



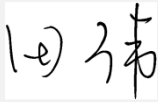
**Verified Carbon
Standard**

VCS JOINT VALIDATION & VERIFICATION REPORT FOR

ANHUI ZHUJIXI CMM UTILIZATION PROJECT



Report ID	0104020323034(001)
Project Title	Anhui Zhujixi CMM Utilization Project
Project ID	4559
Verification period	14/12/2021 to 31/07/2023
Crediting period	14/12/2021 to 13/12/2031
Original date of issue	27/11/2023
Most recent date of issue	11/11/2024

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Client	Climate Bridge (Shanghai) Ltd.
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Summary:

China Classification Society Certification Co. Ltd. (hereafter referred to as “CCSC”) has been commissioned by Climate Bridge (Shanghai) Ltd. to perform the validation and verification of the project activity “Anhui Zhujixi CMM Utilization Project” (hereafter referred to as “the project”) on the basis of requirements of Verified Carbon Standard (VCS) Version 4.5, VCS Validation and Verification Manual, and the approved Clean Development Mechanism (CDM) methodology ACM0008 version 08.0, as well as criteria given to provide for consistent project operations, monitoring and reporting. The joint validation and verification report are summarizing the findings of the validation and verification.

The project is located in Hetuan Town, Panji District, Huainan City, Anhui Province, China. The purpose of the project is to utilize the extracted CMM with low concentration methane concentration to generate hot air to dry the coal slime. The project installed 4 sets of regenerative thermal oxidizers (RTOs), with unit capacity around 30000Nm³/h, able to destroy 10.368 million Nm³ of methane annually. The annual emission reductions in the crediting period are expected 151,088 tCO₂e. Actual monitoring activities complied with the monitoring plan. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project reduces GHG emission. The GHG emission reduction is calculated without material misstatements, and the emission reductions verified totalize 115,119 tCO₂e for the monitoring period.

The validation and verification scope is defined as an independent and objective review of the Joint Project Description and Monitoring Report (hereafter refer to as “Joint PD & MR”), the project’s baseline study and monitoring plan, the emission reduction calculation spreadsheet and other relevant documents refer to VCS and CDM requirements.

The validation is an independent 3rd party assessment of the project’s baseline, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the crediting period using the applicable VCS requirements. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated Verified Carbon Units (VCUs). Verification is the periodic independent review and ex-post determination by a VVB of the monitored reductions in GHG emissions during defined verification period. In carrying out its verification work, the VVB shall ensure that the project complies the applicable CDM and VCS requirements.

The project is eligible under non-AFOLU project. The validation criteria followed the guidance documents provided by VCS and the selected CDM methodology and tool includes:

- VCS Standard, Version 4.5
- VCS Program Guide, Version 4.4
- Methodology ACM0008 version 08.0: Abatement of methane from coal mines and related CDM tools

The Joint-Validation-Verification process includes three phases:

- 1) Desk review of documents;
- 2) On-site visit and follow-up interviews;
- 3) Issuance of the final joint validation and verification report and opinion.

CCSC appointed a qualified audit team in accordance with internal procedures to perform the joint-validation-verification. Nine Corrective Action Requests (CAR) and Eleven Clarification Requests (CL) were raised in the validation and verification process and successfully closed upon the project participant taken actions and submitted the revised joint PD & MR and supporting evidence. No Forward Action Request (FAR) was raised during this validation and verification.

As CCSC internal QA/QC control procedures, the audit team has strictly carried out ISO 14064-3:2019, ISO 14065:2020 and the VCS requirements. Therefore, there are no restrictions of uncertainty for the joint-validation-verification.

In conclusion, it is CCSC's opinion that the project in the Joint PD & MR (version 3.1, date 31/07/2024) meets all relevant requirements for VCS activities and all relevant host Party criteria and correctly applies methodology ACM0008 version 08.0: Abatement of methane from coal mines. And, CCSC is able to certify that the emission reductions from the project during the first monitoring period from 14/12/2021 to 31/07/2023 amount to 151,088 tCO₂e and requests issuance of the equivalent VCUs.

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1 INTRODUCTION

1.1 Objective

Climate Bridge (Shanghai) Ltd. has commissioned China Classification Society Certification Co., Ltd. (herein after refer to as CCSC) to performed the validation of Anhui Zhujixi CMM Utilization Project (VCS ID 4559, hereafter referred to as “the project”) and the verification of the project covering the monitoring period from 14/12/2021 to 31/07/2023 as the first the monitoring period, on the basis of requirements of Verified Carbon Standard (VCS) version 4.5.

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

The validation is an independent 3rd party assessment of the project’s baseline, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the crediting period using the applicable CDM and VCS requirements.

The Verification is the periodic independent review and ex-post determination by a VVB of the monitored reductions in GHG emissions during defined verification period. In carrying out its verification work, the VVB shall ensure that the project complies the applicable CDM and VCS requirements. The verification shall:

- Ensure that the project has been implemented and operated as per the Joint PD & MR, and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Ensure that the Joint PD & MR and other supporting documents provided are complete in accordance with latest applicable version of the completeness checklist for requests for issuance of VCUs and verifiable and in accordance with applicable VCS requirements;
- Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan or any revised approved monitoring plan, and the approved methodologies including applicable tool(s);
- Evaluate the data recorded and stored as per the monitoring methodologies including applicable tool(s).

1.2 Scope and Criteria

The validation was performed on the basis of VCS criteria. The information in the documents is reviewed against CDM Validation and Verification Standard, VCS standard version 4.5 and associated interpretations. CCSC has based on the instructions in the VVS and employed a risk-

based and stepwise approach when conducting the validation, focusing on the identification of significant risks for project implementation and the generation of VCUs. The validation is not meant to provide any consulting towards the PPs. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the CCSC. The verification scope covers the relevant documents (e.g. the Joint PD & MR, the emission reduction calculation spreadsheet, supporting documents available to the verifier and information collected through performing interviews and during the on-site inspection, VERRA's requirements publicly available, relevant rules, including the host country legislation, etc.) to be independently reviewed, the project geographical locations to be visited on-site, the related project stakeholders to be interviewed with, and processes that are necessary to acquire objective evidence for the evaluation of the project compliance to the VCS requirements and associated interpretations. The verification activities are conducted according to the VERRA's requirements. In doing so, the principles of accuracy and completeness, relevance, reliability and credibility were followed. The verification is not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project.

1.3 Reasonableness of Assumptions and Level of Assurance

CCSC has undertaken a reasonable assurance engagement in accordance with VCS Standard (version 4.5). The validation and verification conclusions are based on the Joint PD & MR and supporting evidence made available to the VVB and information collected through performing interviews and during the on-site inspection.

1.4 Summary Description of the Project

The project is located in Hetuan Town, Panji District, Huainan City, Anhui Province, China. Prior to the implementation of the project, the coal mine was equipped with CMM extraction facilities and the extracted CMM to be utilized by the project was vented into the atmosphere directly without utilization. Baseline scenario is the same as the scenario prior to the implementation of the project.

The purpose of the project is to utilize the extracted CMM with low concentration methane concentration to generate hot air to dry the coal slime. The project installed 4 sets of regenerative thermal oxidizers (RTOs), with unit capacity around 30000Nm³/h, able to destroy 10.368 million Nm³ of methane annually. The project is expected to generate an annual average of 151,088 tCO₂e emission reduction over the 10-years of crediting period.

The project was put into production since 14/12/2021. In the JOINT PD & MR, the monitoring period is from 14/12/2021 to 31/07/2023 (Both days included), with totally 595 days. Actual

monitoring activities complied with the monitoring plan. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project reduces GHG emission. The GHG emission reduction is calculated without material misstatements, and the emission reductions verified totalize 115,119 tCO_{2e} for the monitoring period.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The validation and verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the CCSC. The validation and verification scope covers the relevant documents (e.g., the VCS Joint PD/MR, the emission reduction calculation spreadsheet, supporting documents and information collected through performing interviews and during the on-site inspection, VERRA's requirements publicly available, relevant rules, including the host country legislation, etc.) to be independently reviewed, the project geographical locations to be visited on-site, the related project stakeholders to be interviewed with, and processes that are necessary to acquire objective evidence for the evaluation of the project compliance to the VCS requirements and associated interpretations. The validation and verification activities are conducted according to the VERRA's requirements. In doing so, the principles of accuracy and completeness, relevance, reliability and credibility were followed. The validation and verification is not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project.

The validation and verification schedule including key milestones has been included in below of this table.

Table 2.1.1 the validation and verification schedule

Item	Date	Description of the implementation
Desk review of documents	10/09/2023 to 20/09/2023	The audit team evaluates the information provided by PPs.
Validation/verification plan	20/09/2023	The audit team has formulated the validation/verification plan for VCS projects and send it to PPs by email.
opening meeting	26/09/2023	All parties involved had attended the kick-off meeting

On-site inspection	26/09/2023-27/09/2023	The audit team has interviewed with key personnel from the project owner (the project proponent), the coal mine, local experts, and buyer & developer.
The resolution of outstanding issues and the issuance of the joint validation and verification report and statement.	29/10/2023 to 01/12/2023	After the on-site inspection, The audit team issuance of the findings and subsequently the final Joint validation & verification report.

The validation and verification activities are conducted according to the VERRA's requirements. In doing so, the principles of accuracy and completeness, relevance, reliability and credibility were followed. The validation and verification are not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project.

2.2 Document Review

A desk review of the Joint PD & MR and supporting documents was conducted by the audit team. The aim of the desk review of the documentation was to verify correctness, credibility, interpretation and completeness of presented data and information, and to cross check between information provided in the updated Joint PD & MR and information from sources other than that used, if available. Review of the appropriateness of formulae and correctness of calculations was also carried out during this stage based on the approved methodology being applied. And particular attention was given to the quality of the metering equipment including calibration requirements, the monitored data and its evidence, and the emission reduction calculation. The evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions and VCUs was also conducted.

The audit team evaluated the information provided by PPs through document review in accordance with the requirements of CDMP0310- *CDM Audit Verification Implementation Procedure* and *CDM Project Audit Verification Standards*, both of which are the internal procedures for implementing CDM/VCS Validation/Verification in CCSC. With the document review, the audit team should acquire including:

- Identification of project types;
- Description of project activities;
- Selection of methodology and baseline;
- Application of Methodologies and Tools;
- Start date, type of credit period and length of credit period;

- Environmental impact;
- Local stakeholders communication methods;
- Evaluation comments from local stakeholders;
- The state of sustainable development;
- Approval and authorization;
- Project implementation;
- Monitoring system;
- Quantification of GHG emission reductions and carbon dioxide removals.

When assessing the project baseline, the audit team consult both the provided documents by PP and relevant national law and industry regulatory texts or refer to industry experts to CMM utilization requirements of local regulations. This procedure enables the team to determine the accuracy of the project baseline selection.

Appendix 4 of this report contains a complete list of all documents and proofs reviewed by the audit team.

2.3 Interviews

From 26/09/2023-27/09/2023, CCSC performed an on-site inspection at the physical site of the project.

During the on-site inspection, the audit team has interviewed with key personnel from the project owner (the project proponent), the coal mine, local experts, and buyer & developer.

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

Date: 26/09/2023-27/09/2023	
Interview topics	Interviewed Organizations and persons
Project background information and VCS consideration, such as: - Prevailing coalmine methane (CMM) utilization practice in China. - Situations prior to the project implementation. - Participation under Other GHG Programs, etc. Project implementation, such as - Technology	Huainan Huamei Pushi New Energy Technology Co., Ltd (Project Owner) Mr. Liu Yijun Ms. Ji Rui Ms. Geng Xuan Climate Bridge (Shanghai) Ltd. (Buyer) Ms. Gu Jiayi

Date: 26/09/2023-27/09/2023	
Interview topics	Interviewed Organizations and persons
- Project feasibility - Designing - Start date - Operational lifetime - Maintenance and operation capability. - Project monitoring and management plan. - Stakeholder consultation process.	Panji Development and Reformation Committee (DRC, government) Mr. Yang Dayong
Project background information - Project approval status. - Prevalence implementation on coal mine methane management in China. - Energy supply and demand status. - CMM extraction and utilization status prior to the project implementation - Requirements to destroy/recycling CMM in China, relevant regulations or laws. Social and environmental impact, SDG contribution, Stakeholders' comments - Social and environmental impact of the project, environmental monitoring. - Environmental protection requirements related to Project construction (engineering construction) and operation. - Stakeholders' comments. - SDG contribution of the project activity. Whether China has a market-based tool like ETS in the European Union aiming at GHG emission reductions. Will China or GCC establish one in the near future?	Local residents Mr. Yang Yaokun Mr. Chang Hongbao Ms. Yang Xiaoling Ms. Liu Yunyun Huainan Environmental Protection Bureau (EPB, government) Mr. Xie Chun Mr. Chen Yuantu Panji Development and Reformation Committee (DRC, government) Mr. Yang Dayong
- Applicability of selected methodology. - Baseline of the project. - Emission factors. - Preparation of Joint PD & MR. - Compliance of the monitoring plan with the monitoring methodology. - Compliance of monitoring with the monitoring plan.	Huainan Huamei Pushi New Energy Technology Co., Ltd (Project Owner) Mr. Liu Yijun Ms. Ji Rui Ms. Gengxuan Climate Bridge (Shanghai) Ltd. (Buyer) Ms. Gu Jiayi

Date: 26/09/2023-27/09/2023	
Interview topics	Interviewed Organizations and persons
- Assessment of data and calculation of GHG emission reductions. - Monitoring devices. - Monitoring method.	

2.4 Site Visits

The on-site inspection involved following activities:

- An assessment of the implementation and operation of the project as per the Joint PD & MR;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved monitoring plan.

The audit team performed the on-site validation and verification during 26/09/2023-27/09/2023.

The interviewed personnel and objective are listed in above table.

2.5 Resolution of Findings

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

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

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

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

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

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

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

There are 9 CARs, 11 CLs that have been raised during the Joint validation and verification process, No Forwarded Action Requests (FAR) were raised.

Each finding, including the issue raised, the response(s) provided by the project proponent, and the final conclusion and any resulting changes to project documents, are listed in the appendix 5.

2.5.1 Forward Action Requests

None FAR was raised during the validation & verification process.

3 VALIDATION FINDINGS

3.1 Project Details

The project is located in Hetuan Town, Panji District, Huainan City, Anhui Province, China. Prior to the implementation of the project, the coal mine was equipped with CMM extraction facilities and the extracted CMM to be utilized by the project was vented into the atmosphere directly without utilization. Baseline scenario is the same as the scenario prior the implementation of the project.

There are totally six extracting points of the pumping system for pumping CMM installed at Zhujixi coalmine. Each of the extracting point is equipped with an independent extracting machine and an independent pipeline, and the concentration of the extracted CMM is different between the six extracting systems. Three out of the six extracting machines supply CMM with a concentration below 8% and around 8% for the project. The other three extract CMM with a concentration higher

than 10%, which are used by the electricity generation station out of the project boundary. Only the three extracting points which transport CMM with a concentration below 8% and around 8% are involved in the project boundary.

