
$PE_y = 0 \text{ tCO}_2\text{e} + 1,222 \text{ tCO}_2\text{e} + 63 \text{ tCO}_2\text{e}$ $= 1,285 \text{ tCO}_2\text{e}$	$PE_y = 0 \text{ tCO}_2\text{e} + 3,790 \text{ tCO}_2\text{e} + 194 \text{ tCO}_2\text{e} = 3,984 \text{ tCO}_2\text{e}$

a. $PE_{ME,y}$

According to the Joint-PD-MR,

$$\begin{aligned} PE_{ME,y} &= PE_{EC,y} \\ &= EC_{PJ,j,y} \times EF_{EF,j,y} \times (1 + TDL_{j,y}) \end{aligned}$$

In this monitoring period, via checking the meter reading records/^{MRR}/, it is verified that the electricity consumed by the project is from the electricity produced by the project, there is no electricity consumed from the grid or the coal mine, hence $EC_{PJ,j,y}$ is 0 and thus $PE_{ME,y} = 0$.

b. $PE_{MD,y}$

According to the Joint-PD-MR and methodology,

$$\begin{aligned} PE_{MD,y} &= MM_{ELEC,y} \times Eff_{ELEC,y} \times CEF_{CH_4} \\ &= 1,831.37 \text{ tCH}_4 \times 99.5\% \times 2.75 \text{ tCO}_2/\text{tCH}_4 \\ &= 5,012 \text{ tCO}_2\text{e} \end{aligned}$$

For this monitoring period:

24-September-2020 to 31-December-2020	01-January-2021 to 25-August-2021
$PE_{MD,y} = 446.30 \text{ tCH}_4 \times 99.5\% \times 2.75 \text{ tCO}_2/\text{tCH}_4$ $= 1,222 \text{ tCO}_2\text{e}$	$PE_{MD,y} = 1,385.07 \text{ tCH}_4 \times 99.5\% \times 2.75 \text{ tCO}_2/\text{tCH}_4$ $= 3,790 \text{ tCO}_2\text{e}$

c. $PE_{UM,y}$

According to the Joint-PD-MR and on-site interview with the operation staff/^{I1}/, it is confirmed that not all the methane used for power generation is combusted, a small percentage escaped to the atmosphere. Hence,

According to the methodology and Joint-PD-MR,

$$\begin{aligned} PE_{UM,y} &= GWP_{CH_4} \times MM_{ELEC,y} \times (1 - Eff_{ELEC,y}) \\ &= 28 \text{ tCO}_2\text{e}/\text{tCH}_4 \times 1,831.37 \text{ tCH}_4 \times (1 - 99.5\%) \\ &= 257 \text{ tCO}_2\text{e} \end{aligned}$$

For this monitoring period:

24-September-2020 to 31-December-2020	01-January-2021 to 25-August-2021
$PE_{UM,y} = 28 \text{ tCO}_2\text{e}/\text{tCH}_4 \times 446.30 \text{ tCH}_4 \times (1 - 99.5\%) = 63 \text{ tCO}_2\text{e}$	$PE_{UM,y} = 28 \text{ tCO}_2\text{e}/\text{tCH}_4 \times 1,385.07 \text{ tCH}_4 \times (1 - 99.5\%) = 194 \text{ tCO}_2\text{e}$

Leakage Emission Calculation Assessment:

As per the methodology and Joint-PD-MR, and on-site inspection, it is verified that there is no thermal energy use involved in the project, hence leakage (LE_y) during this monitoring period is 0.

$$LE_y = 0 \text{ t CO}_2\text{e}$$

Emission Reduction Calculation Assessment:

Summary of emission reductions during the monitoring period:

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ &= BE_y - PE_y \\ &= 49,822 \text{ tCO}_2\text{e} \end{aligned}$$

Where:

- ER_y -Emission reductions (t CO_2e)
- BE_y -Baseline Emissions (t CO_2e)
- PE_y -Project Emissions (t CO_2e)
- LE_y -Leakage Emissions (t CO_2e)

During this monitoring period, the emission reduction is calculated as below table

Parameter Period	Baseline Emissions	Project Emissions	Leakage Emissions	Emission Reductions
	BE_y (t CO_2e)	PE_y (t CO_2e)	LE_y (t CO_2e)	ER_y (t CO_2e)
24-September-2020 ~ 31-December-2020	13,433	1,285	0	12,148
01-January-2021 ~ 25-August-2021	41,658	3,984	0	37,674
Total	55,091	5,269	0	49,822

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

Refer to Appendix 5 for the detail assessment of each monitoring parameters and Appendix 3 for the supporting evidence used to determine the GHG emission reductions.

For each reported data, the evidence is provided and verified as sufficient and quality is appropriate. Also, the cross-checks has been performed on the reported data with different source of evidence. The information flow from data generation and aggregation, to recording, calculation and final transposition into the monitoring report has been assessed by VVB in Appendix 5 for each parameter and also the calibration have been conducted as per the frequency of monitoring equipment defined in the Joint-PD-MR and national regulation.

Refer to Appendix 5 for the detail assessment.

Therefore, it is concluded that the evidence provided are verified as sufficient and quality is appropriate and thus the evidence can be used to determine the GHG reductions and removals for this monitoring period.

5 VALIDATION AND VERIFICATION CONCLUSION

Climate Bridge (Shanghai) Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Verified Carbon Standard (VCS) joint validation and 1st periodic verification of the project activity Guizhou Wenjiaba CMM Power Generation Project (VCS ID 2383), for the monitoring period from 24-September-2020 to 25-August-2021, with regard to the relevant requirements for VCS Standard Version 4.1.

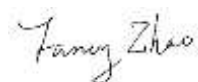
Based on the documented evidence and by an on-site assessment, TÜV NORD can confirm that:

- the baseline scenario is correctly defined as per the applied methodology and relate tools;
- the project is additional;
- all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature;
- the monitoring plan in the validated Joint-PD-MR is as per the applied baseline and monitoring methodology.
- the project has been implemented and operated as per the VCS Joint-PD-MR;
- the project complies with the validation and verification criteria for projects set out in VCS Standard Version 4.1;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS requirement and ACM0008 (version 08.0);
- the monitoring is in place as per the applied baseline and monitoring methodology ACM0008 (version 08.0);
- the monitoring complies with the monitoring plan in the validated Joint-PD-MR;

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
24-September-2020~31-December-2020	13,433	1,285	0	12,148
01-January-2021~25-August-2021	41,658	3,984	0	37,674
Total	55,091	5,269	0	49,822

Beijing, 22-November-2021



Zhao Xuejiao
TÜV NORD JI/CDM Certification Program
Verification Team Leader

Essen, 22-November-2021



Christina Stöhr
TÜV NORD JI/CDM Certification Program
Final Approval

APPENDIX 1: ABBREVIATIONS

Abbreviations	Full texts
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CBM	Coal Bed Methane
CCER	China Certified Emission Reduction
CCPG	Central China Power grid
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CMM	Coal Mine Methane
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CSPG	China Southern Power Grid
DCS	Distributed Control System
DverR	Draft Verification Report
ECPG	East China Power Grid
EIA	Environmental Impact Assessment
EPC	Engineering Procurement Construction
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
MP	Monitoring Plan
MR	Monitoring Report
NMHC	Non Methane Hydrocarbons
PA	Project Activity
PDD	Project Design Document
PP	Project Participant
PRC	Post Registration Change
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VAM	Ventilation Air Methane
VVS	Validation and Verification Standard
XLS	Emission Reduction Calculation Spread Sheet

APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS



Statement of Competence
Assessment and authorization according to the provisions of the TUV NORD ACCOM Certification Program

Ms. Xue Jiao Fancy Zhao

SCHEME	STATUS	VALID UNTIL
COM	Initial Assessment (Validation, Verification)	2023-11-01
VCS 180 18004-2	Special Assessment	2023-11-01

Authorization valid for technical areas within system scope:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
3.1	Energy Storage
3.2	Storage and energy production
11.1	Fluid media and exchanger
11.2	Refrigerant

200 - Rev. 13, Date: 2020-06-29

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



Statement of Competence
Assessment and authorization according to the provisions of the TUV NORD ACCOM Certification Program

Ms. Christina Stöhr

SCHEME	STATUS	VALID UNTIL
COM	Initial Assessment (Validation, Verification)	2023-09-01
VCS 180 18004-2	Special Assessment Technical Reviewer	2023-09-01

Authorization valid for technical areas within system scope:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
11.1	Fluid media and exchanger

200 - Rev. 8, Date: 2021-06-29

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



Statement of Competence
Assessment and authorization according to the provisions of the TUV NORD ACCOM Certification Program

Mr. Rainer Winter

SCHEME	STATUS	VALID UNTIL
COM	Initial Assessment (Validation, Verification)	2023-07-01
18	Special Assessment	2023-07-01
VCS 180 18004-2	Special Assessment	2023-07-01

Authorization valid for technical areas within system scope:

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation
1.2	Renewables
3.1	Storage and energy production
4.2	Paper
5.1	Chemical Industry
5.2	Thermoplastic, metal and alloy
8.1	Manufacturing production
9.1	Manufacturing and engineering production
9.2	Food, feed and food-related production
11.1	Extraction of fluorinated gases
11.2	Refrigerant gas production
11.3	Chemical Industry
11.4	Fluid media and exchanger