The purpose of the project is to utilize the extracted CMM with low concentration methane concentration to generate hot air to dry the coal slime. The project installed 4 sets of regenerative thermal oxidizers (RTOs), with unit capacity around 30000Nm³/h, able to destroy 10.368 million Nm³ of methane annually. The technical process and specifications of the main equipment of the project is shown in Figure 3.1-1 and Table 3.1-1:

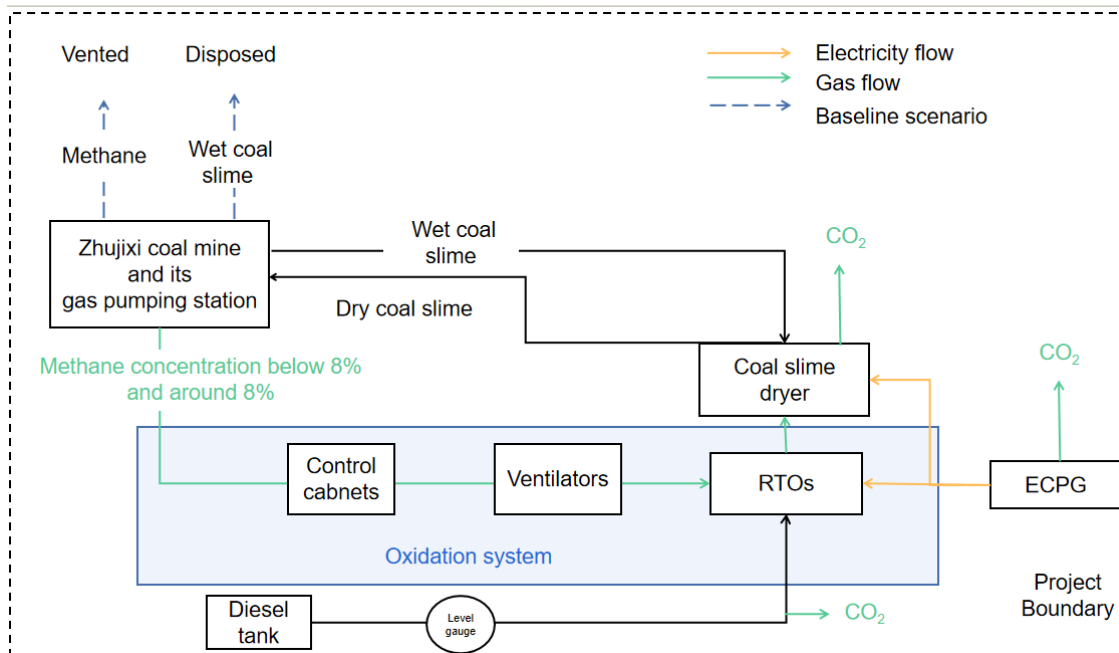


Figure 3.1-1 Technical flow chart of the project activity

Table 3.1-1 RTO Specifications

Product model	2001.0030
Supplier	Shandong ComeRiver Power Technology Company Ltd.
Quantity	4
Gas treatment capacity (Nm ³ /h)	30000~33000Nm ³ /h
Lowest gas concentration entering the RTO (%)	0.5%
Gas concentration for stable working (%)	1.0~1.1%

Power supply requirement	380V/50Hz, 110kW
Oxidation rate (%)	>=95

The project is expected to generate an annual average of 151,088 tCO₂e emission reduction over the 10-years of crediting period.

The project started construction on 01/06/2021 and was put into production since 14/12/2021. In this JOINT PD & MR, the monitoring period is from 14/12/2021 to 31/07/2023 (Both days included), with totally 595 days. Actual monitoring activities complied with the monitoring plan. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project reduces GHG emission. The GHG emission reduction is calculated without material misstatements, and the emission reductions verified totalize 115,119 tCO₂e for the monitoring period.

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Audit history	This is validation and the 1 st verification of the project. No previous audit. Verification period is 595 days, i.e. 1.63 years
Sectoral scope	Checking Annex A to the Kyoto Protocol: https://unfccc.int/resource/docs/convkp/kpeng.html and VERRA website: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes Through reviewing the applied CDM methodology ACM0008 version 08.0, the audit team confirm that the CDM methodology ACM0008 falls under sectoral Scope 8: Mining/mineral production and Sectoral Scope 10: Fugitive emissions from fuels (solid, oil and gas). By onsite inspection and document review, it is confirmed that the project utilizes coal mine methane to generate hot air to dry the coal slime, meaning the heat generated by the project is used to meet the energy demand, therefore it is concluded that the project falls under both sectoral scope 8 and scope 10.
AFOLU project category, if applicable	N/A
Project activity type	The purpose of the project is to utilize the extracted CMM with low concentration methane concentration to generate hot air

	to dry the coal slime. The project applies flameless oxidation process. Four sets of regenerative thermal oxidizers (RTOs). By checking the Feasibility Study Report /16/ and on-site inspection against the applied technology by the project, the audit team can confirm that the project activity type is CMM utilization and abatement.
General eligibility of the project to participate in the VCS Program	- The project is CMM utilization and abatement project generating GHG emission reductions by the abatement of coal mine methane, which is not excluded under Table 2.1 of the VCS Standard. - The project start date is 14/12/2021, which is the operation start date confirmed by checking operation records /36/, while the validation has been complete within 2 years of the project start date, which complies with the VCS standard. - The applied methodology ACM0008 version 08.0 is eligible under the VCS Program, and the methodology does not have scale and/or capacity limits. - No other relevant eligibility information.
AFOLU project eligibility, if applicable	N/A
Transfer project eligibility, if applicable	N/A
Project design	N/A as this is not a grouped project.
Project ownership	The section 1.7 of the PD has been checked and it has been confirmed that the project Proponent demonstrates that they have the legal right to control and operate project activity, via checking the business license /15/, approvals /17//19/ of Feasibility Study Report and EIA, and the contracts /31//32/ of equipments purchase and construction. Thus, it is confirmed that the project owner has the ownership of the project.
Project start date	The project start date 14/12/2021 is the date on which the project began generating GHG emission reductions or removals as per the concept in VCS Standard Version 4.5, which is confirmed by onsite interviewing against the representatives of the PP and local stakeholders and checking the documents including Monitoring report of environment protection acceptance of construction project completion /20/, Operation

	records of slime drying /36/ and Monitoring records for RTOs /40/.
Project crediting period	PP has chosen the fixed ten years of crediting period, 14/12/2021 to 13/12/2031, which is in line with the concept for crediting period in section 3.9.1 of the VCS Standard Version 4.5.
Project scale	As the estimated annual average GHG emission reductions per year is 151,088 tCO ₂ e which is lower than 300,000 tCO ₂ e, the project classified as “Project” under VCS standard version 4.5.
Likelihood of achieving estimated GHG emission reduction or removals	The estimated annual average GHG emission reductions per year is 151,088 tCO₂e. Through checking emission reductions calculation spreadsheets /4/ provided by PP, the audit team was able to confirm the results of the estimated GHG emission reductions of the project activity.
Technologies and measures implemented by the project activity	The measure implemented by the project activity is methane deduction, and the technology applied by the project activity is to utilize the extracted CMM with low concentration methane concentration to generate hot air to dry the coal slime via flameless oxidation process, which has been confirmed by onsite inspection and document review /16//32/.
Implementation schedule of the project activity or activities	The audit team confirmed that the project started operation since 14/12/2021 by onsite interview against representatives of the PP and document review /19//36/. Via document review /36/, the audit team confirmed that the Project kept in good running during this monitoring period 14/12/2021 to 31/07/2023, and all the production instruments and monitoring equipment are well operated.
Project location	The project is located in Hetuan Town, Panji District, Huainan City, Anhui Province, China. The geographical coordinates are 116°42'35.32"E, 32°54'48.59"N. The location of the project site was verified through on-site inspection and the coordinates were verified on-site by GPS devices.
Conditions prior to project initiation	Prior to project initiation, the low concentration CMM extracted from the Zhujixi coalmine, which is utilized in the project scenario, would be vented into the atmosphere without utilization.

	This has been confirmed by reviewing the documents including Feasibility Study Report /16/, and interviewing against the representatives from the local government and the PP.
Project compliance with applicable laws, statutes and other regulatory frameworks	By checking the government policies, the audit team can confirm that the project meets the encouragement policies indicated in the joint PD & MR, including 1. Opinions of the General Office of the State Council on Further Accelerating the Extraction and Utilization of Coalbed Methane (Coal Mine Gas); 2. Chinese National Coalmine Safety Regulation /59/; 3. 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). Besides, the project obtained all the compulsory approvals from the local governments, including the approvals /17//19/ of Feasibility Study Report and Environment Impact Assessment, which means that the project is in line with the national and local laws and regulations based on the local expertise of the VVB.
Double counting and participation under other GHG programs	The project has neither been registered nor seeking registration under any other GHG programs, and hasn't been rejected by any other GHG project, which has been confirmed via checking the website of UNFCCC, GS, VCS, GCC, and CCER.
No double claiming with emissions trading programs or binding emission limits	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, the project owner and 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. In addition, there are 7+1 Pilot ETSS in China, which include Beijing city, Shanghai city, Tianjin city, Chongqing city, Shenzhen city, Guangdong province, Hubei province and Fujian province. Hence, Anhui province is not a Pilot ETS, Hence, it is confirmed that the emission reductions will not be double counted. The declaration regarding the project is submitted by PP which is acceptable to the audit team.

	The audit team confirms that the Net GHG emission reductions or removals generated by the project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits. The audit team checked the relevant laws, statutes, and other regulatory, and found that there is no market-based tool like ETS in the European Union aiming at GHG emission reductions in China. Thus, the audit team concluded that the project activity will not be involved on other Emissions trading programs and other binding limits.
No double claiming with other forms of environmental credit	The project has no intent to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program. Besides, the project does not generate electricity and therefore it cannot apply for any other forms of environmental credit including I-REC.
Supply chain (Scope 3) emissions double claiming	Since the report is submitted before 01/01/2024, the joint PD & MR declares the exemption as per CLARIFICATION TO VCS PROGRAM RULES AND REQUIREMENTS, published on 31 MAY 2023.
Sustainable development contributions	By checking China's National Plan on Implementation of the 2030 Agenda for Sustainable Development and 17 SDGs defined by UNDP, and interviewing with stakeholders during site visit, it is confirmed that the project activity would contribute sustainable development in the region in following aspects, which has been confirmed by site visit: - SDG 13: The project will achieve a GHG emission reduction of 151,088tCO₂e/year during the whole crediting period. Thus, the project will achieve Target 13.2 under SDG 13 "Take urgent action to combat climate change and its impacts". - SDG 8: The project will increase income of local residences and accelerate economy development in rural areas. During the crediting period, direct and indirect employment opportunities will be generated. Thus, the project will achieve Target

	8.5 under SDG 8 “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”.
Additional information relevant to the project	- Leakage management for AFOLU projects According to the methodology, the leakage of the project is zero, thus the leakage management is not applicable to the project. - Commercially sensitive information No commercially sensitive information has been excluded from the public version of the project description. - No additional relevant information that may have a bearing on the eligibility of the project, the reductions or removals, or the quantification of the project’s reductions or removals.

3.2 Project Activity Instances in Grouped Projects

The project is not a grouped project.

3.3 Safeguards

3.3.1 Stakeholder Engagement and Consultation

3.3.1.1 Stakeholder Identification

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder identification	The audit team has checked the joint PD & MR and confirm that the stakeholder identification has been conducted as per the VCS standard Version 4.5. People or groups who might be impacted by a project, including Residents in Hetuan County and Workers in Zhujixi coal mine. Local residents can be workers of the Zhujixi coal mine at the same time. Therefore, people 500 meters away from the project boundary and all workers (e.g. workers, farmers, experts and management personnel, unspecified) including males and females, are stakeholders of this project.

Legal or customary tenure/access rights	The audit team confirm that as per the Measures for Public Participation in Environmental Impact Assessment /21/, the government gives the legal right to the project owner to access the stakeholders and consider their advice. On the other hand, people are voluntary to participate the consultation.
Stakeholder diversity and changes over time	Stakeholder diversity and changes over time described in the joint PD & MR in the aspects including culture, society, economy, and etc. has been checked and confirmed by the audit team by onsite interview and with expertise of the audit team.
Expected changes in well-being	The audit team can confirm the project offers job opportunities and contributes to improve the well-being of local communities, which has been described in the joint PD & MR.
Location of stakeholders	The audit team confirm that it is appropriate that stakeholders located around 500 meters away from the project boundary are selected, as well as within the whole coal mine.
Location of resources	It is confirmed that territories and resources occupied by the project is within the range of Zhujixi coal mine, where no identified stakeholders legally own or use.

3.3.1.2 Stakeholder Consultation and Ongoing Communication

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder engagement process	Communications with local stakeholders are being carried out at periodic intervals. Key implementation schedules or changes of the project will be communicated to the local authority, who will inform the neighborhood committee and the local residents, the comments and suggestions from residents will be collected by the local authority meanwhile. And the local government agencies and competent authorities will conduct spot checks on the implementation of the project from time to time and give suggestions on the involved rectification problems. In line with VCS requirements all the processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals. By checking the documented evidence, 50 questionnaires, it has been confirmed that Survey questionnaires were distributed to relevant personnel of Zhujixi coal mine, local villagers and government officials by the Project owner on 23/04/2021. The survey questionnaire was

	designed to assess the project impacts on the local environment and social economic development.
Consultation outcome	50 questionnaire survey for the local stakeholder to collect the relevant comments and suggestions on 23/04/2021 have been checked. It is confirmed that no negative comments received for the project. By checking the questionnaires, it is confirmed that local stakeholders are supportive of the project construction. However, there 4% investigated stakeholders considered water pollution, 6% investigated stakeholders considered noise pollution and 8% of the respondents think that the project does no good to the local economic environment. See “Stakeholder input” below for the means to mitigate the impacts.
Ongoing communication	It is appropriate that the project owner will set up an on-going communication mechanism to regularly holds stakeholder meetings every year to issue questionnaires and to answer the questions from various stakeholders in order to understand the opinions of various stakeholders during the project operation period.
Stakeholder input	By checking all the questionnaires conducted on 23/04/2021, it is confirmed that there are no negative comments received for the project, except that 4% investigated stakeholders considered water pollution, 6% investigated stakeholders considered noise pollution and 8% of the respondents think that the project does no good to the local economy. Regarding stakeholders’ concern, the project will use sound insulation walls to reduce the impact of noise on the surrounding area. 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: The wastewater mainly comes from ground washing wastewater, and the generated wastewater is mainly SS (suspended substance), which is treated in the concentration tank and recycled without being discharged. The Monitoring report of environment protection acceptance of construction project completion /20/ has been checked which indicates that national standards GB12348-2008 and GB3096-2008 have been met.