180 - Rev. 11, Date: 2019-06-29

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED

No	Author	Title	References to the document	Provider
1.	Zhijin County Environmental Protection Bureau	EIA approval/ ^{AEIA/}	EIA approval of Guizhou Wenjiaba CMM Power Generation Project, dated 20-March-2017	Project Owner
2.	Development and Reform Commission of Zhijin County	Project approval/ ^{AP/}	Project approval for approve the FSR and also the Guizhou Wenjiaba CMM Power Generation Project, dated 22-December-2016	Project Owner
3.	Zhijin County Market Supervision and Administration	Business License/ ^{BL/}	Business License of Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Project Owner
4.	Project Owner	Board meeting minute/ ^{BMM/}	Board meeting minute for project to be developed as VCS project on 01-February- 2017	Project Owner
5.	Electric Power Research Institute of Guizhou Power Grid Co., Ltd.	Calibration certificates/ ^{CAL/}	Calibration Certificates for Electricity meter covering this monitoring period	Project Owner
	Beijing Institute of Metrology and Testing Science		Calibration Certificates for gas flow meter, pressure transmitter and temperature transmitter covering monitoring period	Project Owner
	Hubei Institute of Measurement and Testing Technology		Calibration Certificates for gas analyzer covering monitoring period	Project Owner
6.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	CMM extraction record/ ^{CER/}	CMM extraction record for the Wenjiaba coal mine before the project started	Project Owner
7.	Beijing City Quality Technology Supervision Bureau	Certificate of Metrological Authorization/ ^{CMA /}	Certificate of Metrological Authorization to Beijing Institute of Metrology and Testing Science issued on 08-January-2016 valid to 07-January-2022	Project Owner
	Guiyang City Quality Technology Supervision Bureau		Certificate of Metrological Authorization to Electric Power Research Institute of Guizhou Power Grid Co., Ltd. issued on 17-May-2018 valid to 16-May-2024	
	General Administration of Quality Supervision,		Certificate of Metrological Authorization to Electric Power Research Institute of Guizhou Power	

No	Author	Title	References to the document	Provider
	Inspection and Quarantine of China		Grid Co., Ltd. issued on 04-September-2017 valid to 03-September-2022	
8.	Guizhou Shuikuang Orion Clean Energy Co., Ltd. and Guizhou Meijiashan Coal mine Co., Ltd	Electricity Balance Sheet ^{/EBS/}	Monthly Electricity Balance Sheet (Electricity transaction notes) covering the monitoring period	Project Owner
9.	Chongqing Jiutian Environmental Impact Assessment Co., Ltd.	Environmental Impact Assessment ^{/EIA/}	EIA designed by Chongqing Jiutian Environmental Impact Assessment Co., Ltd. in March 2017	Project Owner
10.	Guizhou Shuikuang Orion Clean Energy Co., Ltd. and Guizhou Jinhong Jinyu Energy Co., Ltd.	EPC contract ^{/EPC/}	EPC contract for the project signed on 13-June-2018	Project Owner
11.	Shengli Oilfield Shengli Power Machinery Group Co., Ltd.	Feasibility Study Report ^{/FSR/}	Feasibility Study Report of Guizhou Wenjiaba CMM Power Generation Project, dated in Nov. 2016	Project Owner
12.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Gas Monthly Data ^{/GMD/}	Gas Monthly Data covering this monitoring period - Monthly gas flow reports via flow meter, pressure transmitter and temperature transmitter - Monthly methane concentration readings via gas analyzer meter	Project Owner
13.	Guizhou Shuikuang Orion Clean Energy Co., Ltd. and Guizhou Wenjiaba coal mine Co., Ltd.	Gas supply agreement ^{/GSA/}	Gas supply agreement issued on 23-April-2018	Project Owner
14.	Climate Bridge (Shanghai) Ltd.	IRR calculation sheet ^{/IRR/}	IRR calculation sheet of Guizhou Wenjiaba CMM Power Generation Project - Draft Version 01, dated 25-September-2021 - Final Version 1.1, dated 08-November-2021	Climate Bridge (Shanghai) Ltd.
15.	Climate Bridge (Shanghai) Ltd.	Joint-PD-MR ^{/JPM/}	Joint-PD-MR of Guizhou Wenjiaba CMM Power Generation Project Draft Version 01, dated 25-September-2021	Climate Bridge (Shanghai) Ltd.

No	Author	Title	References to the document	Provider
			Final Version 1.1, dated 18-November-2021	
16.	Guizhou Shuikuang Orion Clean Energy Co., Ltd. and employments	Labor contract/ ^{LC/}	Labor contracts of the CMM power plant	Project Owner
17.	Project Owner and local authority	Local communication survey records/ ^{LCSR-M/}	Local communication survey records during this monitoring period including all the filled questionnaires	Project Owner
18.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	LOG/ ^{LOG/}	- Sample copy of project operation records - Equipment daily check log - Equipment mandatory maintenance records	Project Owner
19.	Local stakeholders	Local stakeholder consultation records/ ^{LSC/}	Local communication survey records before project started construction including all the filled questionnaires	Project Owner
20.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Monitoring Manual/ ^{MM/}	Monitoring Manual for the project activity and project site management rules and regulations for CMM power plant	Project Owner
21.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Meter Reading Records/ ^{MRR/}	Monthly Meter reading records of all the meters covering this monitoring period	Project Owner
22.	Guizhou Development and Reform Commission	Notification of tariff / ^{NTSE/}	Notification of tariff to the surplus supply electricity to CSPG of project issued by Guizhou Development and Reform Commission on 07-November-2018	Project Owner
23.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Project Operation and Maintenance Records/ ^{O&M/}	Project Operation and Maintenance Records and Regulations of this CMM power plant - Sample copy of O&M records - Gas Engine Generator Operation Safety Management Regulations - Routing inspection operation instruction - Routing inspection line diagram - Fire emergency plan	Project Owner
24.	Guizhou Shuikuang Orion Clean Energy Co., Ltd. and Bijie Power Supply Bureau of Guizhou Power Grid Co., Ltd. & Guizhou	Power Purchase and Sale Contract/ ^{PPA/}	1. Power Purchase and Sale Contract signed by Guizhou Shuikuang Orion Clean Energy Co., Ltd. and Bijie Power Supply Bureau of Guizhou Power Grid Co., Ltd. valid for this monitoring period 2. Power Purchase and Sale Contract signed by Guizhou Shuikuang Orion Clean Energy Co., Ltd. and	Project Owner

No	Author	Title	References to the document	Provider
	Wenjiaba coal mine Co., Ltd.		Wenjiaba coal mine Management Co., Ltd. valid for this monitoring period	
25.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Gas and Power Wiring Diagram/ ^{PWD/}	Gas and Power Wiring Diagram of this CMM power plant derived from the DCS system of the CMM power plant	Project Owner
26.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	QA/QC procedures/ ^{QA/}	QA/QC procedures of implementation of the project, including the emergency response procedure	Project Owner
27.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Record of started construction/ ^{RSC/}	Record of started construction dated on 15-July-2018	Project Owner
28.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Records of electricity purchase/ ^{REP/}	Records of electricity purchased from the grid by coal mines before project started including the electricity purchase invoice from grid company	Project Owner
29.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Record of unit started operation/ ^{RUSO/}	Record of unit started operation dated 24-September-2020	Project Owner
30.	Project Owner	Statement/ ^{SUO/}	Statement of unit operation for this monitoring period	Project Owner
31.	Guizhou Shuikuang Orion Clean Energy Co., Ltd.	Training and Competence Records/ ^{TCR/}	Project Responsibilities, Training and Competence Records • Project Organization Chart and responsibilities • Staff Training Records of this CMM power plant • Operator Certificates of this CMM power plant • Internal audit record covering this monitoring period	Project Owner
32.	Climate Bridge (Shanghai) Ltd.	Emission Reduction Calculation Sheets/ ^{XLS/}	Emission Reduction Calculation sheets • Draft Version 01, dated 25-September-2021 • Final Version 1.1, dated 18-November-2021 Emission Reduction Calculation sheets (related to validation) • Draft Version 01, dated 25-September-2021 • Final Version 1.1, dated 18-November-2021	Climate Bridge (Shanghai) Ltd.
33.	UNFCCC	Applied methodology/ ^{ACM 0008/}	Approved CDM methodology ACM0008: "Abatement of methane from coal mines" (version 08.0)	UNFCCC Website
34.	IPCC	AR5/ ^{AR5/}	IPCC Fifth Assessment Report (AR5)	IPCC website