	It has been explained in the joint PD & MR that the main reason is that they worry that coal price will increase. The project owner replied that the coal slime drying contributes to increase the amount of qualified coal which will not result in coal price increase. Through reviewing the questionnaires the audit team can conclude that local stakeholders are supportive of the project construction. There are no ongoing or unresolved conflicts. Therefore, updates to the project design or justify why updates were not necessary.
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3.3.1.3 Free, Prior, and Informed Consent

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Obtaining consent	The audit team has checked the Environmental Impact Assessment and its approval from local government, and can confirm that every aspect of environmental impact has been considered in the Environmental Impact Assessment with corresponding measures during project development, and no net harm has been detected. The audit team checked the Monitoring report of environment protection acceptance of construction project completion /20/ and interviewed the local stakeholders, and confirms that there do not exist any ongoing or unresolved conflicts.
Outcome of FPIC discussion	By checking the evidence /16//17//18//19//20/ and interviewing the local stakeholders, the audit team can confirm that the project obtained the approval letters from governmental authorities and there do not exist any ongoing or unresolved conflicts.

3.3.1.4 Grievance Redress Procedure

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Development process	Development process of the grievance redress procedure described in the joint PD & MR has been checked and confirmed via onsite interview: Stakeholders can access the official website of Huainan City Panji District Environmental Protection Bureau or directly call to reflect,

	report any problems or give their advice anytime. The project proponent has nominated a specific staff in charge of recording and collecting conflicts and grievances of local communities, and the relevant solution process is as follows.
Grievance redress procedure	Grievance redress procedure of the grievance redress procedure described in the joint PD & MR has been checked and confirmed via onsite interview: Firstly, once getting the complaints or grievances, project proponent shall contact and discuss with relevant community or other stakeholders within 3 days; then the specific staff of project proponent should propose a solution and mediation which is performed by relevant government agency within a week based on all collected information; Thirdly, the project proponent will address their complaints or grievances by relevant legal method such as arbitration and courts if necessary. Finally, the entire complaints or grievances redress process shall be dealt within 30 days. The above grievance redress procedures are included in the Monitoring and QC manual /51/, which was checked and confirmed by the audit team.

3.3.1.5 Public Comments

Comments received	Actions taken by the project proponent	Evidence gathering activities, evidence checked, and assessment conclusion
No comment has been received	N/A	N/A

3.3.2 Respect for Human Rights and Equity

3.3.2.1 Labor and Work

Item	Evidence gathering activities, evidence checked, and assessment conclusion
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Discrimination and sexual harassment	It has been confirmed during onsite inspection and interviews that project proponent strictly obeys the anti-discrimination rules set out in the law. No discrimination or sexual harassment has occurred or will occur.
Management experience	It has been confirmed during onsite inspection and interviews that PP have previous experience on the similar project. Meanwhile, the PP continuously learns from Zhujixi Coal Mine Labour Union to earn more similar experience.
Gender equity in labor and work	It has been confirmed during onsite inspect and interviews that project proponent strictly obeys the law, i.e. Chapter IV Labor and Social Security Rights and Interests of Law of People's Republic of China for the Protection of Women's Rights and Interests to eliminate gender discrimination. In total 20 employees are hired working for the project. The PP employ 2 female staff responsible for project management. Male and female employees enjoy equal pay for equal work.
Human trafficking, forced labor, and child labor	It has been confirmed during onsite inspect and interviews that project proponent strictly obeys the law, i.e. Article 15 of Labour Law of People's Republic of China , and there is no human trafficking, forced labor, and child labor.

3.3.2.2 Human Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Human rights	It has been confirmed during onsite inspect and interviews that project proponent strictly obeys the law, i.e. Labour Law of in line with People's Republic of China and the legal rights and interests of all employees are protected. No indigenous peoples or tribal peoples are treated differently from the majority of local people.

3.3.2.3 Indigenous Peoples and Cultural Heritage

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Preservation and protection of cultural heritage	It has been confirmed during onsite inspect and interviews that no indigenous peoples and cultural heritage involved.

3.3.2.4 Property Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Rights to territories and resources	It has been confirmed during onsite inspect and interviews that there does not exist no identified stakeholders legally own or use Zhujixi coal mine.
Respect for property rights	It has been confirmed during document review /37/ and interviews that the project have achieved agreement with Zhujixi coal mine on the supply and usage of CMM.

3.3.2.5 Benefit Sharing

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Process used to design the benefit sharing plan	Not applicable as the no benefit sharing event is involved in the project, which has been confirmed during onsite interviews.
Summary of the benefit sharing plan	Not applicable as the no benefit sharing event is involved in the project, which has been confirmed during onsite interviews.
Approval and dissemination of benefit sharing plan	Not applicable as the no benefit sharing event is involved in the project, which has been confirmed during onsite interviews.
Benefit sharing during the monitoring period	Not applicable as the no benefit sharing event is involved in the project, which has been confirmed during onsite interviews.

3.3.3 Risks to Local Stakeholders and the Environment

Item	Evidence gathering activities, evidence checked, and assessment conclusion
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Risks to stakeholder participation	No risk has been identified as confirmed during onsite interviews.
Working conditions	No risk has been identified as confirmed during onsite interviews.
Safety of women and girls	No risk has been identified as confirmed during onsite interviews.
Safety of minority and marginalized groups, including children	No risk has been identified as confirmed during onsite interviews.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	No risk has been identified as confirmed during onsite interviews.

3.3.4 Ecosystem Health

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Impacts on biodiversity and ecosystems	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.
Soil degradation and soil erosion	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.
Water consumption and stress	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.
Usage of fertilizers	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.

3.3.4.1 Rare, Threatened, and Endangered species

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Species and habitat	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.

3.3.4.2 Introduction of Species

Species introduced	Evidence gathering activities, evidence checked, and assessment conclusion
N/A	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.

Existing invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
N/A	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.

3.3.4.3 Ecosystem conversion

Item	Evidence gathering activities and evidence checked
Ecosystem conversion	No risk has been identified as confirmed during onsite interviews and document review /18//19//20/.

3.4 Application of Methodology

3.4.1 Title and Reference

Applied methodology: ACM0008 version 08.0 Abatement of methane from coal mines

Applied tools:

TOOL02 “Combined tool to identify the baseline scenario and demonstrate additionality” (version 07.0)

TOOL03 “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (version 03.0)

TOOL05 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)

TOOL08 “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (version 3.0)

TOOL24 “Common practice” (version 3.1)

TOOL27 “Investment analysis” (version 12)

3.4.2 Applicability

Methodology ID	Applicability condition	Assessment and conclusion
ACM0008 version 08.0	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 project uses the low concentration coal mine methane (CMM) from Zhujixi coal mine for hot air generation to dry coal slime. Therefore, the project is applicable to condition (b).
ACM0008 version 08.0	Emission reductions can be claimed for displacing or avoiding energy from other sources	Emission reduction from heat generation is not claimed. This is conservative. Applicability condition is met.
ACM0008 version 08.0	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);	The project uses CMM from ‘Underground boreholes in the mine to capture pre mining CMM’ and ‘surface goaf well, underground boreholes, gas drainage galleries or other goaf gas capture techniques, including gas from sealed areas, to capture coal mine methane (CMM)’. The Project activity does not

	(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).	involve the extraction or utilization of CBM, VAM or AMM. Therefore, the project is applicable to condition (b).
ACM0008 version 08.0	The remaining share of the methane, to be diluted for safety reason, may still be vented.	The project involves the capture and utilization of CMM for energy use at the operational Zhujixi coal mine where the baseline is the total atmospheric release of the methane. The remaining unused share of the methane is vented for safety reasons. Applicability condition is met.
ACM0008 version 08.0	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.	The Zhujixi coal mine the project involved is not a case of open cast mine. Applicability condition is not relevant.
ACM0008 version 08.0	The methodology does not apply to project activities with any of the following features: (a) Capture/use of virgin coal bed methane, e.g. methane extracted from coal seams for which there is no valid coal mining concession;	The project does not involve the extraction or utilization of CBM. The project does not use CMM from open cast

	(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.	mining, or abandoned mines. Applicability condition is not relevant.
ACM0008 version 08.0	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.	The project does not involve use and/or destruction of CBM or OCM. Applicability condition is not relevant.
ACM0008 version 08.0	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.	The project does not involve use and/or destruction of CBM or OCM. Applicability condition is not relevant.
Tool02	The tool is applicable to all types of proposed project activities. However, in some cases, methodologies referring to this tool may require adjustments or additional explanations as per the guidance in the respective methodologies. This could include, inter alia, a listing of relevant alternative scenarios that should be considered in Step 1, any relevant types of barriers other than those presented in this tool and guidance on how common practice should be established.	Methodology ACM0008 version 08.0 refers to this tool. This tool is applied.
Tool03	This tool provides procedures to calculate project and/or leakage CO ₂ emissions from the combustion of fossil fuels. It can be used in cases where CO ₂ emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process this tool is being applied.	The RTOs consume diesel to ignite at the start up. This tool is applied.
Tool05	If emissions are calculated for electricity consumption, the tool is only applicable if one	The electricity is purchased from the grid only, and no

	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 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.	captive power plant(s) is/are installed at the site of electricity consumption. So the project is in accordance with scenario A. Methodology ACM0008 version 08.0 refers to this tool. This tool is applied.
Tool05	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 consumers/electricity consuming facilities.	This tool is used to calculate the emission of electricity consumption in project scenario, not to monitor amount of electricity generated. This applicability condition is not relevant.

Tool05	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.	No captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. Applicability condition is met.
Tool08	Typical applications of this tool are methodologies where the flow and composition of residual or flared gases or exhaust gases are measured for the determination of baseline or project emissions.	The volumetric flow of the gaseous stream and volumetric fraction of greenhouse gas CH ₄ will be measured by the project. Applicability condition is met.
Tool08	Methodologies where CO ₂ is the particular and only gas of interest should continue to adopt material balances as the means of flow determination and may not adopt this tool as material balances are the cost-effective way of monitoring flow of CO ₂	Not relevant. For the project, CO ₂ is not the particular and only gas. The CH ₄ is the main gas in the landfill gas for the project Applicability condition is not relevant.
Tool08	The underlying methodology should specify: (a) The gaseous stream the tool should be applied to; (b) For which greenhouse gases the mass flow should be determined; (c) In which time intervals the flow of the gaseous stream should be measured; and (d) Situations where the simplification offered for calculating the molecular mass of the gaseous stream (equations (3) or (17)) is not valid (such as the gaseous stream is	The methodology has specified (a) to (d). Applicability condition is met.

	predominantly composed of a gas other than N ₂).	
Tool24	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.	Since the project activity is using “Combined tool to identify the baseline scenario and demonstrate additionality”, the tool is applicable.
Tool24	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.	The methodology refers to “Combined tool to identify the baseline scenario and demonstrate additionality”. It required that the latest version of the “Methodological tool: Common practice” available on the UNFCCC website shall be applied. Therefore, this tool is applicable. Applicability condition is met.
Tool27	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 activities”, or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	Since the project activity is using “Combined tool to identify the baseline scenario and demonstrate additionality”, the tool is applied.
Tool27	In case the applied approved baseline and monitoring methodology contains	The methodology refers to “Combined tool to identify

	requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	the baseline scenario and demonstrate additionality". Therefore, this tool is applicable.
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3.4.3 Project Boundary

The audit team has checked the documents including Feasibility Study Report /16/, technical specifications of the RTOs /33/, and the Monitoring report of environment protection acceptance of construction project completion /20/, and onsite inspected the project and interviewed the PP, and confirmed that the project boundary is appropriately correctly in the joint PD & MR which is in accordance with the methodology ACM0008 version 08.0.

Source	Gas	Included?	Assessment and conclusion
Baseline	Methane emissions as a result of venting	CH ₄ Yes	Main emission source. All CMM captured and sent to RTOs would be vented in the baseline scenario. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
	Emissions from destruction of methane in the baseline	CO ₂ No	No flaring or energy use in the baseline scenario. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
		CH ₄ No	Excluded for simplification. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
		N ₂ O No	Excluded for simplification. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
	Electricity generation (electricity provided to	CO ₂ No	The project generate heat to dry slime, but the PP will not claim the emission reductions by heat generation. Excluded for simplification.

Source		Gas	Included?	Assessment and conclusion
	the grid and/or to the captive user), heat and vehicle fuel use			Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
		CH ₄	No	Excluded for simplification. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
		N ₂ O	No	Excluded for simplification. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
Project	Emissions of methane as a result of continued venting	CH ₄	No	The project will take into account only the change in CMM emissions in ex ante estimate of GHG emission reduction; this will be done through rigorous monitoring of the amount of methane utilized or destroyed by the project activity. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
	On-site electricity and fuel consumption due to the project activity, including transport of the gas	CO ₂	Yes	Electricity and diesel consumed for the operation of all facilities. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
		CH ₄	No	Excluded for simplification. This emission source is assumed to be very small. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
		N ₂ O	No	Excluded for simplification. This emission source is assumed to be very small.

Source	Gas	Included?	Assessment and conclusion
			Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
Emissions from methane destruction	CO ₂	Yes	Emissions from the oxidation of CMM in RTO in the project activity will be considered. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
Fugitive emissions of unburned methane	CH ₄	Yes	Un-oxidated methane from RTO will be considered. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.
Fugitive methane emissions from on-site equipment	CH ₄	No	Excluded for simplification. This emission source is assumed to be very small. Confirmed in accordance with the methodology, by document review and onsite inspection and interview.

3.4.4 Baseline Scenario

The joint PD & MR applies the latest version of Tool02 “Combined tool to identify the baseline scenario and demonstrate additionality” as per the methodology ACM0008 version 08.0 to identify the baseline scenario. Steps 0-4 in the Tool02 are correctly taken to determine the baseline scenario:

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

The PP considers that the proposed project activity is not the first-of-its-kind, which is in accordance with the Tool02 since this step is optional.

Step 1: Identification of alternative scenarios

Sub-step 1a: Define alternative scenarios to the proposed project activity.

The joint PD & MR identifies all alternative scenarios that provide the same output (service or product) as the proposed project activity in accordance with the methodology ACM0008 version 08.0 as per the Tool02, including all feasible options to handle methane to comply with safety regulations and all feasible options to deal with methane:

a. Options to **handle methane**

A1: Extraction of methane prior to the mining (CBM/OCM);

A2: Extraction of methane during and after the mining (CMM);

A3: Extraction of methane through ventilation during the mining;

A4: Extraction of methane from the abandoned mine;

A5: Possible combinations of options A1 to A4 with the relative shares of gas specified.

b. Options to **deal with methane**

B1 Venting of methane;

B2 Flaring of methane;

B3 Use of methane for energy production, e.g. electricity generation, heat generation, vehicle fuel, gas production, etc.

B4 Possible combinations of options B1 to B3 with the relative shares of gas specified.

Among the above options, the joint PD & MR specifies that the combination of A5 (A1 and A2) + B1 is the proposed project activity not being registered as a GHG emission reduction project, which is in compliance with the methodology ACM0008 version 08.0 and Tool02.