No	Author	Title	References to the document	Provider
35.	China DNA	Baseline Emission Factors/ ^{BEF} /	“2019 Baseline Emission Factors for Regional Power Grids in China” published by DNA of China https://www.mee.gov.cn/ywgz/ymqhbh/wsqtgz/202012/W020201229610353816665.pdf	China DNA website
36.	National Energy Administration, China Electricity Council etc.	China Electric Power Yearbook/ ^{CEPY} /	China Electric Power Yearbook from 2014 to 2018	China Website
37.	National Bureau of Statistics	China Energy Statistical Yearbook/ ^{CESY} /	China Energy Statistical Yearbook from 2016 to 2018	China Website
38.	TÜV NORD JI / CDM Certification Program	CP Manual/ ^{CPM} /	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)	TÜV NORD JI / CDM Certification Program
39.	State Administration of Work Safety	Coalmine Safety Regulation/ ^{CSR} /	Chinese National Coalmine Safety Regulation (valid in 2016)	
40.	National Standard	Technical administration code of meter/ ^{DLT} /	DL/T 448-2016 technical administration code of electricity energy metering	National Standard Website http://gb-china.cn/
41.	National Development and Reform Commission and Ministry of Construction	Economic Evaluation / ^{EEMP} /	“Economic Evaluation Method and Parameters for Construction Projects”	Public Website
42.	National Standard	Emission standard/ ^{ESIE} /	“Emission standard for industrial enterprise noise at boundary”(GB12348-2008)	National Standard
43.	China National Energy Administration	Gas-fired power generation safety supervision report/ ^{GFPG} /	“Gas-fired power generation safety supervision report” published by China National Energy Administration	Public website
44.	Intergovernmental Panel on Climate Change	IPCC Guidelines/ ^{IPCC} /	1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp
45.	National law	Income Tax Law / ^{ITL} /	Enterprise Income Tax Law of the People's Republic of China	Public Website
46.	VERRA	Joint Template / ^{JPMT} /	VCS-Joint-Project-Description-Monitoring-Report-Template-v4.0	VERRA
47.	UNFCCC	Kyoto Protocol/ ^{KP} /	Kyoto Protocol (1997)	UNFCCC

No	Author	Title	References to the document	Provider
48.	The State Council	Law of City Construction Tax/ ^{LCT/}	Law of the People's Republic of China on City Maintenance and Construction Tax (Draft)	Public website
49.	State Taxation Bureau of Guizhou Province	Local Education Surcharges/ ^{LES/}	Announcement of the State Administration of Taxation of Guizhou Province on the Collection of Education Fee Surcharges and Local Education Surcharges	Public website
50.	National Government	Law and Regulations/ ^{L&R/}	1. Renewable Energy Law and Regulations 2. Guidance Catalogue for the Development of Renewable Energy Industry 3. Further Accelerating the Extraction and Utilization of Coalbed Methane (Coal Mine Gas) 4. Twelfth Five-Year Plan for The Development and Utilization of Coalbed Methane (Coal Mine Gas) 5. "Environmental Protection Law of P.R. China" 6. "Law of the People's Republic of China on the Environmental Impact Assessment"	Public website
51.	General Office of the State Council	Notice on Strictly Prohibiting the Installation / ^{NSP/}	Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or Below, decree no. 2002-6 [Doc-32]	Public websites
52.	On-site Verification Team	Photographs of Project Site/ ^{PHT/}	Photographs of this CMM power plant site, Central Control Room, DCS System, all the meters and nameplate of the equipment taken by validation and verification team during the on-site validation and verification	On-site Verification Team
53.	VERRA	Registration and Issuance Process version 4.0/ ^{RIP/}	Registration and Issuance Process version 4.0	VERRA
54.	UNFCCC	UNFCCC Standard / ^{SASS/}	UNFCCC Standard "Applicability of sectoral scopes version 01.0"	UNFCCC
55.	National standard	Standard for installation of flow meters and gas analyzers/ ^{SFG/}	The national standard (MT448-2008 and JJG 1138-2017) for installation of flow meters and gas analyzers	National standard
56.	UNFCCC	Methodological tool/ ^{TBDA/}	"Combined tool to identify the baseline scenario and demonstrate additionality" (version 07.0)	UNFCCC
57.	UNFCCC	Methodological tool/ ^{TBPL/}	Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 03.0)	UNFCCC

No	Author	Title	References to the document	Provider
58.	UNFCCC	Methodological tool /TCP/	“Common practice” (version 03.1)	UNFCCC
59.	UNFCCC	Methodological tool/TEF/	“Tool to calculate the emission factor for an electricity system” (version 07.0)	UNFCCC
60.	UNFCCC	Methodological tool/TIA/	“Investment analysis” (version 10.0)	UNFCCC
61.	The State Council	Corporate Income Tax/CIT/	‘Detailed Rules for the Implementation of the Provisional Regulations on Corporate Income Tax of the People's Republic of China’	Public website
62.	VERRA	VCS Program Definitions/VCSPD/	VCS Program Definitions, v4.1	VCS website
63.	VERRA	VCS Program Guide/VCSPG/	VCS Program Guide, v4.0	VCS website
64.	VERRA	VCS Standard /VCSS/	VCS Standard, v4.1	VCS website
65.	National Standard	JJG640-2016/VRF/	“Verification regulation of different pressure type flow meter (JJG640-2016)”. http://cdm.ccchina.org.cn/ccer.aspx	Public Website
66.	China CER Exchange Info-platform	China CER/CCER/	http://cdm.ccchina.org.cn/ccer.aspx	Website
67.	China DNA	China cap & trade scheme/cets/	http://www.mee.gov.cn/xxgk2018/xxgk/xxgk02/202101/t20210105_816131.html	Public Website
68.	China DNA	DNA of China/dna/	http://www.mee.gov.cn/	Website
69.	China DNA	Enforced company list/ecf/	http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/W020201230736907682380.pdf	Public Website
70.	Electric Power News Network	Electric Power News Network/epnn/	http://news.bjx.com.cn/zt.asp?topic=%CD%DF%CB%B9%B7%A2%B5%E7	Website
71.	Google	Google Earth Map/gem/	earth.google.com	Website
72.	GS	Gold Standard/gs/	http://www.goldstandard.org/	Website
73.	IPCC	IPCC publications/ipcc/	www.ipcc-nggip.iges.or.jp	Website
74.	Ministry of Environmental Protection of China	Environmental Protection /mep/	http://www.zhb.gov.cn/	Website
75.	National Bureau of Statistics of China	Statistic Data/sd/	http://www.stats.gov.cn/tjsj/ndsj/	Website
76.	UNFCCC	UNFCCC/unfccc/	http://cdm.unfccc.int	Website
77.	Journal of Guizhou Meteorology	solar source/ss/	http://www.doc88.com/p-1344326182784.html	Website
78.	VCS	VCS/vcs/	https://verra.org/project/vcs-program/	Website

APPENDIX 4: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	<i>n.a</i>	Section no.		Date:
Description of FAR				
Project participant response (1st round)				Date:
Documentation provided by project participant (1st round)				
☐	Changes in Joint-PD-MR	Section(s):	New version No.:	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☐	Other:			
DOE assessment (1st round)				Date:
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☐ The finding is closed		

Table 2. CL from this verification

CL ID	01	Section no.	1.14	Date: 19/10/2021
Description of CL				
The source of each law and regulation is not provided.				
Project participant response (1st round)				
The source of each law and regulation are implemented in Section 1.14 of the updated joint PD & MR.				
1. Renewable Energy Law of the People's Republic of China: http://www.gov.cn/ziliao/flfg/2005-06/21/content_8275.htm . 2. Guidance Catalogue for the Development of Renewable Energy Industry: http://www.nea.gov.cn/2015-12/13/c_131051692.htm . 3. Opinions of the General Office of the State Council on Further Accelerating the Extraction and Utilization of Coalbed Methane (Coal Mine Gas): http://www.gov.cn/zhengce/content/2013-09/18/content_2540.htm . 4. Chinese National Coalmine Safety Regulation: https://www.mem.gov.cn/fw/flfgbz/gz/ . 5. Notice of the National Development and Reform Commission on the issuance of the twelfth Five-Year Plan for The Development and Utilization of Coalbed Methane (Coal Mine Gas): https://www.ndrc.gov.cn/xxgk/zcfb/ghwb/201112/t20111231_962121.html .				
Documentation provided by project participant (1st round)				Date: 05/11/2021
☒	Changes in the Joint-PD-MR	Section(s): 1.14	New version No.:	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☒	Other:	/L&R/		
DOE assessment (1st round)				Date: 08/11/2021
The revised Joint-PD-MR is checked, it is confirmed that all the data sources have been added and the websites are confirmed as correct and relevant ^{/L&R/} .				
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