Sub-step 1b. Consistency with mandatory applicable laws and regulations:

Any options for CMM management and use that do not meet with local legal or regulatory requirements have been eliminated in the joint PD & MR which has been confirmed by the audit team by interview against the representatives from the PP and local authorities and onsite inspection with its sectoral expertise.

Through this step, the option A3 is eliminated since it does not comply with National Coalmine Safety Regulation (2016) /59/. Option B2 is eliminated since the CMM concentration is lower than 30% and is prohibited to be directly combusted as per the Decision on the Revision of Certain Aspects of the <Coalmine Safety Regulation> /60/.

The audit team can confirm the exclusion of the option of the use of methane for electricity generation, vehicle fuel, gas production (part of option B3) by checking the Design and safety technology of the CMM extraction system of Zhujixi coal mine /22/ and the concentration of the extracted CMM. Only the three extracting points which transport CMM with a concentration below 8% and around 8% are involved in the project boundary /16//22/. From the current technical application situation, extracted gas with a concentration of 8%-30% /61/ can be directly used as an internal combustion engine to generate electricity. The extracted lower concentration CMM with a concentration below 8% which is to be used in the project scenario are all directly vented to the air in the absence of the implementation of the project, since its concentration is lower than the required concentration by the generation plant. Besides, the concentration of the CMM

utilized by the project does not meet the concentration requirements for vehicle fuel because of safety reasons, and for urban gas use which can confirmed by checking the national standard /62/.

The joint PD & MR draws a conclusion in step 1 that baseline alternative options that are technically feasible and comply with all legal and regulatory requirements are listed below:

Scenario ID	CMM extraction	CMM treatment
Scenario 1 (A5+B1)	Combinations of options A1 to A2	Venting
Scenario 2 (A5+B3)	Combinations of options A1 to A2	Use of methane for hot air (thermal energy) production

Step 2: Barrier analysis

This step is not applied in the joint PD & MR.

Step 3: Investment analysis and Step 4: Common analysis are analysed in section 3.5 of the joint PD & MR, and the baseline scenario is identified through Step 3 and Step 4, which is scenario 1 (A5+B1):

Handling methane – A5 (Combination of A1 and A)	Dealing with methane - B1
A1: Extraction of methane prior to the mining (CBM/OCM); A2: Extraction of methane during and after the mining (CMM);	Venting.

3.4.5 Additionality

The joint PD & MR demonstrates the additionality as per the Tool02 “Combined tool to identify the baseline scenario and demonstrate additionality”. Step 0 ~ 2 including Step 0: Demonstration whether the proposed project activity is the first-of-its-kind, Step 1: Identification of alternative scenarios, and Step 2: Barrier analysis have been validated in the above section “Baseline Scenario”. Step 3: Investment analysis and Step 4: Common practice analysis are validated as follows:

Step 3: Investment analysis

Method choice

As per the Tool02, the objective of Step 3 is to compare the economic or financial attractiveness of the alternative scenarios remaining after Step 2 by conducting an investment analysis. The analysis should include all alternative scenarios remaining after Step 2. The latest approved version of the “Methodological tool: Investment analysis” (Tool27 version 12.0), available on the UNFCCC website, shall be considered when applying this step. In addition, the choice between the Benchmark Analysis versus the Investment Comparison Analysis and Simple cost analysis is

determined by whether the output can only be provided by the project proponent.

It is appropriate and valid that the joint PD & MR chooses the Benchmark Analysis method to demonstrate the additionality, as the project may generate economic benefits through charging for drying coal slimes as well as CDM/VCS revenues, therefore simple cost analysis (Option I) is not appropriate. Besides, since the output, the heat generated by utilization of the CMM for drying the slime, can only be provided by the project proponent among the output in the identification of baseline scenario, which are Scenario 1 (A5+B3) and Scenario 2(A5+B3), the Benchmark Analysis method (Option III) other than the Investment Comparison Analysis method (Option II) is chosen.

Benchmark selection

has been used as which complies with the requirements in the Tool27:

A suitable benchmark i.e., Pre-tax (Before tax) project IRR has been selected as the financial indicator for the demonstration of financial unviability for the proposed project activity. The source of benchmark was assessed by the audit team and the selected before tax project IRR and selected benchmark were found to be appropriate and in-line with the applied tools. As the CMM utilization belongs to the gas production and utilization industry, thus the sectoral benchmark before tax project IRR for gas production and utilization industrial projects is applied. According to “Economic Assessment Method and Parameters for Construction Project” (version 3) (2006, jointly issued by NDRC and Ministry of Construction) (Fagaitouzi[2006]No.1325), the before tax project IRR benchmark is 12%.

The audit team confirms that this benchmark was determined by the national DRC in China, and represents a government/official approved benchmark. Besides, after this benchmark has been published, there has been no updated benchmark for this industry published in China. The audit team also checked the similar CDM project ref. 8196 “Shanxi LuAn Group Gaohe Mine VAM Destruction and Utilization Project” applying similar RTO technologies, same benchmark has been applied. Therefore, selected benchmark value was found to be appropriate for this project.

Appropriateness of the Input parameters

Audit team confirm that the PP made investment decision on 29/12/2020 on the basis of the Feasibility Study Report (12/2020) during onsite interview against the management representatives. Given the short period of time between the Feasibility Study Report (12/2020) and the construction start date of the Project on 01/06/2021, the audit team was therefore confident that it is unlikely in the context of the underlying Project that the input values would have materially changed. At the same time, the audit team compared the input values for the financial analysis in the joint PD & MR and the Feasibility Study Report, and confirms that all input parameters used in the financial analysis are taken from the approved Feasibility Study Report. Therefore, the audit team confirms that the input values from the Feasibility Study Report were valid and applicable to the investment analysis.

Furthermore, the audit team has reviewed the IRR calculation sheet/6/ and data sources of the parameters for investment analysis, and confirms that:

Parameter	Value	Unit	Source	Crosscheck	Justification	
Total static investment	85,922,000	CNY	Feasibility Study report	Actual contract values:		Based on the actual contracts for the project implementation, the actual project cost (i.e. static investment) was 82,961,811CNY, which accounts the 96.6% of the estimated total static investment of 85,922,000 CNY in the FSR. Therefore, the audit team confirm its reasonability. Furthermore, when the static investment decreases more than 23.16%, the IRR of the proposed project begins to exceed the benchmark. This cannot be realistic to occur.
				Contract	Value (CNY)	
				Purchase contract of RTOs	32,795,200	
				Purchase contract of drying system	13,250,000	
				Construction contract	12,583,577	
				Construction contract (supplement)	333,034	
				Installation contract	24,000,000	
				Total	82,961,811	
				Percentage of estimated total investment	96.6%	
Operation period	10	years	Feasibility Study report	Lifetime of the RTOs is 10 years as per the equipment specifications /33/.	It is reasonable that the project lifetime applies 10 years which is consistent with the lifetime of the main equipment RTOs, which complies with the Tool27: Both	

					project internal rate of return (IRR) and equity IRR calculations should reflect the period of expected operation of the underlying project activity (technical lifetime).
Annual coal slime output	336,000	t/year	Feasibility Study report	Actual dry coal slime output evidenced by the Operation records of slime drying /36/: Period: Jan 2022-Sep 2023 (21 months) Output: 186,338.53t, corresponding to 106,479.16t per year	Actual output is lower than estimate. Audit team confirm this parameter is conservative for demonstration of additionality.
Coal slime drying tariff (including VAT)	90	CNY/t	Feasibility Study report	Consistent with the CMM supply and slime drying cooperation agreement /37/.	This parameter is consistent with the actual value. Therefore the audit team confirm its reasonability.
Value added tax rate (VAT)	13%	/	Feasibility Study report	VAT rate is consistent with the Provisional Regulations on Value Added Tax of the People's Republic of China /24/. Ministry of Finance and the State Administration of Taxation issued the Notice about Implementation of VAT Reform in the Whole Country (Cai Shui [2008]170) on 19/12/2008, which was effected on 01/01/2009 /25/. In	This parameter is consistent with the actual value. Therefore the audit team confirm its reasonability.

				accordance with Cai Shui [2008]170, the VAT of newly purchased equipments from the investment allows to be compensated to the projects. For the Project, VAT of 13% for equipments purchase is calculated firstly, and the VAT of newly purchased equipments is compensated to the Project in the operation period. This calculation is fully consistent with the regulation above.	
City maintenance & construction tax rate	5%	/	Feasibility Study report	Consistent with the Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax (Guo Fa [1985] No.19) /27/.	This parameter is consistent with the actual value. Therefore the audit team confirm its reasonability.
Educational surcharges rate	5%	/	Feasibility Study report	Consistent with the Decision of the State Council on Amending the Interim Provisions on the Collection of Educational Surcharges (Order of the State Council [2005] No.448) /26/.	This parameter is consistent with the actual value. Therefore the audit team confirm its reasonability.
Scrap value of fixed assets (fair value of the project activity assets at the	3%	/	Feasibility Study report	This complies with the Enterprise Income Tax Law Implementation Regulations of People's Republic of China (The People's Republic of China State Council Order No. 512 /28/) and Notice on Determination of Residual Rate for Enterprise Fixed Asset,	This parameter complies with the national regulations. Therefore the audit team confirm its reasonability.

end of the assessment period)				GuoShui Han [2005] No. 883 /29/,which requires that the residual value of fixed assts should not be higher than 5%. The value applied is common practice in China. Even if 5% is applied, the IRR result is 4.41% lower than the benchmark 12%.	
Breakdown of annual operation and management cost	Salary and welfare: -Employee: 20 -Salary: 80,000 CNY per person/y -Welfare rate (of salary): 59% Energy cost: Electricity tariff: 0.7CNY/kWh Insurance rate: 0.3% Repair rate: 5% Other cost (Miscellaneous fee): 2,000,000CNY		Feasibility Study report	Number of employees is crosschecked with the employee list – actual value is 20. According to the Anhui Statistical Yearbook 2022, the average salary is 153,623CNY for heat generation and supply industry in 2021. The salary of 80,000 applied in this project is conservative. Even if 80,00 plus 59% of welfare, the total employee expense is lower the statistic average. Electricity tariff 0.7CNY/kWh is crosschecked against the CMM supply and slime drying cooperation agreement and found consistent. Issuance rate 0.3% is common practice in China /34/. The repair rate, and Miscellaneous fee comply with the Accounting Standard	The audit team confirm the responsibility and conservativeness of this parameter.

			for Business Enterprises - Basic Standard /35/.	
debt-equity ratio	Pre-tax project IRR is applied. These parameters are not applicable.			
Depreciation Period				
Depreciation rate				

Final step: Assessment of Regulatory Surplus

PP has demonstrated the regulatory surplus of the project in Joint-PD-MR, based on the demonstration, the audit team has searched all the related law, statute, or other regulatory framework of CMM industry in China including Emission standard of coalbed methane/coal mine gas (on trial) issued by the Ministry of Environmental Protection in 2008/64/ Opinions of the General Office of the State Council on Further Accelerating the Extraction and Utilization of Coalbed Methane (Coal mine Gas)/65/, 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)/63/, National Coalmine Safety Regulation (2016)/59/ and Decision on the Revision of Certain Aspects of the <Coalmine Safety Regulation> released by the State Administration of Work Safety in 2010/60/, it is verified that in China, only the high-concentration gas with methane volume fraction $\geq 30\%$ is prohibited from discharge, and there is no requirement to prohibit the emission of low-concentration CMM, which means that the project activity is not mandated by any law, statute, or other regulatory framework of China, while the utilization of the low-concentration CMM is encouraged which is also verified by cross-checking the Renewable Energy Law and Regulations/66/, Guidance Catalogue for the Development of Renewable Energy Industry/67/.

Hence it is validated that the project is regulatory surplus.

Based on above all the steps' assessment, the audit team concluded that the project is additional.

3.4.6 Quantification of GHG Emission Reductions and Carbon Dioxide Removals

The audit team confirms that the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the methodology ACM0008 version 08.0, which are described below.

Baseline emissions

Baseline emissions are determined in two steps:

Step A. Determination of methane eligible for crediting

It is correctly determined that all captured CMM is eligible for crediting in the joint PD & MR.

Step B. Determination of baseline emissions.

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

Where:

BE_y	=	Baseline emissions in year y (tCO ₂ e)
$BE_{MD,y}$	=	Baseline emissions from destruction of methane in the baseline scenario in year y (tCO ₂ e);
$BE_{MR,y}$	=	Baseline emissions from release of methane into the atmosphere in year y that is avoided by the project activity (tCO 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 (tCO ₂ e)

Methane destruction in the baseline scenario

The baseline scenario does not involve any flaring or usage of CMM, therefore, there is no methane destruction in the baseline. So, destruction of methane in the baseline scenario ($BE_{MD,y}$) is 0.

Methane venting in the baseline scenario

As per the methodology, baseline emissions due to venting should be discounted in case host country has regulations in place that are restricting the release of methane into the atmosphere. There is no regulation in place that are restricting the release of methane into the atmosphere. The amount of methane that would have been emitted to the atmosphere in the baseline scenario shall be determined as follows:

$$BE_{MR,y} = \sum_i \sum_s (MT_{PJ,s,i,y} - MT_{BL,s,i,y}) \times GWP_{CH4}$$

Where:

$BE_{MR,y}$	=	Baseline emissions from release of methane into the atmosphere in year y that is avoided by the project activity (tCO ₂ e)
$MT_{PJ,s,i,y}$	=	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_{CH4}	=	Global warming potential of methane (t CO ₂ e/t CH ₄)

In the baseline scenario, there is no CMM captured and destroyed, and the use of methane only involves hot air production, thus $MT_{BL,s,i,y}$ is 0;

Thus,

$$BE_{MR,y} = MT_{PJ,s,i,y} \times GWP_{CH4}$$

Methane from the mine captured and destroyed by the project ($MT_{PJ,s,i,y}$) equals to methane measured sent to use ($MM_{i,y}$, will be described in section 5.2). So the calculation of parameter $MT_{PJ,s,i,y}$ is the same as $MM_{i,y}$

Production of power, heat or other forms of useful energy replaced by the project activity in baseline scenario

The project used extracted CMM for hot air (thermal energy) generation. However, the generated hot air can't be monitored. Thus, for the conservative, the emission reduction generated by hot air replacement is not claimed. So $BE_{Use,y}=0$.

Therefore, the baseline emissions is calculated by the following equation:

$$BE_y = BE_{MR,y} = MT_{PJ,s,i,y} \times GWP_{CH4}$$

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.

Project emissions are defined by the following equation:

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

Where:

PE_y	=	Project emissions in year y (tCO ₂ e)
$PE_{ME,y}$	=	Project emissions from energy use to capture and use methane (tCO ₂ e)
$PE_{MD,y}$	=	Project emissions from destruction of captured methane (tCO ₂ e)
$PE_{UM,y}$	=	Project emissions from un-combusted methane in year y (tCO ₂ e)

Project emissions from the energy use to capture and to use methane

During the normal operation of the project activity, the additional electricity consumption required by the project activity to oxidate the methane gas flow and coal slime dryer. For the first time igniting the RTOs, diesel is consumed.