CL ID	02	Section no.	2.2	Date: 19/10/2021
Description of CL				
Which mitigation measures conducted by project owner for the potential noise pollution and water pollution caused by the Project which are concerned by local stakeholders are not clarified.				
Project participant response (1st round)				
The following mitigation measures are implemented in section 2.2 of the update joint PD&MR. For the noise pollution issue, project owner conducted the following measures: the plant buildings that contain machinery will be all built from reinforced concrete, with soundproof materials installed inside, atop and at the openings. Mufflers and vibration damper bases have been designed for the machinery. Noise emission from the project operation complies with the standard requirements of Category 2 of "Emission standard for industrial enterprise noise at boundary" (GB12348-2008), and the environmental noise at the residential settlement satisfies Category 2 of "Environmental quality standard for noise" (GB3096-2008). For the water pollution issue, project owner conducted the following measures: wastewater during operation consists of condensate water, cooling water and domestic wastewater. Condensate water which contains no pollutant will be used in the water-based flame arrester. Cooling water also doesn't contain any pollutants, which will be circulated after cooling. Domestic wastewater from excretion of construction personnel is fermented and sterilized before used as fertilizer for agricultural land. Wastewater from washing hands will be treated by sedimentation and reused for plant landscaping. The content mentioned above was provided in section 2.2 of revised PDD.				
Documentation provided by project participant (1st round)				Date: 05/11/2021
☒	Changes in the Joint-PD-MR	Section(s): 2.2	New version No.:	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☒	Other:	/EIA/, /AEIA/, /LSC/		
DOE assessment (1st round)				Date: 08/11/2021
The revised Joint-PD-MR is checked, it is confirmed that the related mitigation measures conducted by project owner have been added. These impacts have already been considered in the EIA approval and the PP has taken related mitigation measures as per the EIA approval request so that the project can be implemented successfully. The related mitigative actions have been carried out by and assessed by VVB as below: 1. The noise during operation is generated by the low-concentration CMM generators, circulating cooling tower and pumps, via site inspection, VVB confirmed that the plant buildings that contain machinery are all built from reinforced concrete, with soundproof materials installed inside, atop and at the openings. And the Noise emission from the project operation is confirmed as complies with the standard requirements of Category 2 (GB12348-2008) which is in line with the requirement of EIA/^{EIA}/. 2. There are wastewater generated during the operation including condensate water, cooling water and domestic wastewater and via site inspection, VVB confirmed that no pollutions in condensate water and cooling water, an all the domestic wastewater has been properly handled and used as fertilizer which is verified by site inspection. Finally, it is verified that there is no one thinks that the Project will have a negative impact on the local life, local stakeholders are supportive of the project construction by checking the questionnaires/^{LSC}/, and thus no need to change the project design based on the stakeholder inputs.				
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

CL ID	03	Section no.	5.3	Date: 19/10/2021
Description of CL				

The position of installed monitoring equipment is not clarified.			
Project participant response (1st round)			
The flow meter with pressure sensor and temperature sensor and gas analyzer are installed at the outlet of the pretreatment system. The electricity meter (M ₁) is installed at the project site to monitor the electricity delivered to Wenjiaba coal mine and the electricity imported from coal mine. The surplus electricity delivered to CSPG is not included in emission reduction calculation. The content mentioned above are implemented in the update joint PD&MR.			
Documentation provided by project participant (1st round)			Date: 05/11/2021
☒	Changes in Joint-PD-MR	Section(s): 5.3	New version No.:
☐	Changes in XLS	Worksheet(s):	New version No.:
☒	Other:	/PPA/	
DOE assessment (1st round)			Date: 08/11/2021
The revised Joint-PD-MR is checked, it is confirmed that position of installed monitoring equipment have been clarified which are confirmed as correct by site inspection and checking the PPA/PPA/ with coal mine.			
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CL ID	04	Section no.	1.11	Date: 19/10/2021
Description of CL				
The PP stated that only 2 sets of 1MW (2.0MW) CMM generators have been operated to electricity for this monitoring period, the related reason is not clarified and supporting evidence is missing.				
Project participant response (1st round)				
During the first monitoring period, only 2 sets of 1MW (2MW) generators have been operated to electricity, the reason is that the coal mine has temporarily stopped mining, so the gas source for extraction is insufficient. The current pumped gas volume is only enough to run the two sets of 1MW generators. The content mentioned above are implemented in the update joint PD&MR. The supporting evidence "Explanation on the commissioning of the Wenjiaba Coal Mine Gas Power Generation Project" is provided.				
Documentation provided by project participant (1st round)				Date: 05/11/2021
☒	Changes in Joint-PD-MR	Section(s): 1.11	New version No.:	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☒	Other:	/SUO/, /LOG/		
DOE assessment (1st round)				Date: 08/11/2021
The revised Joint-PD-MR is checked, it is confirmed that the reason has been clarified. Via on-site investigation, it is confirmed that during this monitoring period, only 2.0MW (2 sets of 1MW) CMM generators have been operated to generate the electricity due to the gas source for extraction is insufficient caused by coal mine has temporarily stopped mining which has been confirmed by checking the statement of unit operation for this monitoring period/ ^{SUO} /. And via site inspection and checking the operation log/ ^{LOG} /, it is confirmed that for the operation of 2MW units, there were no events for the normal operation occurred.				
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Table 3.CAR from this verification

CAR ID	01	Section no.	1.16.1	Date: 19/10/2021
Description of CAR				

How to consider the China emission trading program and how to make sure of no double counting is missing.			
Project participant response (1st round)			
China has a national emissions trading scheme only cover the high-emission industries, such as thermal power generation, petrochemical, chemical, building materials, iron and steel, non-ferrous, paper, aviation and other key emission industries that emitted at least 26,000 tons of CO ₂ e/year. And the project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the project owner according to the enforced company list in public information. Hence, it is confirmed that the emission reductions will not be double counted.			
Documentation provided by project participant (1st round)			Date: 05/11/2021
☒	Changes in Joint-PD-MR	Section(s): 1.16.1	New version No.: 2.0
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		
DOE assessment (1st round)			Date: 08/11/2021
The revised Joint-PD-MR is checked, it is confirmed that the related information has been specified.			
Based on validation and verification team's local expertise, China has a national emissions trading scheme only cover the high-emission industries, such as power generation sector that emitted at least 26,000 tons of CO ₂ e/year which has been verified in the public website/ cets/ , and it is confirmed that the project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the project owner by checking the enforced company list in public information/ ecl/ . Hence, it is confirmed that the emission reductions will not be double counted.			
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	02	Section no.	2.2	Date: 19/10/2021
Description of CAR				
The actual Local Stakeholder Consultation process and results for this monitoring period are not specified.				
Project participant response (1st round)				
The actual Local Stakeholder Consultation process and results for this monitoring period are specified in section 2.2 of the updated joint PD&MR.				
The LSC during the first monitoring period was conducted on 15-January-2021 to introduce the situation of project to local stakeholders.				
The following people are considered as the stakeholders of this project during the implementation stage.				
- Residents of the nearby village. - Staff of the project. - Relevant administrative staff of the local government.				
The project owner designed a questionnaire to collect the comments of relevant stakeholders and the major question issues and results are shown as below:				
Item	Options	Results	Percentage	
Whether the project cause water pollution?	Yes	0	0.00%	
	No	28	93.33%	
	Don't know	2	6.67%	
Whether the project cause air pollution?	Yes	0	0.00%	
	No	28	93.33%	
	Don't know	2	6.67%	
Whether the project cause noise pollution?	Yes	0	0.00%	
	No	28	93.33%	
	Don't know	2	6.67%	

Whether the project impact on soil environment?	Yes	0	0.00%
	No	25	83.33%
	Don't know	5	16.67%
Whether the project impact on the surrounding animals and plants?	Yes	0	0.00%
	No	21	70.00%
	Don't know	9	30.00%
Impact on the local residents' employment opportunities and income.	Advantageous	26	86.67%
	No impact	4	13.33%
	Disadvantageous	0	0.00%
Impact on the local economic development.	Advantageous	26	86.67%
	No impact	4	13.33%
	Disadvantageous	0	0.00%
Impact on the local power grid.	Advantageous	22	73.33%
	No impact	8	26.67%
	Disadvantageous	0	0.00%
Attitude on implementation of the project.	Support	30	100.00%
	Oppose	0	0.00%
	Don't know	0	0.00%

All local stakeholders are supportive to the implementation of the project, believing that the Project help improve the life of local people and promote local economic development without adverse environmental impact.

During the operation, some main issues were raised by local stakeholder and the developer should pay attention and solve these issues which are listed as following:

1. Some measurements should be taken to control the environmental pollution;
2. Project developer should ensure the security of the power station during the operation period;

For the first issue, as the project will merely cause environmental pollution during the operation period, this issue can be easily controlled; for the second issue, all the workers should receive the safety training regularly.

Documentation provided by project participant (1st round) **Date: 05/11/2021**

☒ Changes in Joint-PD-MR	Section(s): 2.2	New version No.: 2.0
☐ Changes in XLS	Worksheet(s):	New version No.:
☒ Other:	/LSCR-M/	

DOE assessment (1st round) **Date: 08/11/2021**

The revised Joint-PD-MR is checked, it is confirmed that actual Local Stakeholder Consultation process and results for this monitoring period have been specified.

Refer to section 3.3.2 of this report for detail assessment.

Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed
--	--

CAR ID 03 **Section no.** 2.4 **Date:** 19/10/2021

Description of CAR

The VCS ID and related website for the project are not provided.

Project participant response (1st round)

The following content are implemented in section 2.4 of the update joint PD&MR.

The project (VCS ID 2383) was open for public comment from 26-November-2020 to 26-December-2020 on the verra website, no comments was received.

The related website: <https://registry.verra.org/app/projectDetail/VCS/2383>

Documentation provided by project participant (1st round) **Date: 05/11/2021**

☒ Changes in Joint-PD-MR	Section(s): 2.4	New version No.: 2.0
☐ Changes in XLS	Worksheet(s):	New version No.:

☐ Other:		
DOE assessment (1st round)		Date: 08/11/2021
The revised Joint-PD-MR is checked, it is confirmed that VCS ID and related website for the project have been provided. The project sought the registration with the VCS Program, according to VCS requirements the Project Description was submitted for public comment period. The project was allocated with VCS ID 2383. The public comment period started on 26-November-2020 and ended on 26-December-2020 (https://registry.terra.org/app/projectDetail/VCS/2383). No comments were received during this period which has been verified by checking the dedicated website.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	04	Section no.	3.3	Date:	19/10/2021
Description of CAR					
The ECPG which has been mentioned in 4.1 for Emission Factor calculation is not included in the project boundary.					
Project participant response (1st round)					
For the project, CCPG and ECPG supply electricity to CSPG, thus power plants connected to ECPG, CSPG and CCPG were included in the project boundary. The Figure 3 in section 3.3 is also renewed.					
Documentation provided by project participant (1st round)					Date:
☒ Changes in Joint-PD-MR					Section(s): 2.4
☐ Changes in XLS					Worksheet(s):
☒ Other:					/BEF/
DOE assessment (1st round)					Date:
The revised Joint-PD-MR is checked, it is confirmed that ECPG has been added into both the description of boundary and project boundary map which is confirmed in line with the grid region defined in "2019 Baseline Emission Factors for Regional Power Grids in China" published by DNA of China/BEF/.					
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	05	Section no.	5.3	Date:	19/10/2021
Description of CAR					
For the electricity meter, in the Figure 6, two meters are shown, however in table 13, only listed information of one electricity meter, specification is requested.					
Project participant response (1st round)					
For the project, the surplus electricity delivered to CSPG is not included in emission reduction calculation.					
The electricity delivered to coal mine is measured by electricity meter (M ₁), the specification is shown as below: Model: DSSD71, Serial No.1900030130, Accuracy: 0.5S					
Documentation provided by project participant (1st round)					Date:
☒ Changes in Joint-PD-MR					Section(s): 5.3
☐ Changes in XLS					Worksheet(s):
☐ Other:					
DOE assessment (1st round)					Date:
The revised Joint-PD-MR is checked, it is verified that the figure 6 has been updated and due to the PP will not claim the ER due to surplus electricity delivered to CSPG, hence the meter for measuring the surplus electricity delivered to CSPG is deleted from the figure accordingly and only keep the meter M ₁ for measuring the electricity delivered to coal mine which is verified as correct and reasonable.					

Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed
--	--

CAR ID	06	Section no.	6.1	Date: 19/10/2021
Description of CAR				
For the parameter $MT_{PJ,s,i,y}$ and $MM_{ELEC,y}$, the actual monitoring method, process and data collection, QA/QC procedure and calibration information for the monitoring devices are not provided related to this monitoring period.				
Project participant response (1st round)				
The following information are implemented in section 6.1 of the update joint PD&MR. $MM_{ELEC,y}$ and $MT_{PJ,s,i,y}$ were calculated by the gas flow rate, pressure, temperature and CH_4 concentration of CMM. Flow meter measured gas volumes, pressure and temperature. Density of methane under normal conditions of temperature and pressure continuously and recorded hourly. Gas analyzer measured the concentration of CH_4 continuously and recorded hourly. Gas analyzer was calibrated annually and the flow meter was calibrated annually according to the relevant standard "Verification regulation of different pressure type flow meter (JJG640-2016)". All electronic data and paper documents were archived for two years following the end of the crediting period.				
Documentation provided by project participant (1st round)				Date: 05/11/2021
☒	Changes in Joint-PD-MR	Section(s): 6.1	New version No.: 2.0	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☒	Other:			
DOE assessment (1st round)				Date: 08/11/2021
The Joint-PD-MR is checked, it is confirmed that the actual information of monitoring both $MT_{PJ,s,i,y}$ and $MM_{ELEC,y}$ during this monitoring period has been added and confirmed as correct and actual. Refer to Appendix 5 of this report for detail assessment of both parameters.				
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	07	Section no.	6.1	Date: 19/10/2021
Description of CAR				
For the parameter $EG_{use,k,y}$ ($EG_{PJ,grid,y}$), the actual monitoring method, process and data collection, QA/QC procedure and calibration information for the monitoring devices are not provided related to this monitoring period.				
Project participant response (1st round)				
The following information are implemented in section 6.1 of the update joint PD&MR. The electricity supplied to coal mine was measured by electricity meter (M_1) continuously and recorded monthly. Electricity transaction notes have been provided for crosscheck. All electronic data and paper documents were archived for two years following the end of the crediting period. The electricity meter (M_1) was calibrated annually according to the industrial standard "Technical administrative code of electric energy metering (DL/T448-2016)".				
Documentation provided by project participant (1st round)				Date: 05/11/2021
☒	Changes in Joint-PD-MR	Section(s): 6.1	New version No.: 2.0	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☒	Other:			
DOE assessment (1st round)				Date: 08/11/2021
The Joint-PD-MR is checked, it is confirmed that the actual information of monitoring $EG_{use,k,y}$ ($EG_{PJ,grid,y}$) during this monitoring period has been added and confirmed as correct and actual. Refer to Appendix 5 of this report for detail assessment of this parameter.				

Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed
--	--

CAR ID	08	Section no.	6.1	Date: 19/10/2021		
Description of CAR						
For the parameter $EC_{PJ,j,y}$, the actual monitoring method, process and data source are not provided related to this monitoring period and why the value is 0 need to be specified.						
Project participant response (1st round)						
According to the CMM cooperation agreement between the project and Wenjiaba coal mine, the electricity consumed by the project is imported from CSPG to the power station through coal mine, and the electricity is measured by electricity meter (M_1) which is installed at the project site. The electricity meter was calibrated annually according to the industrial standard "Technical administrative code of electric energy metering (DL/T448-2016)" According to the FSR, about 7% of internal electricity consumption ratio is provided by the project. In the first monitoring period, the internal consumption electricity are all provided by the project from part of the total electricity generation, and in this monitoring period no any sudden or emergency event occur, thus the project has not imported electricity from the coal mine and accordingly the value of the parameter $EC_{PJ,j,y}$ is 0.						
Documentation provided by project participant (1st round)				Date: 05/11/2021		
☒	Changes in Joint-PD-MR	Section(s): 6.1	New version No.: 2.0			
☐	Changes in XLS	Worksheet(s):	New version No.:			
☒	Other:					
DOE assessment (1st round)				Date: 08/11/2021		
The Joint-PD-MR is checked, it is confirmed that the actual information of monitoring $EC_{PJ,j,y}$ during this monitoring period has been added and confirmed as correct and actual. And the value of 0 is confirmed as correct by checking the related evidence. Refer to Appendix 5 of this report for detail assessment of this parameter.						
<table border="1"> <tr> <td> Conclusion Tick the appropriate checkbox </td> <td> ☐ Additional action should be taken (finding remains open) ☒ The finding is closed </td> </tr> </table>					Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed					

CAR ID	09	Section no.	6.1	Date: 19/10/2021
Description of CAR				
For the parameter $TDL_{j,y}$, how the value is determined for this monitoring period is not specified as per the tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 03.0).				
Project participant response (1st round)				
According to the tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 03.0)) the project is the case of Scenario A; ii) the electricity consumption by all project and leakage electricity consumption sources OMWh in this monitoring period is smaller than the electricity consumption of all baseline electricity consumption sources 7,497.440MWh in this monitoring period. Thus, Use as default values of 3% for (b) project and leakage electricity consumption sources.				
Documentation provided by project participant (1st round)				Date: 05/11/2021
☒	Changes in Joint-PD-MR	Section(s): 6.1	New version No.: 2.0	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☒	Other:			
DOE assessment (1st round)				Date: 08/11/2021
The Joint-PD-MR is checked, it is confirmed that the determination method has been added which is confirmed as in line with the tool of "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Version 03.0).				

By checking the meter reading records, it is confirmed that the electricity consumption by project is 0MWh for this MP, which is smaller than the electricity consumption in baseline of the project (7,497.44000MWh in this monitoring period). Hence, 3% is applicable to the project for project emission calculation.

Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed
--	--

Table 4. Remaining FAR from next verification

FAR ID	<i>n.a</i>	Section no.		Date:
Description of FAR				
Project participant response (1st round)				Date:
Documentation provided by project participant (1st round)				
☐	Changes in Joint-PD-MR	Section(s):	New version No.:	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☐	Other:			
DOE assessment (1st round)				Date:
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☐ The finding is closed			