According to methodology, emissions due to electricity consumption should be determined using the latest version of the Tool05 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0) should be used. Fossil fuel consumption should apply Tool03 “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (version 03.0).

$$\text{Thus, } PE_{ME,y} = PE_{EC,y} + PE_{FC,j,y}$$

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

Where,

$PE_{EC,y}$	=	Project emissions from electricity consumption in year y (tCO ₂ /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 (tCO ₂ /MWh)
$TDL_{j,y}$	=	Average technical transmission and distribution losses for providing electricity to source j in year y
j	=	Sources of electricity consumption in the project

For the project, Option A2 of Tool05 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0) is chosen. A value of 1.3 t CO₂/MWh for $EF_{EF,j,y}$ is used to calculate project emissions because the project only involves

electricity consumption from the national grid so it accords with (i) Scenario A applies only to project and/or leakage electricity consumption sources but not to baseline electricity consumption sources.

According to the tool “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0), i) 20% is used for “project or leakage electricity consumption sources”. Thus, use as default values of 20% for project and leakage electricity consumption sources for the project, i.e. $TDL_{j,y} = 20\%$.

CO₂ emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

Where:

- $PE_{FC,j,y}$ = Are the CO₂ emissions from fossil fuel combustion in process j during the year y (tCO₂/yr)
- $FC_{i,j,y}$ = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr)
- $COEF_{i,y}$ = Is the CO₂ emission coefficient of fuel type i in year y (tCO₂/mass or volume unit)
- i = Are the fuel types combusted in process j during the year y

The CO₂ emission coefficient $COEF_{i,y}$ is calculated using Option B: The CO₂ emission coefficient $COEF_{i,y}$ is calculated based on net calorific value and CO₂ emission factor of the fuel type i, as follows:

$$COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$$

Where:

- $COEF_{i,y}$ = Is the CO₂ emission coefficient of fuel type i (tCO₂/mass or volume unit)
- $NCV_{i,y}$ = Is the weighted average mass fraction of carbon in fuel type i in year y (tC/mass unit of the fuel)
- $EF_{CO2,i,y}$ = Is the weighted average CO₂ emission factor of fuel type i in year y (tCO₂/GJ)
- i = Are the fuel types combusted in process j during the year y

The NCV value 43.3 TJ/Gg and $EF_{CO2,i,y}$ 74800 kg/TJ are extracted from vol. 2 of 2019 Refinement to 2006 IPCC Guidelines. So, $COEF_{i,y} = 3.24 \text{ tCO}_2/\text{t} = 74800 \text{ kg/TJ} \times 43.3 \text{ TJ/Gg} / 1000000$

Project emissions from destruction of captured methane

When the captured methane is burned in a flare, heat or power plant, or oxidized in a flameless oxidation unit, combustion emissions are released.

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

Where:

- $PE_{MD,y}$ = Project emissions from methane destroyed (tCO_{2e})
- $MD_{i,y}$ = Methane destroyed through use i (tCH₄)
- i = Use of methane (power generation, heat generation, supply to gas grid to various combustion end uses)
- CEF_{CH_4} = Carbon emission factor for combusted methane. Set as 2.75 (t CO₂/t CH₄)

The Project only involve in methane destroyed through hot air generation.

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

In each end-use, the amount of methane destroyed depends on the efficiency of oxidation 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)
- $MM_{i,y}$ = Methane measured sent to use i in year y (tCH₄)
- $Eff_{i,y}$ = Efficiency of methane destruction in use i in year y (%), equals to the parameter $EFF_{ox,y}$

For the parameter $MM_{i,y}$

As the gaseous flow is measured by flow meter with volume unit, density of the methane shall be determined in order to calculate the methane. The methane density is determined as per Tool08 "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 03.0). For the project, the flow of gaseous stream is volume flow-wet basis, and the volumetric fraction is wet basis, thus, Option C is applied to determine the methane density as follow:

$$\rho_{i,n} = \frac{P_n \times MM_i}{R_u \times T_n}$$

Where:

- $\rho_{i,n}$ = Density of greenhouse gas i in the gaseous stream at normal conditions (kg gas i/m³ wet gas i)
- P_n = Absolute pressure at normal conditions (Pa)

T_n = Temperature at normal conditions (K)

MM_i = Molecular mass of greenhouse gas i (kg/kmol)

R_u = Universal ideal gases constant (Pa.m³ /kmol.K)

The following requirements apply:

- a) CH₄ is the greenhouse gas for which the mass flow will be determined;
- b) The mass flow will be calculated on an hourly basis for each hour h in year y;
- c) The mass flow calculated for hour h is 0 if the equipment is not working in hour h (Opj,h=not working), the hourly values are then summed to a yearly unit basis.

For the parameter $EFF_{i,y}$ ($EFF_{ox,y}$)

The project applies flameless oxidation process to treat CMM, so the efficiency of flameless oxidation process is determined as follows:

$$Eff_{ox,y} = 1 - \frac{PC_{CH_4,exhaust,y} \times D_{CH_4,correxh,y}}{PC_{CH_4,VAM,y} \times D_{CH_4,corrinflow,y}}$$

Where:

$EFF_{ox,y}$ = Efficiency of the flameless oxidation process in year y (%)

For ex-ante calculation, 90% is applied for $EFF_{ox,y}$

$PC_{CH_4,exhaust,y}$ = Annual average concentration of methane in the gas flow exiting the flameless oxidation unit in year y (m³/m³)

$D_{CH_4,correxh,y}$ = Annual average density of methane corrected for pressure and temperature in the exhaust gases corrected to reference conditions (t CH₄/m³)

$PC_{CH_4,VAM,y}$ = Annual average concentration of methane in the gas flow entering the flameless oxidation unit (m³/m³)

$D_{CH_4,corrinflow,y}$ = Annual average density of methane entering the flameless oxidation unit corrected to reference conditions (t CH₄/m³)

Project emissions from un-combusted methane

Not all of the methane sent to the flare, to the flameless oxidizer or used to generate power and heat will be combusted, so a small amount will be released to the atmosphere. These emissions are calculated as follows:

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

Where:

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

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)

$Eff_{i,y}$ = Efficiency of methane destruction in use i in year y (%), equals to $Eff_{ox,y}$

For ex ante projections, the efficiency of destruction of methane in the flameless oxidation process may be assumed to be 90 per cent.

Leakage

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.

Since the baseline scenario of the project does not include thermal energy use, the leakage (LEy) is taken as zero.

Ex-ante emission reduction calculation

It is confirmed that the estimated annual CMM measured sent to RTO will be 10.368 million Nm³ CMM per year when the project is fully operated as per the Feasibility Study Report /16/, of normal conditions of temperature 273.15K and 1 atm (101,325Pa), which can be converted to mass flow 7,419.963 tCH₄ with the above equations:

$$\rho_{i,n} = \frac{P_n \times MM_i}{R_u \times T_n} = (101,325Pa \times 16.04kg \text{ kmol}^{-1}) / (8,314Pa. m^3/kmol. K \times 273.15K) = 0.00071566 \text{ t CH}_4/m^3.$$

$$MT_{PJ,s,i,y} = MM_{i,y} = 10.368 \times 10^6 m^3 \times 0.00071566 t/m^3 = 7,419.963 \text{ tCH}_4$$

As per the IPCC Fifth Assessment Report (AR5), GWP_{CH_4} is 28 tCO₂e/tCH₄. Therefore baseline emissions are calculated:

$$BE_y = BE_{MR,y} = GWP_{CH_4} \times MT_{PJ,s,i,y} = 28 \text{ tCO}_2/tCH_4 \times 7,419.963 \text{ tCH}_4 = 207,758 \text{ tCO}_2e$$

It is confirmed that the estimated $FC_{i,j,y}$ is 11,232MWh and the estimated $EC_{PJ,y}$ is 2.08t diesel as per the Feasibility Study Report /16/. Therefore

$$PE_{ME,y} = PE_{EC,y} + PE_{fc,j,y} = FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y} + EC_{PJ,y} \times EF_{i,y} \times (1+TDL_i) = 2.08t \times 43.3TJ/Gg \times 74800kg/TJ / 1000000 + 11,232MWh \times 1.3 \text{ MWh/tCO}_2e \times (1+20\%) = 17,529 \text{ tCO}_2e$$

Project emissions from destruction of captured methane are calculated with above formulae:

$$PE_{MD,y} = MD_{i,y} \times CEF_{CH_4} = MM_{i,y} \times Eff_{ox,y} \times CEF_{CH_4} = 7,419.963 \text{ tCH}_4 \times 90\% \times 2.75 \text{ tCO}_2/tCH_4 = 18,365 \text{ tCO}_2e.$$

Project emissions from un-combusted methane are calculated with above formula:

$$PE_{UM,y} = GWP_{CH_4} \times MM_{i,y} \times (1 - Eff_{O,X,y}) = 28 \text{ tCO}_2/\text{tCH}_4 \times 7,419.548 \text{ tCH}_4 \times (1 - 90\%) = 20,776 \text{ tCO}_2e$$

Therefore $PE_y = PE_{ME,y} + PE_{MD,y} + PE_{UM,y} = 17,529 \text{ tCO}_2e + 18,365 \text{ tCO}_2e + 20,776 \text{ tCO}_2e = 56,670 \text{ tCO}_2e$

$$ER_y = BE_y - PE_y - LE_y = 207,758 \text{ tCO}_2e - 56,670 \text{ tCO}_2e - 0 \text{ tCO}_2e = 151,088 \text{ tCO}_2e$$

Conclusion

The audit team confirms that all data sources and assumptions are appropriate, methodology and referenced tools have been applied correctly, and that calculations are correct, applicable to the project activity, leading to a conservative estimate of the emission reductions. In general, the audit team can confirm the following information:

- All assumptions and data used by the project participants are listed in the joint PD & MR (version 3.1 dated 31/07/2024) and/or supporting documents, including their references and sources;
- All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the joint PD & MR (version 3.1 dated 31/07/2024);
- All values used in joint PD & MR (version 3.1 dated 31/07/2024) are considered reasonable in the context of the project;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, and leakage emissions;
- All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in joint PD & MR (version 3.1 dated 31/07/2024).

3.4.7 Methodology Deviations

There is not any methodology deviation.

3.4.8 Monitoring Plan

The project applies the approved monitoring methodology ACM0008 version 08.0 Abatement of methane from coal mines. The chosen monitoring methodology is suitable for this project, and the monitoring plan aligns with the monitoring methodologies. The monitoring plan provides a chance for actual measurements of emission reduction achievements. It includes principles and concepts that serve as its foundation, along with operational and monitoring obligations that the project owner must fulfil. These obligations encompass resources involved in the monitoring process, training, support activities, calibration and data collection, quality assurance procedures, data management, and electronic support tools.

The data and parameters available at validation are included in the Joint PD & MR and are provided in compliance with the methodology:

Data / Parameter	Description	Source of data	Value applied	Justification
CEF_{CH_4}	Carbon emission factor for combusted methane	ACM0008 version 08.0	2.75 tCO_2e/tCH_4	Consistent with methodology
$EF_{EF,j,y}$	Default value of the emission factor	Tool05	1.3 tCO_2e/MWh	Consistent with tool
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y	Tool05	20%	Consistent with tool
R_u	Universal ideal gases constant	Tool08	8,314 $Pa.m^3/kmol.K$	Consistent with tool
MM_i	Molecular mass of greenhouse gas CH_4	Tool08	16.04 $kg/kmol$	Consistent with tool
P_n	Total pressure at normal conditions	Tool08	101,325 Pa	Consistent with tool
T_n	Temperature at normal conditions	Tool08	273.15K	Consistent with tool
$\rho_{i,n}$	Density of methane under the condition of 273.15 K (temperature) and 101,325 pa (pressure)	Tool08	0.71566 $Kg\ gas\ i/m^3\ gas\ i$	Consistent with tool

The audit team confirms that the monitoring plan complies with the requirements of the applied methodology and tools. The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design are described below.

Parameter	Description	Monitoring methods
$MT_{PJ,s,i,y}$	Methane from source s captured and destroyed by use i in the project activity in year y	$MT_{PJ,s,i,y}$ is calculated by multiplying methane volume (measured by flow meters for volume under normal conditions and analyzers for concentration) and methane density $\rho_{i,n}$. All electronic data and paper documents will be archived for two years following the end of the crediting period.

MM _{i,y}	Methane measured sent for heat generation in year y	same as MT _{PJ,s,i,y}
GWP _{CH4}	Global warming potential of methane	IPCC Fifth Assessment Report (AR5) default value
EC _{PJ,j,y}	Quantity of electricity consumed by the project electricity consumption source j in year y	Electricity consumed by the project is daily measured by an electricity meter installed on-site and another electricity meter for backup. PO regularly recorded the electricity consumption and settled with the power company every month. All electronic data and paper documents will be archived for two years following the end of the crediting period.
EFF _{i,y} (Eff _{ox,y})	Efficiency of methane destruction in use i	The parameter is calculated with the formula: $Eff_{ox,y} = 1 - \frac{PC_{CH4,exhaust,y} \times D_{CH4,correxh,y}}{PC_{CH4,VAM,y} \times D_{CH4,corrinflow,y}}$ PC_{CH4,exhaust,y} and PC_{CH4,VAM,y} represent “annual average concentration of methane in the flameless oxidation exiting the flameless oxidation unit in year y” and “annual average concentration of methane in the gas flow entering the flameless oxidation unit” respectively. The two variations are measured by gas analyzers, daily collected and weekly aggregated. D_{CH4,correxh,y} and D_{CH4,corrinflow,y} represent “annual average density of methane corrected for pressure and temperature in the exhaust gases corrected to reference conditions” and “annual average density of methane entering the flameless oxidation unit corrected to reference conditions” respectively. The two variations are measured by thermometers and pressure gauges, daily collected and weekly aggregated. All electronic data and paper documents will be archived for two years following the end of the crediting period.
PC _{CH4,exhaust,y}	Annual average concentration of methane in the flameless oxidation exiting the flameless oxidation unit in year y	The concentration of outflow is daily measured by a portable gas analyzer. PO daily records the concentration. All electronic data and paper documents will be archived for two years following the end of the crediting period.
PC _{CH4,VAM,y}	Annual average concentration of methane entering the flameless oxidation unit	The concentration of outflow is daily measured by 4 gas analyzers installed before RTOs. PO regularly records the concentration once per day. All electronic data and paper documents will be

	in year y	archived for two years following the end of the crediting period.
D _{CH₄, exhaust,y}	Density of methane corrected for pressure and temperature (P _{exhaust} and T _{exhaust} respectively) in the exhaust gases.	Density of exhaust can be determined based on continuously measured temperature and pressure with thermometer and pressure gauge.
D _{CH₄, inflow,y}	Density of methane entering the flameless oxidation system corrected for pressure and temperature (P _{inflow} and T _{inflow} respectively).	Density of inflow can be determined based on continuously measured temperature and pressure with thermometers and pressure gauges incorporated in the gas analyzers.
FC _{i,j,y}	Quantity of fuel type i combusted in process j during the year	The consistency of metered fuel consumption quantities should be measured by level gauge.
NCV _{i,y}	Weighted average net calorific value of fuel type i in year y	Any future revision of the IPCC Guidelines will be taken into account
EF _{CO₂,i,y}	Weighted average CO ₂ emission factor of fuel type i in year y	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2019 Refinement to 2006 IPCC Guidelines on National GHG Inventories

By on-site interview with the PP, the audit team confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by the Project can be reported ex post and verified. The audit team is of the opinion that the monitoring plan complies with the requirements of the methodology.