APPENDIX 5 MONITORED PARAMETERS

Table A-1: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. $MT_{PJ,s,i,y}$		Methane from source s captured and destroyed by use i in the project activity in year y		
a) Measurement / Determination method (VVS, §§ 389-393) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level but also describe the applied data aggregation trails (from ODL to data aggregation level zero).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the Joint-PD-MR,D and the applied methodology.</i>	/I1/ /GMD/ /LOG/ /MM/ /JPM/ /O&M/ /PPA/ /PWD/ /ACM000 8/	Description: $MT_{PJ,s,i,y}$ is measured continuously by the Flow meter (with temperature and pressure transmitter) and gas analyzer. Flow meter (with temperature and pressure transmitter) and gas analyzer are installed at this CMM power plant. $MT_{PJ,s,i,y}$ is continuously measured and monthly recorded by DCS system automatically. The $MT_{PJ,s,i,y}$ is calculated based on the value of gas flow rate, pressure, temperature measured by Flow meter and CH₄ concentration of CMM measured by gas analyzer. The calculation is done by the DCS system automatically. The Flow meter (with temperature and pressure transmitter) and gas analyzer monitors the Methane captured and destroyed by the power generations. And the calculation is done by the DCS system automatically. The meter readings and calculation result are recorded by the operation staff of this CMM power plant aggregated monthly. Meanwhile, the automatic monitoring DCS system of this CMM power plant collects the data from the meter and gas analyzer every day and delivers them to the project owner. Neither failure nor exchange of meters was detected during the monitoring period. The data aggregation procedure applied by the PP is shown as follow: 1. $MT_{PJ,s,i,y}$ is measured continuously by Flow meter (with temperature and pressure transmitter) and gas analyzer of this CMM power plant, the operators read the value from the	CAR-06	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		meters monthly. Based on the difference between the two meter values for each meter for that month the value of $MT_{PI,s,i,y}$ is determined. Accordingly the operator issues the monthly reports. The monthly reports record the quantities of gross methane sent to the power generators per month. 2. Based on the monthly reports, the final monthly value was reported in the monitoring report. <i>Verifier's action:</i> This was verified by on-site interview, by observations and by cross checking with calibration records, Joint-PD-MR and applied methodology against the ER calculation spreadsheet. Furthermore, the following actions have been taken by the verification team to check the correctness of the data aggregation. The reported value in the Joint-PD-MR has been recalculated by the verification team based on the values from the monthly reports. Based on monthly reports and the underlying original data, the verification team calculated the data aggregation completely independent from the calculation provided by the PP. 100% of the monthly reports have been verified. <i>Conclusion:</i> The actual Measurement / Determination method for this monitoring period is not specified. CAR 06 was raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/I1/ /CAL/ /CMA/ /GMD/ /LOG/ /MM/ /JPM/ /O&M/ /PPA/ /VRF/	<i>Description:</i> Refer to Appendix 6 for the accuracy details of each meter. The calibrations of all the meters were performed annually by a qualified 3rd party entity according to national industry standard^{/VRF/} and records maintained. QA/QC procedure for meter calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. In case the meter is out of order, no emission reductions will be claimed.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.	/SFG/ /PWD/ /QA/ /TCR/ /ACM0008/ /FMCS/ /PHT/	The calibration is valid for the entire monitoring period. The monitored data will be kept for two years after the last issuance of VCUs. <i>Verifier's action:</i> The above mentioned was verified by cross checking the meter readings, the DCS calculation result and calibration records against the Joint-PD-MR, internal audit records and ER sheet against the Joint-PD-MR. Further, an on-site interview has been conducted and the procedures for meter calibration maintenance and recording as well as for monitoring staff training and competence have been cross checked. <i>Conclusion:</i> The accuracy of equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan.		
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/GMD/ /LOG/ /JPM/ /QA/ /TCR/ /XLS/ /ACM0008/	☒ Correct ☐ Not correct (initial assessment) <i>Description:</i> The $MT_{PJ,s,y}$ during this monitoring period 24-September-2020 to 25-August-2021 is reported in the Joint-PD-MR based on the value of gas flow rate, pressure, temperature measured by Flow meter and CH ₄ concentration of CMM measured by gas analyzer. The calculation is done by the DCS system automatically. <i>Verifier's action:</i> By means of checking the ER-spreadsheet against the monthly value of gas flow rate, pressure, temperature measured by Flow meter and CH ₄ concentration of CMM measured by gas analyzer against the automatic calculation done by the DCS system, the internal audit record and daily log. <i>Conclusion:</i> The value calculated in the Joint-PD-MR is in line with the value in the evidence, thus verified as correct.	OK	OK
B. $MM_{ELEC,y}$		Methane measured sent to use of power generation in year y		
a) Measurement / Determination method (VVS, §§ 389-393)	/I1/ /GMD/ /LOG/	<i>Description:</i> $MM_{ELEC,y}$ is measured continuously by the Flow meter (with temperature and pressure transmitter) and gas analyzer.	CAR-06	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level but also describe the applied data aggregation trails (from ODL to data aggregation level zero). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the Joint-PD-MR,D and the applied methodology.	/MM/ /JPM/ /O&M/ /PPA/ /PWD/ /ACM000 8/	Flow meter (with temperature and pressure transmitter) and gas analyzer are installed at this CMM power plant. MM_{ELEC,y} is continuously measured and monthly recorded by DCS system automatically. The MM_{ELEC,y} is calculated based on the value of gas flow rate, pressure, temperature measured by Flow meter and CH₄ concentration of CMM measured by gas analyzer. The calculation is done by the DCS system automatically. The Flow meter (with temperature and pressure transmitter) and gas analyzer monitors the Methane captured and destroyed by the power generations. And the calculation is done by the DCS system automatically. The meter readings and calculation result are recorded by the operation staff of this CMM power plant aggregated monthly. Meanwhile, the automatic monitoring DCS system of this CMM power plant collects the data from the meter and gas analyzer every day and delivers them to the project owner. Neither failure nor exchange of meters was detected during the monitoring period. The data aggregation procedure applied by the PP is shown as follow: MM_{ELEC,y} is measured continuously by Flow meter (with temperature and pressure transmitter) and gas analyzer of this CMM power plant, the operators read the value from the meters monthly. Based on the difference between the two meter values for each meter for that month the value of MM_{ELEC,y} is determined. Accordingly the operator issues the monthly reports. The monthly reports record the quantities of gross methane sent to the power generators per month. - Based on the monthly reports, the final monthly value was reported in the monitoring report. Verifier's action: This was verified by on-site interview, by observations and by cross checking with calibration records, Joint-PD-MR and applied methodology against the ER calculation spreadsheet. Furthermore, the following actions have been taken by the verification team to check the correctness of the data aggregation.		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The reported value in the Joint-PD-MR has been recalculated by the verification team based on the values from the monthly reports. Based on monthly reports and the underlying original data, the verification team calculated the data aggregation completely independent from the calculation provided by the PP. 100% of the monthly reports have been verified. <i>Conclusion:</i> The actual Measurement / Determination method for this monitoring period is not specified. CAR 06 was raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/I1/ /CAL/ /CMA/ /GMD/ /LOG/ /MM/ /JPM/ /O&M/ /PPA/ /VRF/ /SFG/ /PWD/ /QA/ /TCR/ /ACM000 8/ /FMCS/ /PHT/	<i>Description:</i> Refer to Appendix 6 for the accuracy details of each meter. The calibrations of all the meters were performed annually by a qualified 3rd party entity according to national industry standard^{VRF/} and records maintained. QA/QC procedure for meter calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. In case the meter is out of order, no emission reductions will be claimed. The calibration is valid for the entire monitoring period. The monitored data will be kept for two years after the last issuance of VCUs. <i>Verifier's action:</i> The above mentioned was verified by cross checking the meter readings, the DCS calculation result and calibration records against the Joint-PD-MR, internal audit records and ER sheet against the Joint-PD-MR. Further, an on-site interview has been conducted and the procedures for meter calibration maintenance and recording as well as for monitoring staff training and competence have been cross checked. <i>Conclusion:</i> The accuracy of equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/GMD/ /LOG/ /JPM/ /QA/ /TCR/ /XLS/ /ACM000 8/	☒ Correct ☐ Not correct (initial assessment) Description: The MM_{ELEC,y} during this monitoring period 24-September-2020 to 25-August-2021 is reported in the Joint-PD-MR based on the value of gas flow rate, pressure, temperature measured by Flow meter and CH ₄ concentration of CMM measured by gas analyzer. The calculation is done by the DCS system automatically. Verifier's action: By means of checking the ER-spreadsheet against the monthly value of gas flow rate, pressure, temperature measured by Flow meter and CH ₄ concentration of CMM measured by gas analyzer against the automatic calculation done by the DCS system, the internal audit record and daily log. Conclusion: The value calculated in the Joint-PD-MR is in line with the value in the evidence, thus verified as correct.	OK	OK
C. GWP_{CH4}		Global warming potential of methane		