3.5 Non-Permanence Risk Analysis

Not applicable for the present project activity.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The verification team has:

- Applied the GPS instruments to check the project location and geo-coordinates;

- Checked onsite installed equipments to confirm that the project equipment installation is consistent with the joint PD & MR.
- Onsite checked the monitoring equipments and confirmed the metering equipments are in place.
- Reviewed documents /36//39//40//41/ to confirm the Project has been operated as per the joint PD & MR.
- Interviewed relevant personnel for the project implementation information, and assessed the construction and implementation status with the documents /33//37/ to check the implementation status of the Project.

The project is located in Hetuan Town, Panji District, Huainan City, Anhui Province, China. The geographical coordinates are 116°42'35.32"E, 32°54'48.59"N. The location of the project site was verified through on-site inspection and the coordinates were verified on-site by GPS devices.

The purpose of the project is to utilize the extracted CMM with low concentration methane concentration to generate hot air to dry the coal slime. The project installed 4 sets of regenerative thermal oxidizers (RTOs), with unit capacity around 30000Nm³/h, able to destroy 10.368 million Nm³ of methane annually.

The technical process and specifications of the main equipment of the project is shown in following figure and table:

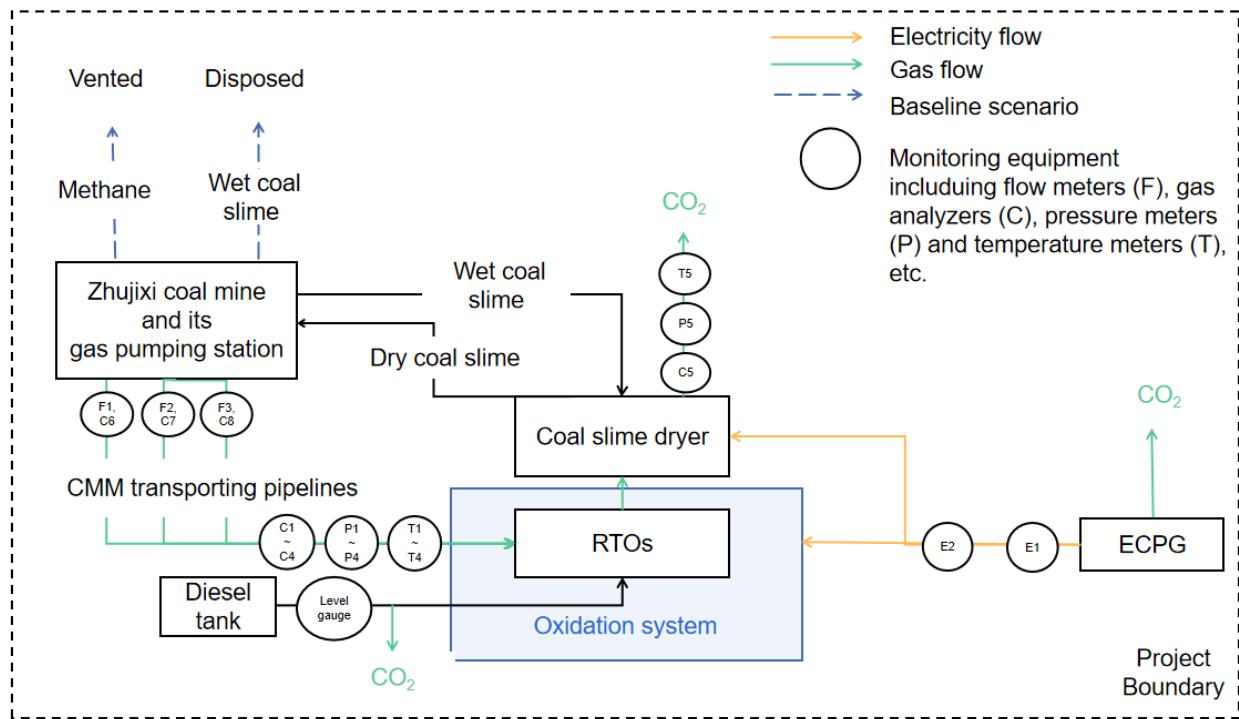


Figure 4.1-2 Technical flow chart of the project activity

Table 4.1-2 RTO Specifications

Product model	2001.0030
Supplier	Shandong ComeRiver Power Technology Company Ltd.
Quantity	4
Gas treatment capacity (Nm ³ /h)	30000~33000Nm ³ /h
Gas concentration for stable working (%)	1.0~1.1%
Power supply requirement	380V/50Hz, 110kW
Oxidation rate (%)	>=95

The project started construction on 01/06/2021 and was put into production since 14/12/2021. In this joint PD & MR, the monitoring period is from 14/12/2021 to 31/07/2023 (Both days included), with totally 595 days. Actual monitoring activities complied with the monitoring plan. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project reduces GHG emission.

The audit team can confirm that:

- The implementation status and equipments installation of the project activity are consistent with the joint PD & MR /3/;
- The actual operation of the CDM project activity is as per the joint PD & MR /3/ by the PP;
- Information (data and variables) provided in the joint PD & MR /3/ is in accordance with that stated in the joint PD & MR /3/.

Implementation Status	Assessment steps, evidence checked, & conclusion:
Project implementation	As described above including assessment steps and evidence, the audit team can confirm that there is not existence of any material misstatements between the project implementation and the Project Description.

Monitoring plan	The PP has operated the Project as per the PDD. The monitoring organization has been set up and all monitoring staffs have been trained. Monitoring and Management Manual /51/ and internal training records /52/ have been provided and verified by the audit team. The audit team confirms that all the documents required by the monitoring plan have been stored. Bureau Veritas has verified the documents and found the management and operations have been conducted by the PP in accordance with the monitoring plan. The audit team has onsite interviewed the representatives from the PP on the actual monitoring activities, onsite witnessed the actual monitoring activities, and reviewed the documented evidence Monitoring and management manual /51/, and confirmed that the PP conduct the monitoring activities in accordance with the monitoring plan contained in the joint PD & MR. The audit team has verified the parameters in the joint PD & MR /3/ and the Emission Reductions Calculation Spreadsheet /4/ and found consistent with the relevant evidences, i.e. CMM transaction notes, Monthly records of CMM extraction, Monitoring records for RTOs, Monitoring records for electricity consumption, Electricity transaction notes /38//39//40//41//44//45/. Therefore the audit team can confirm that: • The PP implemented the monitoring plan as per the project description and the actual monitoring activities are complete, and the implemented monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters) is suitable. • There is not any material misstatement between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology.
AFOLU-specific project implementation	N/A

4.2 Accuracy of Reduction and Removal Calculations

[Data and parameters available at validation]

The data and parameters fixed ex ante available at validation reported in the joint PD & MR have been verified and confirmed appropriate. See section 3.4.8 of this report.

[Data and parameters monitored]

According to VCS criteria, the audit team has performed the following activities to determine whether the monitoring of parameters related to the GHG emission reductions has been implemented in accordance with the monitoring plan.

- Through the inspection of the monitoring system, interview with the monitoring team representatives, document review including relevant records, procedures and technical specifications, the audit team has assessed the implementation of the monitoring plan followed by the PP;
- The parameters stated in the monitoring plan have been checked by means above;
- The audit team has checked the installation of the monitoring equipments against the PDD and calibration reports /45/ by qualified third party;
- The documented records of CMM transaction notes, Monthly records of CMM extraction, Monitoring records for RTOs, Monitoring records for electricity consumption, Electricity transaction notes /38//39//40//41//44//45/ were checked by the verification team to confirm the monitoring results;
- Based on the interview with the top management and operation staff and the review of the Monitoring and Management Manual /51/, the verification team has assessed the quality assurance and quality control procedures applied by the PP.

The monitoring parameters have been carried out in accordance with the monitoring plan. All parameters were monitored and determined as per the monitoring plan which is listed below. Values of the monitoring parameters have been checked against the data sources and confirmed consistent.

Parameter	Description	Value	Information flow	Data source
$MT_{PJ,s,i,y}$ (Same as $MM_{i,y}$)	Methane from source s captured and destroyed by use i in the project activity in year y	5,259.621 tCH ₄	Calculated by multiplying methane volume (measured by flow meters and gas analyzers) and methane density $\rho_{i,n}$ $\rho_{i,n}$ is calculated with the above equation: $\rho_{i,n} = \frac{P_n \times MM_i}{R_u \times T_n}$	Monitoring records for RTOs /40/, crosschecked against CMM transaction notes /38/ and found consistent.
$MM_{i,y}$	Methane measured sent for heat generation in year y		Mass flow meters are employed to measure the CMM volume in wet basis with incorporated temperature, and pressure sensors which return volume under normal conditions directly, while gas analyzers are employed to measure the methane concentration. The parameters are monitored continuously. Pure methane volume is converted to normal conditions and recorded in the computer system every day which is gathered monthly.	
GWP_{CH_4}	Global warming potential of methane	28 tCO ₂ e/ tCH ₄	Use IPCC default	IPCC Fifth Assessment Report (AR5) /48/
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project electricity consumption source j in year y	2,816 MWh	Measured with electricity meter continuously, and recorded monthly.	Monitoring records for electricity consumption /41/ Crosschecked against Electricity transaction notes and found consistent /44/.

EFF _{i,y} (Eff _{ox,y})	Efficiency of methane destruction in use i	95.87% as monitored, 90% applied in the calculation for conservativeness	Calculated with equation: $\text{Eff}_{\text{ox},y} = 1 - \frac{\text{PC}_{\text{CH}_4,\text{exhaust},y} \times \text{D}_{\text{CH}_4,\text{correxh},y}}{\text{PC}_{\text{CH}_4,\text{VAM},y} \times \text{D}_{\text{CH}_4,\text{corrinflow},y}}$	Monthly calculated with the below parameters: PC_{CH₄,exhaust,y} PC_{CH₄,VAM,y} D_{CH₄, exhaust,y} D_{CH₄, inflow,y} Calculated result of the Eff_{ox,y} is comparable to the technical specification of the RTOs (rated efficiency ≥ 95%), while default value 90% is applied in emission reductions calculation, which is conservative. There are four sets of gas analyzers for the monitoring of the concentration and density of the gas entering the RTOs, but the monthly arithmetic average of PC_{CH₄,VAM,y} and D_{CH₄,corrinflow,y} are calculated for monitoring results. However, considering the calculated results of the oxidation efficiency are higher than 95% and the technical specification indicates at least 95%, while the default value 90% from the methodology is applied in the ER calculation, the audit team considers that this is conservative and acceptable.
PC _{CH₄,exhaust,y}	Annual average concentration of methane in the flameless oxidation exiting the flameless oxidation unit in year y	0.056%	This parameter is measured by a portable gas analyzer for the measuring of the exhaust of the RTOs and recorded every day and gathered at least once a week.	Monitoring records for RTOs /40/ Calculated result of the Eff_{ox,y} is comparable to the technical specification of the RTOs (rated efficiency ≥ 95%), while default value 90% is applied in emission reductions calculation, which is conservative.
PC _{CH₄,VAM,y}	Annual average concentration of methane entering the flameless	1.31%	This parameter is measured by gas analyzer installed before the inlet of the RTOs and recorded every day and	

	oxidation unit in year y		gathered at least once a week.	
DCH ₄ , exhaust,y	Density of methane corrected for pressure and temperature (P _{exhaust} and T _{exhaust} respectively) in the exhaust gases.	0.02143 tCH ₄ /m ³	The parameter is calculated with equation: $\rho_{i,n} = \frac{P_n \times MM_i}{R_u \times T_n}$ P (pressure) and T (temperature) are respectively measured by thermometer and pressure gauge installed at exhaust of the RTOs which are recorded every day and gathered at least once a month.	
DCH ₄ , inflow,y	Density of methane entering the flameless oxidation system corrected for pressure and temperature (P _{inflow} and T _{inflow} respectively).	0.13744 tCH ₄ /m ³	The parameter is calculated with equation: $\rho_{i,n} = \frac{P_n \times MM_i}{R_u \times T_n}$ P (pressure) and T (temperature) are respectively measured by thermometer and pressure gauge incorporated in the gas analyzer installed before the inlet of the RTOs which are recorded every day and gathered at least once a week.	
FC _{i,j,y}	Quantity of fuel type i combusted in process j during the year	2.4t	The quantity is measured by the level gauge. Data was recorded when the diesel is used.	Monitoring records for diesel consumption /42/, crosschecked against the purchase record /43/ and the conservative (higher) value is used to calculate the emission reductions. Diesel is used during the start up process of the RTOs, the records for diesel consumption is corresponding to the operation records of the RTOs.

NCV _{i,y}	Weighted average net calorific value of fuel type i in year y	43.3 GJ/t	Default from IPCC is applied.	2019 Refinement to IPCC 2006 /47/
EF _{CO2,i,y}	Weighted average CO ₂ emission factor of fuel type i in year y	74800 tCO ₂ /GJ	Default from IPCC is applied.	2019 Refinement to IPCC 2006 /47/

[Calibration information]

Accuracy and calibration frequency of the monitoring equipments have been checked and confirmed in accordance with the requirements of the monitoring plan. Calibration records have been checked by the audit team, and the following calibration information is confirmed:

Equipment	Monitoring parameter	Installed location	S/N	Accuracy	Calibration frequency	Date of calibrate	Validity
Flow meter (F1)	Volume flow for $MT_{PJ,s,i,y}$ $MM_{i,y}$	On the CMM supplying pipeline	289000138	$\pm 1.5\%$	Once a year	09-October-2021 29-April-2022 12-April-2023	08-October-2022 28-April-2023 11-April-2024
Flow meter (F2)		On the CMM supplying pipeline	289000139	$\pm 1.5\%$	Once a year	09-October-2021 29-April-2022 13-April-2023	08-October-2022 28-April-2023 12-April-2024
Flow meter (F3)		On the CMM supplying pipeline	289000140	$\pm 1.5\%$	Once a year	09-October-2021 29-April-2022 13-April-2023	08-October-2022 28-April-2023 12-April-2024
Gas analyzer (C6)	Concentration for $MT_{PJ,s,i,y}$ $MM_{i,y}$	On the CMM supplying pipeline	2115096	$\pm 1.5\%$	Once a year	09-October-2021 30-April-2022 12-April-2023	08-October-2022 29-April-2023 11-April-2024
Gas analyzer (C7)		On the CMM supplying pipeline	2115285	$\pm 1.5\%$	Once a year	09-October-2021 30-April-2022 12-April-2023	08-October-2022 29-April-2023 11-April-2024
Gas analyzer (C8)		On the CMM supplying pipeline	2115281	$\pm 1.5\%$	Once a year	09-October-2021 30-April-2022 12-April-2023	08-October-2022 29-April-2023 11-April-2024
Electricity meter (main meter E1)	$EC_{PJ,j,y}$	Between the coalmine and PO, the electricity is from the grid ultimately	0801756	0.5S	Once a year	18-October-2021 28-April-2022 10-April-2023	17-October-2022 27-April-2023 09-April-2024
Electricity meter (back-up meter E2)			2009513972 000066	0.2S	Once a year	18-October-2021 28-April-2022 10-April-2023	17-October-2022 27-April-2023 09-April-2024
Portable gas analyzer (C5)	$PC_{CH4,exhaust,y}$	At the exhaust of the whole system	SS238158	1%	Once a year	24- August -2021 19- August -2022	23- August -2022 18-August-2023

Gas analyzer (C1)	PC _{CH4,VAM,y} D _{CH4, inflow,y}	On the inlet of the RTOs	AAM621402 60	± 5%	Once a year	29-April-2021 23- August -2022	28-April-2022 22- April -2023
Gas analyzer (C2)	Concentration, pressure and template sensors are incorporated in the analyzers to monitor concentration, pressure and template of the gas	On the inlet of the RTOs	AAM621500 04	± 5%	Once a year	29-April-2021 23- August -2022	28-April-2022 22- April -2023
Gas analyzer (C3)		On the inlet of the RTOs	AAM621500 05	± 5%	Once a year	29-April-2021 23- August -2022	28-April-2022 22- April -2023
Gas analyzer (C4)		On the inlet of the RTOs	AAM621500 44	± 5%	Once a year	29-April-2021 23- August -2022	28-April-2022 22- April -2023
Temperature meter (T5)	D _{CH4, exhaust,y}	At the exhaust of the whole system	205149	1%	Once a year	24-August-2021 19-August-2022	23-August-2022 18-August-2023
Pressure meter (P5)	D _{CH4, exhaust,y}	At the exhaust of the whole system	JY06360	Level 1	Once a year	24-August-2021 19-August-2022	23-August-2022 18-August-2023
Level gauge	FC _{i,j,y}	Diesel tank	21-12	± 5%	Once a year	24-August-2021 19-August-2022	23-August-2022 18-August-2023

[Calculation of emission reductions]

The verification team has performed the following activities to assess the data and calculations of GHG emission reductions achieved by the Project as per the methodology:

- Through desk review and on-site inspection o, to verify that a complete set of data for the specified monitoring period is available;
- Information provided in the joint PD & MR has been crosschecked with other sources;
- Review the calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the joint PD & MR, and the methodology;
- Review emission factors, IPCC default values, GWPs and other reference values as per the joint PD & MR.

Therefore, the audit team is able to conclude that the emission reductions provided in the project's GHG statement have been quantified correctly in accordance with the monitoring plan and applied methodology. There is not manual transposition error between data sets have occurred. Calculation result of the emission reductions during this monitoring period 14/12/2021 to 31/07/2023 is confirmed:

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)
2021 (14-December-2021~31-December-2021)	11,705	2,455	0	9,250
2022	90,935	19,749	0	71,186
2023 (01-January-2023~31-July-2023)	44,628	9,945	0	34,683
Total	147,268	32,141	0	115,119

[Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates ex-ante]

Actual emission reductions are 53.26% lower than estimation, which resulted from that the amount of destroyed CH₄ during this monitoring period is lower than the estimation, which is reasonable.

[Conclusion]

In general, the audit team confirms the following:

- All assumptions and data used by the project participants are listed in the Joint PD & MR and/or supporting documents, including their references and sources;
- All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the Joint PD & MR;
- All values used in Joint PD & MR are considered reasonable in the context of the project activity;
- The methodology has been applied correctly to calculate project emissions, baseline emissions, and leakage emissions;
- All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in Joint PD & MR.
- CCSC confirms that the methodology has been applied correctly to calculate baseline emissions, project emissions, leakage and ex-ante net GHG emission reductions and removals.

4.3 Quality of Evidence to Determine Reductions and Removals

As a result of verification of the ER calculation process, the audit team confirmed that all the parameters required for the determination of the emission reductions have been included in the Joint PD & MR and ER Calculation Spreadsheet of this monitoring period are consistent with the applied methodology and the monitoring plan contained in the Joint PD & MR. The parameters are complete in this monitoring period.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the ER Calculation Spreadsheet of this monitoring period and Joint PD & MR. the verification process for the same has been clearly described above in section 4 of the report.

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

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

5 VALIDATION AND VERIFICATION OPINION

5.1 Validation and Verification Summary

China Classification Society Certification Co. Ltd. (hereafter referred to as “CCSC”) has been commissioned by Climate Bridge (Shanghai) Ltd. to perform the validation and verification of the project activity “Anhui Zhujixi CMM Utilization Project” (hereafter referred to as “the project”) on the basis of requirements of Verified Carbon Standard (VCS) Version 4.5, VCS Validation and Verification Manual, and the approved Clean Development Mechanism (CDM) methodology ACM0008 version 08.0, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation and verification scope is defined as an independent and objective review of the Joint Project Description and Monitoring Report (joint PD & MR), the project’s baseline study and monitoring plan, the emission reduction calculation spreadsheet and other relevant documents refer to VCS and CDM requirements. The GHG statement is the responsibility of the project proponent. The joint validation and verification report are summarizing the findings of the validation and verification.

5.2 Validation Conclusion

The validation is an independent 3rd party assessment of the project’s baseline, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the crediting period using the applicable VCS requirements. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated Verified Carbon Units (VCUs). Verification is the periodic independent review and ex-post determination by a VVB of the monitored reductions in GHG emissions during defined verification period. In carrying out its verification work, the VVB shall ensure that the project complies the applicable CDM and VCS requirements.

The project is eligible under non-AFOLU project. The validation criteria followed the guidance documents provided by VCS and the selected CDM methodology and tool includes:

- VCS Standard, Version 4.5
- VCS Program Guide, Version 4.4
- Methodology ACM0008 version 08.0: Abatement of methane from coal mines and related CDM tools.

The project is located in Hetuan Town, Panji District, Huainan City, Anhui Province, China. The purpose of the project is to utilize the extracted CMM with low concentration methane

concentration to generate hot air to dry the coal slime. The project installed 4 sets of regenerative thermal oxidizers (RTOs), with unit capacity around 30000Nm³/h, able to destroy 10.368 million Nm³ of methane annually. The annual emission reductions in the crediting period is expected 151,088 tCO₂e.

Crediting Period: From 14/12/2021 to 13/12/2031

Validated estimated GHG emission reductions and carbon dioxide removals for the project crediting period:

Vintage period	Estimated baseline emissions (tCO ₂ e)	Estimated project emissions (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated reduction VCU (tCO ₂ e)	Estimated removal VCU (tCO ₂ e)	Estimated total VCUs (tCO ₂ e)
14- December - 2021 to 31- December- 2021	10,246	2,795	0	7,451	0	7,451
01- January -2022 to 31- December- 2022	207,758	56,670	0	151,088	0	151,088
01- January -2023 to 31- December- 2023	207,758	56,670	0	151,088	0	151,088
01- January -2024 to 31- December- 2024	207,758	56,670	0	151,088	0	151,088
01- January -2025 to 31- December- 2025	207,758	56,670	0	151,088	0	151,088
01- January -2026 to 31- December- 2026	207,758	56,670	0	151,088	0	151,088
01- January -2027 to 31- December- 2027	207,758	56,670	0	151,088	0	151,088

01- January -2028 to 31- December- 2028	207,758	56,670	0	151,088	0	151,088
01- January -2029 to 31- December- 2029	207,758	56,670	0	151,088	0	151,088
01- January -2030 to 31- December- 2030	207,758	56,670	0	151,088	0	151,088
01- January -2031 to 13- December- 2031	197,512	53,869	0	143,637	0	143,637
Total	2,077,580	566,700	0	1,510,880	0	1,510,880

5.3 Verification conclusion

CCSC has been commissioned by Climate Bridge (Shanghai) Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Anhui Zhujixi CMM Utilization Project” (VCS project ID: 4559).

The management of project proponent, Huainan Huamei Pushi New Energy Technology Co., Ltd, is responsible for the conformity with the verification criteria for projects and their GHG emission reductions or removals set out in VCS Version 4.5, including any qualifications or modifications, and the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the VCS joint PD & MR related to the crediting period covering this monitoring period.

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

- the project is implemented and operated as per the VCS joint PD & MR related to the crediting period covering this monitoring period;
- the monitoring plan in the VCS joint PD & MR related to the crediting period covering this monitoring period is as per the applied methodology;
- the monitoring activities comply with the monitoring plan in the VCS joint PD & MR related to

the crediting period covering this monitoring period;

- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS standard version 4.5 and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for “Anhui Zhujixi CMM Utilization Project” during the monitoring period 14/12/2021 to 31/07/2023 as reported in Monitoring Report, prepared on the basis of the project’s Monitoring Plan are fairly stated. Based on the information we have seen and evaluated, we confirm the following statement:

Verification period: From 14/12/2021 to 31/07/2023

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

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)	Removal VCU (tCO ₂ e)	Total VCUs (tCO ₂ e)
2021 (14-December-2021~31-December-2021)	11,705	2,455	0	9,250	0	9,250
2022	90,935	19,749	0	71,186	0	71,186
2023 (01-January-2023~31-July-2023)	44,628	9,945	0	34,683	0	34,683
Total	147,268	32,141	0	115,119	0	115,119

5.4 Ex-ante vs Ex-post ERR Comparison

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
2021 (14-December-2021~31-December-2021)	7,451	9,244	24.06%	The amount of destroyed CH ₄ during this monitoring period is higher than the estimation, which is reasonable.

2022	151,088	71,186	-52.88%	The amount of destroyed CH ₄ during this monitoring period is lower than the estimation, which is reasonable.
2023 (01-January-2023~31-July-2023)	87,755	34,683	-60.48%	The amount of destroyed CH ₄ during this monitoring period is lower than the estimation, which is reasonable.
Total	246,294	115,119	-53.26%	The amount of destroyed CH ₄ during this monitoring period is lower than the estimation, which is reasonable.

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

Section	Information	Justification	Assessment method conclusion
Not applicable	Not applicable	Not applicable	Not applicable

APPENDIX 2: ABBREVIATIONS

Abbreviations	Full texts
AFOLU	Agriculture, Forestry and Other Land Use
CAR	Corrective Action Request
CCER	China Certified Emission Reductions
CCSC	China Classification Society Certification Co. Ltd.
CDM	Clean Development Mechanism
CL	Clarification Request
CMM	Coal mine methane
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DOE	Designated Operation Entity
DNA	Designated National Authority
DRC	Development and Reform Committee
EB	Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG(s)	Greenhouse gas(es)
GS	Golden Standard
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Return Rate
MEE	Ministry of Ecology and Environment of the People's Republic of China
MP	Monitoring Plan

PD	Project Description
PDD	Project Design Document
PP	Project Participant
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Voluntary Carbon Unit
VVB	Validation / Verification Body

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

CCS 认证公司

Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 30/06/2023

Mr. Wang Guan

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

- CDM validator for Technical Area(s): TA1.2/TA13.1/TA14.1
- CDM verifier for Technical Area(s): TA1.2/TA13.1/TA14.1
- ☐ Technical expert for Technical Area(s): _____



Tian Wei
CCSC General Manager

CCS 认证公司

Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 30/06/2023

Mr. Tan Wenbin

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

- CDM validator for Technical Area(s): TA1.1/TA1.2/TA3.1/TA5.2/TA8.1/TA10.1
- CDM verifier for Technical Area(s): TA1.1/TA1.2/TA3.1/TA5.2/TA8.1/TA10.1
- ☐ Technical expert for Technical Area(s): _____



Tian Wei
CCSC General Manager



Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 30/06/2023

Mr. Li Xingtong

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

- CDM validator for Technical Area(s): TA1.1/TA1.2/TA3.1/TA9.2/TA13.1
- CDM verifier for Technical Area(s): TA1.1/TA1.2/TA3.1/TA9.2/TA13.1
- ☐ Technical expert for Technical Area(s): _____



Tian Wei
CCSC General Manager



Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 04/01/2023

Mr. Zhao Xin

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

- CDM validator for Technical Area(s): TA8.1/TA10.1
- CDM verifier for Technical Area(s): TA8.1/TA10.1
- ☐ Technical expert for Technical Area(s): _____



Tian Wei
CCSC General Manager



Appendix 9

CERTIFICATE OF COMPETENCE

Date of issue: 24/04/2023

Mr. Tang Zhiang

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

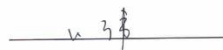
■ CDM validator for Technical Area(s):

TA1.1/TA1.2/TA.2.1/TA3.1/TA.4.1/TA9.2/TA13.1

■ CDM verifier for Technical Area(s):

TA1.1/TA1.2/TA.2.1/TA3.1/TA.4.1/TA9.2/TA13.1

☐ Technical expert for Technical Area(s): _____


Tian Wei
CCSC General Manager

APPENDIX 4: DOCUMENTS REVISED OR REFERENCED

No.	Author	Title	References to the document	Provider
/1/	Climate Bridge (Shanghai) Ltd.	VCS-PD & MR sent to CCSC for validation	Version 1.0 30/06/2023	PP
/2/	Climate Bridge (Shanghai) Ltd.	Final VCS-PD & MR to request registration	Version 3.1 31/07/2024	PP
/3/	Climate Bridge (Shanghai) Ltd.	Revised VCS-PD & MR to request registration	Version 3.2 10/10/2024	PP
/4/	Climate Bridge (Shanghai) Ltd.	Emission Reductions Calculation Spreadsheet	Version 3.1 31/07/2024	PP
/5/	Climate Bridge (Shanghai) Ltd.	IRR Calculation Spreadsheet	Version 3.1 31/07/2024	PP
/6/	Climate Bridge (Shanghai) Ltd.	Revised IRR Calculation Spreadsheet	Version 3.2 10/10/2024	PP
/7/	CDM-EB	CDM Methodology ACM0008 version 08.0	https://cdm.unfccc.int/methodologies/PAmethodologies/approved	Others
/8/	CDM-EB	CDM TOOL02 “Combined tool to identify the baseline scenario and demonstrate additionality” (version 07.0)	https://cdm.unfccc.int/Reference/tools/index.html	Others
/9/	CDM-EB	CDM TOOL03 “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion” (version 03.0)	https://cdm.unfccc.int/Reference/tools/index.html	Others
/10/	CDM-EB	CDM TOOL05 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 03.0)	https://cdm.unfccc.int/Reference/tools/index.html	Others
/11/	CDM-EB	CDM TOOL08 “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (version 3.0)	https://cdm.unfccc.int/Reference/tools/index.html	Others