a) Measurement / Determination method (VVS, §§ 389-393) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level but also describe the applied data aggregation trails (from ODL to data aggregation level zero).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the Joint-PD-MR,D and the applied methodology.</i>	/ACM000 8/ /JPM/ /AR5/ /VCSS/	Description: GWP_{CH4} is a default value from IPCC Fifth Assessment Report (AR5) ^{/AR5/} which is confirmed in line with the VCS standard version 4.1 ^{/VCSS/} . Verifier's action: The value has been verified against the IPCC Fifth Assessment Report (AR5) ^{/AR5/} . Conclusion: The determination method is verified as correct.	OK	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)	/ACM000 8/ /JPM/	Description: GWP_{CH4} is a default value from IPCC Fifth Assessment Report (AR5) ^{/AR5/}	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/AR5/ /VCSS/	Verifier's action: Any update from VERRA will be checked. Conclusion: There is no change for this MP.		
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/ACM000 8/ /JPM/ /AR5/ /VCSS/	☒ Correct ☐ Not correct (initial assessment) Description: The GWP_{CH4} is determined as per IPCC Fifth Assessment Report (AR5)^{/AR5/} default value which is confirmed as the correct value. Verifier's action: By means of checking the IPCC Fifth Assessment Report (AR5)^{/AR5/} Conclusion: The value given in the monitoring report is correct.	OK	OK
D. EG_{use,k,y} (EG_{PJ,grid,y})		Energy of type k displaced by the project activity in year y		
a) Measurement / Determination method (VVS, §§ 389-393) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level but also describe the applied data aggregation trails (from ODL to data aggregation level zero).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>	/I1/ /EBS/ /LOG/ /MM/ /JPM/ /MRR/ /O&M/ /PPA/ /PWD/ /ACM000 8/	Description: As the project design, the emission reduction due to surplus electricity delivered to CSPG is not claimed which is conservative. In this monitoring period, all electricity generated by the project supplied to Wenjiaba coal mine which has been confirmed by checking the meter reading records^{/MRR/} and electricity balance sheets^{/EBS/}. EG_{PJ,grid,y} is measured continuously by a bidirectional electricity meter located in project site with accuracy of 0.5s and recorded monthly. The meter monitors the electricity generated by the project supplied to Wenjiaba coal mine. The meter readings are recorded by the operators monthly. Meanwhile, the automatic monitoring	CAR-07	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the Joint-PD-MR,D and the applied methodology.		system will collect the data from the meters every month and deliver them to the PP. The meter readings are recorded by the PP, based on that, related monthly electricity balance sheets have been issued. Neither failure nor exchange of electric meter were detected during the monitoring period. The data aggregation procedure applied by the PP is shown as follow: 1. $EG_{PJ,grid,y}$ is measured continuously by electric meter located in Wenjiaba Substation, the operators read the value from the electric meters per month. Based on the difference between the two meter values, the electricity supplied for that month is determined. Accordingly the operator issues the monthly reports. The monthly reports record the quantities of gross electricity supplied per month. 2. Based on the monthly reports, the final monthly value was reported in the monitoring report. <i>Verifier's action:</i> This was verified by on-site interview, by observations and by cross checking with calibration records, meter reading records and electricity balance sheets, Joint-PD-MR and applied methodology against the ER calculation spreadsheet. Furthermore, the following actions have been taken by the verification team to check the correctness of the data aggregation. The reported value in the MR has been recalculated by the verification team based on the values from the monthly reports. Based on monthly reports and the underlying original data, the verification team calculated the data aggregation completely independent from the calculation provided by the PP. 100% of the monthly reports have been verified. The meter reading record values have been cross-checked with monthly electricity balance sheets. <i>Conclusion:</i> The actual Measurement / Determination method for this monitoring period is not specified.		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		CAR 07 was raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/I1/ /CAL/ /CMA/ /EBS/ /LOG/ /MM/ /JPM/ /MRR/ /O&M/ /PPA/ /PWD/ /QA/ /TCR/ /ACM0008/ /JJG/ /DLT/ /PHT/	Description: EG_{PJ,grid,y} is measured continuously by electric meter with accuracy of 0.5s and recorded monthly. The calibration of all the meters were performed annually by a qualified 3 rd party entity according to national industry standard and records maintained. QA/QC procedure for meter calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. In case the meter is out of order, no emission reductions will be claimed. The calibration is valid for the entire monitoring period. The monitored data will be kept for two years after the last issuance of VCU. Verifier's action: The above mentioned was verified by cross checking the monthly electricity balance sheets, the meter readings and calibration records against the MR, internal audit records and ER sheet against the MR. Further, an on-site interview has been conducted and the procedures for meter calibration maintenance and recording as well as for monitoring staff training and competence have been cross checked. Conclusion: The accuracy of equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan.	OK	OK
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>	/EBS/ /LOG/ /JPM/ /MRR/ /QA/ /TCR/ /XLS/	☒ Correct ☐ Not correct (initial assessment) Description: The electricity of EG_{PJ,grid,y} during period 24-September-2020 to 25-August-2021 is reported in the MR based on the meters readings and cross check with electricity balance sheets. Verifier's action:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/ACM0008/	By means of checking the ER-spreadsheet against the monthly electricity balance sheets and meter reading records, the internal audit record and daily log. <i>Conclusion:</i> The value given in the monitoring report is correct.		
E. $EC_{PJ,j,y}$		Quantity of electricity consumed by the project electricity consumption source j in year y		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level but also describe the applied data aggregation trails (from ODL to data aggregation level zero). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the Joint-PD-MR,D and the applied methodology.	/I1/ /LOG/ /MM/ /JPM/ /MRR/ /O&M/ /PPA/ /PWD/ /ACM0008/	<i>Description:</i> In this monitoring period, all electricity consumed by the project is provided by the project itself and no more imported from the grid which has been confirmed by checking the meter reading records/ ^{MRR} /. $EC_{PJ,j,y}$ is measured continuously by a bidirectional electricity meter located in Wenjiaba Substation with accuracy of 0.5s and recorded monthly. The meter monitors the electricity consumed by the project. The meter readings are recorded by the operators monthly. Due to no electricity consumed by the project, hence the value is 0. Neither failure nor exchange of electric meter were detected during the monitoring period. <i>Verifier's action:</i> This was verified by on-site interview, by observations and by cross checking with calibration records, meter reading records, Joint-PD-MR and applied methodology against the ER calculation spreadsheet. <i>Conclusion:</i> The actual measurement is not provided for this monitoring period. CAR 08 was raised.	CAR-08	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the	/I1/ /CAL/ /CMA/ /LOG/ /MM/	<i>Description:</i> $EC_{PJ,j,y}$ is measured continuously by electric meter installed at Wenjiaba Substation with accuracy of 0.5s and recorded monthly. The calibration of all the meters were performed annually by a qualified 3 rd party entity according to national industry standard and records maintained.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.	/JPM/ /MRR/ /O&M/ /PPA/ /PWD/ /QA/ /TCR/ /ACM0008/ /JJG/ /DLT/ /PHT/	QA/QC procedure for meter calibration maintenance and recording; procedure for monitoring staff training and competence were established and implemented. The data flow and protection process was observed during the on-site verification. In case the meter is out of order, no emission reductions will be claimed. The calibration is valid for the entire monitoring period. The monitored data will be kept for two years after the last issuance of VCU. Verifier's action: The above mentioned was verified by cross checking the meter readings and calibration records against the Joint-PD-MR, internal audit records and ER sheet against the Joint-PD-MR. Further, an on-site interview has been conducted and the procedures for meter calibration maintenance and recording as well as for monitoring staff training and competence have been cross checked. Conclusion: The accuracy of equipment used for monitoring is checked as controlled and calibrated in accordance with the monitoring plan.		
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/LOG/ /JPM/ /MRR/ /QA/ /TCR/ /XLS/ /ACM0008/	☒ Correct ☐ Not correct (initial assessment) Description: The electricity of $EC_{PJ,y}$ during period 24-September-2020 to 25-August-2021 is reported as 0 in the MR based on the meters readings. Verifier's action: By means of checking the ER-spreadsheet against the meter reading records, the internal audit record and daily log. Conclusion: The value given in the monitoring report is correct.	OK	OK
F. $Eff_{ELEC,y}(Eff_{i,y})$		Efficiency of methane destruction in use i (for the project, i represents power generation)		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level but also	/IPCC/ /ACM0008/	Description: $Eff_{ELEC,y}$ is an IPCC default value. Verifier's action:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
describe the applied data aggregation trails (from ODL to data aggregation level zero). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the Joint-PD-MR,D and the applied methodology.	/JPM/	The value has been verified against the IPCC default value. Conclusion: The determination method is confirmed as correct.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.	/IPCC/ /ACM000 8/ /JPM/	Description: Eff_{ELEC,y} is an IPCC default value. Verifier´s action: Any update from IPCC will be checked. Conclusion: There is no change for this MP.	OK	OK
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/IPCC/ /ACM000 8/ /JPM/	☒ Correct ☐ Not correct (initial assessment) Description: The Eff_{ELEC,y} is determined as per IPCC default value which is confirmed as the correct value. Verifier´s action: By means of checking the IPCC default value. Conclusion: The value given in the monitoring report is correct.	OK	OK

APPENDIX 6: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this MP)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
Electricity meter (M ₁)	EG _{use,k,y} (EG _{PJ,grid,y}) EC _{PJ,j,y}	1900030130	DSSD71	0.5s	01-June-2020	31-May-2021	01-June-2020~30-May-2022	☒ No ☐ Yes	From: To:
Flow Meter	MT _{PJ,s,i,y} MM _{ELEC,y}	R91003	TY-7030	±1%	31-May-2020	25-May-2021	31-May-2020~24-May-2022	☒ No ☐ Yes	From: To:
Pressure transmitter				0.5%FS				☒ No ☐ Yes	From: To:
Temperature transmitter				0.2%SF				☒ No ☐ Yes	From: To:
Gas analyzer	MT _{PJ,s,i,y} MM _{ELEC,y}	TY6020EX19012501	TY-6020EX	methane: ±2%FS	18-June - 2020	08-June-2021	18-June - 2020~07-June-2022	☒ No ☐ Yes	From: To:

APPENDIX 7: ASSESSMENT OF FINANCIAL PARAMETERS

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	ASSESSMENT	
					Correctness of value applied	Comment
Total static investment	17.175	million CNY	FSR page 97	/FSR/ /EPC/	☒	The value has been derived from the FSR. The Total static investment of the project is 17.175 million CNY according to FSR including engineering, construction and equipment which is in line with national and local standards. Due to the project was operated during the site visit, via checking the EPC contract for the actual cost, it is verified that the real expenditure of 17 million CNY accounted for about 99% of the Total static investment. Finally, a threshold analysis was conducted by PP and shows if the Fixed assets investment decrease 20.09%, the benchmark of 8% will be reached. However, it is impossible for investment decrease so many, as the actual investment already accounted for 99%. Therefore, it is unlikely to improve the economic attraction due to the decrease in Total static investment.
Annual Electricity exported	16,275	MWh /year	FSR page 98	/FSR/ /EBS/ /GFPG/	☒	The value has been derived from the FSR. In the FSR, Annual Electricity exported is calculated by installed capacity 3.5 MW multiply with Annual operating hour 5,000h multiply with (1- Power self-consumption ratio 7%) = 16,275MWh/year. The annual operating hour is 5,000hours, and equivalent power load factor is 57.08%. According to “Gas-fired power generation safety supervision report” published by China National Energy Administration/GFPG/, utilization hours of Gas-fired power generation

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	ASSESSMENT	
					Correctness of value applied	Comment
						operation hours in China vary from 2,045 hours to 5,345 hours with average value is 3,450 hours. The value is within the range and higher than average, thus assessed to be convincing and reasonable. Furthermore, according to the “Guidelines for the reporting and validation of plant load factors (version 01)” issued by EB48 as Annex 11, validation team verified the following documents: a) Feasibility study report carried out by Shengli Oilfield Shengli Power Machinery Group Co., Ltd./FSR/; b) Approval of Feasibility study report issued by Development and Reform Commission of Zhijin County on 22-December-2016/AP/; c) The certification of Shengli Oilfield Shengli Power Machinery Group Co., Ltd./FSR/. The annual electricity exported for the Project is impacted by generator performance and availability and stability of CMM supply. Due to the project was operated during the site visit, via checking the actual electricity exported value from electricity balance sheets/EBS/, it is verified that the actual value from 24-September-2020 to 25-August-2021 is 7,497.440MWh with installed capacity of 2MW, which is 12.42% lower than the assumed electricity supplied 8,561 MWh (=16,275MWh x 2MW/3.5MW *336days/365 days). A threshold analysis was conducted by PP and shows if the annual Electricity exported increases 9.20%, the benchmark of 8% will be reached. However, it is impossible for Electricity exported increase so many, as the low concentration of CMM or fluctuation of CMM volume will reduce the effective operation hour. Therefore, it is unlikely to improve the economic attraction due to the increase in Annual Electricity exported.
Electricity Tariff (tax included)	0.493	CNY /kWh	FSR page 98	/FSR/ /EBS/ /PPA/	☒	The applied electricity tariff is derived from the FSR. For the proposed project, the expected Electricity tariff of 0.493 CNY/kWh (incl. VAT) applied in the approved FSR was the most recently available at the time of the investment decision.

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	ASSESSMENT	
					Correctness of value applied	Comment
						Due to the project was operated during the site visit, via checking the actual electricity tariff value from PPA/^{PPA}/, electricity balance sheets/^{EBS}/, it is verified that the actual tariff value is 0.493 CNY/kwh (VAT incl.) which is same to estimated value in the FSR. The sensitivity analysis shows if the tariff increases by 9.20% (the tariff should be 0.538 CNY/kWh), the project IRR would hit the benchmark of 8%. However, the actual electricity tariff is same to FSR value. In addition, the tariff is determined by both parties, if the tariff is determined, it is not likely to change frequently. Hence, it is unlikely for the tariff increase to 0.541 CNY/kWh for every year in the whole project lifetime. Therefore, it is unlikely to improve the economic attraction due to the increase in Electricity Tariff.
Annual O&M cost	5.8	Million CNY	FSR Page 98	/FSR/ /EEMP/ /GSA/ /sd/	☒	The Annual O&M cost is derived from the FSR. It encompasses sub-items of Material fee, repair fee, Salary and welfare, Insurance fee as well as Others costs. The repair fee is calculated as 5% of the fixed assets investment. This rate of the repair & maintenance cost is assessed as reasonable by checking the “Economic Evaluation Method and Parameters for Construction Projects”/^{EEMP}/. The material fee includes CMM fee, oil fee and water fee etc. The Salary is 65,000CNY/year/person and welfare rate is 50% of the salary. The total employees are 22 persons. Thus total is 2.145 million CNY/year. Insurance fee is calculated as 0.3% of total statistic investment. Other costs are calculated as 1.05 million CNY/year. Considering about the composition of the Annual O&M cost, the analysis focuses mainly on Raw material and fuel expenses, Wages and welfare. Via checking the Gas supply agreement/^{GSA}/, it is verified that the CMM cost is 0.2RMB/m³ which is same to the estimated value in FSR of 0.2 RMB/m³, thus the value in FSR is deemed as reasonable.

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	ASSESSMENT	
					Correctness of value applied	Comment
						In addition, via checking the statistics data ^{/sd/} , producer price indices for purchasing goods is increasing in recent five years (93.9, 98, 108.1, 104.1 and 99.3) and the index of wages keep increasing in recent five years (110.1, 108.9, 110.0, 110.9 and 109.8) and therefore will not cause significant decrease. Finally as shown in the threshold analysis, the benchmark will be reached when the annual O&M cost decreased by 12.50%. Considering the increase of material price and labour cost in China ^{/sd/} , the decrease of O&M by 12.50% is not likely to occur. Therefore, it is unlikely to improve the economic attraction due to the decrease in O&M cost.
Installed Capacity	3.5	MW	FSR page 5	/FSR/ /AP/ /EPC/	☒	The value is derived from the FSR. The capacity is approved ^{/AP/} by local authority based on the provided FSR ^{/FSR/} . Via site inspection by checking the nameplate of the 4 sets of CMM power generators ^{/PHT/} , it is verified that total 4 sets is 3.5 MW, and this is also cross checked with contract of the main equipment ^{/EPC/} . The validation team is of the opinion that both data sources are credible, reliable and relevant in the context of the considered parameter.
VAT-Electricity	17%	-	FSR page 99	/FSR/ /ITL/	☒	The tax rate is derived from the FSR ^{/FSR/} . It is in line with the Enterprise Income Tax Law of the People's Republic of China ^{/ITL/} . In the tax reform, VAT for sales products is 17%. This tax rate is verified as the correct rate based on local expertise from validation team.
Municipal maintenance and construction tax	5% (of VAT)	-	FSR page 99	/FSR/ /LCT/	☒	The tax rate is derived from the FSR. The tax rate is mandatory and applicable since 1985. According to <i>Law of the People's Republic of China on City Maintenance and Construction Tax (Draft)</i> ^{/LCT/} , if the project is located in the County and town, the rate of the tax is 5% of VAT. The proposed project is

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	ASSESSMENT	
					Correctness of value applied	Comment
						located in Pingzai Village, Zhijin County, thus the tax rate of 5% is correct and reasonable. This rate is widely used by other projects in China.
Surcharge for education	5% (of VAT)	-	FSR page 99	/FSR/ /LES/	☒	The tax rate is derived from the FSR. The tax rate is mandatory and applicable since 1986. According to Announcement of the State Administration of Taxation of Guizhou Province on the Collection of Education Fee Surcharges and Local Education Surcharges/ ^{LES} /, the rate of the tax is 5% of VAT. This rate is widely used by other projects in China.
Income Tax	25	%	FSR page 99	/FSR/ /ITL/	☒	The tax rate is derived from the FSR. It is in accordance with the <i>Enterprise Income Tax Law of the People's Republic of China</i> / ^{ITL} /. The applied Income tax Law is effective since 01/01/2008 and edited in Dec 2018. But the income tax of 25% is not changed. Hence it is relevant for the Purpose of the income tax determination. This rate is widely used by other projects in China.
Depreciation period	10	year	FSR page 99	/FSR/ /EEMP/	☒	The depreciation period has been derived from the FSR which has been approved. The "Economic Evaluation Method and Parameters for Construction Projects"/ ^{EEMP} / has been cross checked, it is confirmed that the depreciation period of 10 years is in line with the industrial guidance.
Residual value rate	5	%	FSR page 99	/FSR/ /CIT/	☒	The Residual rate of fixed assets has been derived from the FSR. It is prescribed in the 'Detailed Rules for the Implementation of the Provisional Regulations on Corporate Income Tax of the People's Republic of China'/ ^{CIT} / that the residual value rate of fixed assets for the projects after the issue date should use 5%. Moreover, the 5% residual value of the project activity assets has been included as a cash inflow in the final year at the end of the assessment period.

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	ASSESSMENT	
					Correctness of value applied	Comment
Project Lifetime (Period of financial analysis)	10	year	FSR page 99	/FSR/ /EPC/ /EEMP/	☒	The value is derived from the FSR. The lifetime is confirmed as 10 years based on the contract of the main equipment/ ^{EPC} /. 10 years is a typical Period of financial analysis for this kind of project which is cross-checked by “Economic Evaluation Method and Parameters for Construction Projects”/ ^{EEMP} /.
Fluid capital	419,400	CNY	FSR page 97	/FSR/ /EEMP/	☒	The liquidity of 419,400 CNY applied in the Joint-PD-MR derived from the FSR. This value has been considered as cash in-flow in the last year which is in line with the financial regulation “Economic Evaluation Method and Parameters for Construction Projects”/ ^{EEMP} /.