/12/	CDM-EB	CDM TOOL24 “Common practice” (version 3.1)	https://cdm.unfccc.int/Reference/tools/index.html	Others
/13/	CDM-EB	CDM TOOL27 “Investment analysis” (version 12)	https://cdm.unfccc.int/Reference/tools/index.html	Others
/14/	Verra	VCS standard	Version 4.5 Dated 29/08/2023	Others
/15/	Government of Panji District, Huainan City	Business license of the project owner	/	PP
/16/	Design institute, Xi'an Xujin Renewable Resources Co., Ltd.	Feasibility Study Report (FSR)	Dated 12/2020	PP
/17/	DRC of Panji District, Huainan City	Approval of the Feasibility Study Report	Dated 29/12/2020	PP
/18/	Design institute, Anhui Sike Environment System Engineering Technology Co., Ltd.	Environmental Impact Assessment (EIA)	04/2021	PP
/19/	Environment Protection Bureau of Huainan City	Approval of the Environmental Impact Assessment	25/05/2021	PP
/20/	Third party, Huainan Kunze Environment Protection Consulting Service Co., Ltd.	Monitoring report of environment protection acceptance of construction project completion	01/2022	PP
/21/	Ministry of Environment, People's Republic of China	Measures for Public Participation in Environmental Impact Assessment https://www.gov.cn/gongbao/content/2018/content_5338231.htm	16/07/2018	Others
/22/	Zhujixi coal mine	Design and safety technology of the CMM extraction system of Zhujixi coal mine	/	PP
/23/	NDRC	Economic Assessment Method and Parameters for Construction Project (version 3) (2006, jointly issued by NDRC and Ministry of Construction) (Fagaitouzi[2006]No.1325)	2006	Others

/24/	State Council of China of the People's Republic of China	Provisional Regulations of the People's Republic of China on Value Added Tax (Document State Council No. 538)	10/11/2008	Others
/25/	Ministry of Finance and the State Administration of Taxation	Notice about Implementation of VAT Reform in the Whole Country (Cai Shui [2008]170)	Issued on 19/12/2008, which was effected on 01/01/2009	Others
/26/	State Council of China of the People's Republic of China	Decision of the State Council on Amending the Interim Provisions on the Collection of Educational Surcharges (Order of the State Council [2005] No.448)	issued on 20/08/2005 and effective from 01/10/2005	Others
/27/	State Council of China of the People's Republic of China	Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax (Guo Fa [1985] No.19)	1985	Others
/28/	State Council of China of the People's Republic of China	Enterprise Income Tax Law Implementation Regulations of People's Republic of China (The People's Republic of China State Council Order No. 512)	01/01/2008	Others
/29/	State Taxation Administration, China of the People's Republic of China	Notice on Determination of Residual Rate for Enterprise Fixed Asset, GuoShui Han [2005] No. 883	14/09/2005	Others
/30/	Anhui Statistic Bureau	Anhui Statistical Yearbook 2022	2022	Others
/31/	Contractor	Construction contract	01/06/2021	PP
/32/	Manufacturer	Main equipment purchase contract	30/05/2021	PP
/33/	PP	Technical specifications of RTOs	/	PP
/34/	/	https://baike.baidu.com/item/%E5%B7%A5%E7%A8%8B%E4%BF%9D%E9%99%A9%E8%B4%B9/5947681 https://china.findlaw.cn/fagui/p_1/190448.html http://www.trzj.net/Staticpage/2020/6/16/573.html	/	PP
/35/	Ministry of Finance	Accounting Standard for	15/02/2006	Others

		Business Enterprises - Basic Standard		
/36/	PP	Operation records of slime drying	2021-2023	PP
/37/	PP and Zhujixi coal mine	CMM supply and slime drying cooperation agreement	12/2020	PP
/38/	Zhujixi coal mine	CMM transaction notes	2021-2023	PP
/39/	Zhujixi coal mine	Monthly records of CMM extraction	2021-2023	PP
/40/	PP	Monitoring records for RTOs	2021-2023	PP
/41/	PP	Monitoring records for electricity consumption	2021-2023	PP
/42/	PP	Monitoring records for diesel consumption	2021-2023	PP
/43/	PP	Diesel purchase record	2021-2023	PP
/44/	Grid company	Electricity transaction notes	2021-2023	PP
/45/	Calibrator	Calibration records	/	PP
/46/	PP	Monitoring records for diesel consumption	2021-2023	PP
/47/	IPCC	IPCC 2006 report	/	Others
/48/	IPCC	IPCC Fifth Assessment Report (AR5)	/	Others
/49/	Market Supervision and Administration Bureau of Guangdong Province	Qualification certificate of calibrator Shenzhen Measurement and Quality Testing Institute	No. (Yue)Faji(2019)01002 Validity: 30/07/2019-29/07/2024	PP
/50/	State Administration for Market Regulation of China	Qualification certificate of calibrator Huainan Measurement Testing Institute	No. (Guo)Faji(Wan2018)006 Validity: 21/05/2023 till	PP
/51/	PP	Monitoring and QC manual	06/2021	PP
/52/	PP	Training records	/	PP
/53/	PP	Stakeholder consulting report	06/2021	PP
/54/	PP	Employee list	/	PP

/55/	PP	Labor contract	/	PP
/56/	PP	Questionnaires for stakeholders	2021-2023	PP
/57/	PP	Declaration on non-double counting for GHG program	01/06/2023	PP
/58/	Verra	VCS Project Description & Monitoring Report template	Version 4.3 Dated 29/08/2023	Others
/59/	Ministry of Emergency Management of the People's Republic of China	National Coalmine Safety Regulation (2016)	https://www.mem.gov.cn/gk/gwgg/agwzfl/zjl_01/201603/W020190705622814170708.pdf	Others
/60/	State Administration of Work Safety	Decision on the Revision of Certain Aspects of the <Coalmine Safety Regulation>	https://www.gov.cn/gzdt/2010-03/02/content_1545565.htm	Others
/61/	/	https://www.thepaper.cn/newsDetail_forward_22124801	/	Others
/62/	Ministry of Construction, People's Republic of China	National standard: Urban Gas Specification" (GB50028-93)	2002	Others
/63/	National Development and Reform Commission of China	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	Others
/64/	Ministry of Environmental Protection of China	GB 21522 Emission standard of coalbed methane/coal mine gas (on trial)	https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqgdwyrwrfbz/200804/t20080414_121137.htm	Others
/65/	State council of China	Opinions of the General Office of the State Council on Further Accelerating the Extraction and Utilization of Coalbed Methane (Coal mine Gas)	https://www.gov.cn/zhengce/content/2013-09/18/content_2540.htm	Others
/66/	National Energy Administration of China	Renewable Energy Law and Regulations	https://www.nea.gov.cn/2017-11/02/c_136722869.htm	Others

/67/	National Development and Reform Commission of China	Guidance Catalogue for the Development of Renewable Energy Industry	https://www.ndrc.gov.cn/xxgk/zcfb/tz/200602/t20060206_965900.html?code=&state=123	Others
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APPENDIX 5: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Draft report clarifications and corrective action requests by audit team	Summary of project participant response	Audit team conclusion
CL-1 The VCS joint PD & MR template version 4.3 shall be applied.	PD & MR version 2,0 (after the on-site validation and verification) is revised using VCS Joint Project Description and Monitoring Report Template v4.3.	VCS Joint Project Description and Monitoring Report Template v4.3, which is the latest template. This CL is closed.
CL-2 The concentration of the extracted CMM from the Zhujixi coal mine transported to the project and the concentration of the gas at the inlet of the RTOs shall be described in the description of the joint PD & MR, as well as the gas dilution system.	The concentration of CMM extracted from the mine which is utilized by the project is below 8% and around 8%. After the gas dilution system, the methane gas concentration is diluted to below 1.5% for flameless oxidation. Relative description is added into the revised joint PD & MR.	Relative description is added into the revised joint PD & MR. This CL is closed.
CL-3 Relevant dates, including construction and commissioning/operation start dates, shall be included in the project description.	The construction date and operation date is added the joint PD & MR v2.0	The added construction date and operation date are confirmed. This CL is closed.
CL-4 Total days in the table of audit history is incorrect.	Has been corrected.	Correction is confirmed. This CL is closed.
CL-5 It is to be clarified whether the project belongs to sectoral scope 7.	Has been corrected.	Correction is confirmed. This CL is closed.
CL-6 As per the methodology and Tool02, "One of these alternative(s) shall be the CDM project activity not being registered as a CDM project." Therefore which alternative(s) is the project	Option A5 Possible combinations of options A1 to A4 with the relative shares of gas specified and B3 Use of methane for hot air (thermal energy) production are the options that the project not	joint PD & MR has been checked and the alternative(s) which is the project not being registered as a GHG emission reduction project has been included in the Step 1 of the section 3.4

not being registered as a GHG emission reduction project shall be included in the Step 1 of the section 3.4 Baseline scenario of the joint PD & MR.	implemented as a VCS project. Detailed demonstration has been added to Step 1 of section 3.4 of the joint PD & MR.	Baseline scenario of the joint PD & MR. This CL is closed.
CL-7 The result of determination of the baseline scenario shall be provided in the section of 3.4 Baseline scenario of the joint PD & MR.	Scenario 1 (A5+B1): This is the baseline scenario (Business As Usual scenario) and faces no barriers. Relevant description is added to section 3.4.	The joint PD & MR has been checked and the result of determination of the baseline scenario has been provided in the section of 3.4 Baseline scenario of the joint PD & MR. This CL is closed.
CL-8 Evidence for the source of crosscheck of the parameters in the financial analysis shall be provided.	Evidence for the source of crosscheck of the parameters in the financial analysis are provided.	The joint PD & MR has been checked and the evidence for the source of crosscheck of the parameters in the financial analysis were provided. This CL is closed.
CL-9 It has to be clarified whether there is any financial subsidies from the government and/or tax exemption.	The project owner did not apply for, neither receive any subsidies or tax exemptions from the government. This can be confirmed by the contract between the coal mine legal developer and the project owner.	It has been confirmed during onsite interview against the PO and document review /37/. This CL is closed.
CL-10 As per the joint PD & MR template, for the data and parameters monitored: Identify equipment used to monitor the data/parameter including type, accuracy class, and serial number of equipment, as appropriate. This information shall be included in the section 6.2 of joint PD & MR.	Monitoring equipment's information like type, accuracy class, and serial number is added to joint PD & MR v2.0.	The revised joint PD & MR has been checked and required information was included in joint PD & MR. This CL is closed.
CL-11 Measurement frequency of several monitoring parameters is "once a week", such as methane concentration, Eff _{ox,y} . It is	It is a typo. The description should be "values are recorded every day and gathered at least once a week." The reason is that the	Measuring frequency is confirmed by monitoring records /39//40/. This CL is closed.

required to be clarified how the PP ensure the data quality and how the QA&QC procedures are followed.	workers implements job rotation system. The workers are different.	
CAR-1 The (summary) description of the project in the section 1.1 and 1.11 of the joint PD & MR is incorrect, since actually not all the CMM extracted from the Zhujixi coal mine is utilized by the project, and part of extracted CMM is utilized by the CMM generation plant near the project.	There are totally six CMM extracting points of the pumping system installed at Zhujixi coalmine. Each of the extracting point is equipped with an independent extracting machine and an independent pipeline, and the concentrations of the extracted CMM are different among the six extracting points. Three out of the six extracting machines supply CMM with a concentration below 8% and around 8% for the project. The other three extract CMM with a concentration higher than 10%, which are used by the electricity generation station out of the project boundary. Only the three extracting points which transport CMM with a concentration below 8% and around 8% are involved in the project boundary. The CMM concentration is diluted to proper concentration by the gas dilution system of the RTOs, ready for flameless oxidation.	The revised joint PD & MR has been checked and relevant information was corrected in joint PD & MR, which is in accordance with documented evidence /17//22//27/, and confirmed during onsite interview against the PO. This CAR is closed.
CAR-2 The process of stakeholder identification shall be included in the section 2 of the joint PD & MR.	Revised in the revised VCS Joint Project Description and Monitoring Report.	The revised joint PD & MR has been checked and relevant information was included. This CAR is closed.
CAR-3 8% of the investigated stakeholders before the project implementation deem that there would be negative effect on economy. However, there are no explanation or means of mitigation included in the joint PD &	8% of the respondents think that the project does no good to the local economic environment. The main reason is that they are afraid of coal price will increase. The project owner answers, the coal slime drying contributes to increase the amount of qualified coal.	The revised joint PD & MR has been checked and relevant information was included, which has been confirmed during onsite interview against local stakeholders. This CAR is closed.

MR.	So the project will not impact the coal price. The respondents felt satisfying to the answer.	
CAR-4 The elimination of the scenario of utilization of methane for electricity generation (B3) is invalid, especially considering there is a CMM generation plant utilize a part of CMM generated from the same coal mine.	There are totally six CMM extracting points of the pumping system installed at Zhujixi coalmine. Each of the extracting point is equipped with an independent extracting machine and an independent pipeline, and the concentrations of the extracted CMM are different among the six extracting points. Three out of the six extracting machines supply CMM with a concentration below 8% and around 8% for the project. The other three extract CMM with a concentration higher than 10%, which are used by the electricity generation station out of the project boundary. Only the three extracting points which transport CMM with a concentration below 8% and around 8% are involved in the project boundary. From the current technical application situation, extracted gas with a concentration of 8%-30% can be directly used as an internal combustion engine to generate electricity. The extracted lower concentration CMM with a concentration below 8% which is to be used in the project scenario are basically all directly discharged to the air in the absence of the implementation of the project, since its concentration is lower than the required concentration by the generation plant. When methane concentration cannot satisfy the requirement of generators, operating the generators	Revised joint PD & MR has been checked and the revised elimination of the scenario of utilization of methane for electricity generation (B3) is valid, which is confirmed by documented review /17//22//27/, and onsite interview against the PO. This CAR is closed.

	would damage the machines and bring extra repairing expenses. So, electricity generation is not a possible option.	
CAR-5 It has to be clarified how the investment benchmark in the PD version 1.0 listed on the VCS pipeline is selected as per the Tool27.	Physical processing of coal products belongs to coal industry, of which the benchmark IRR is 12% (project IRR, before tax) according to Fagaitouzi[2006]No.1325 published by National Development and Reform Commission. If the project has a project IRR less than the benchmark of 12% (before tax), then the project cannot be considered as financially attractive.	Revised joint PD & MR has been checked and the investment benchmark in the joint PD & MR is appropriate. The source of benchmark was assessed by the audit team and the selected before tax project IRR and selected benchmark were found to be appropriate and in-line with the applied tools. As the CMM utilization belongs to the gas production and utilization industry, thus the sectoral benchmark before tax project IRR for gas production and utilization industrial projects is applied. According to “Economic Assessment Method and Parameters for Construction Project” (version 3) (2006, jointly issued by NDRC and Ministry of Construction) (Fagaitouzi[2006]No.1325), the before tax project IRR benchmark is 12%. The audit team confirms that this benchmark was determined by the national DRC in China, and represents a government/official approved benchmark. Besides, after this benchmark has been published, there has been no updated benchmark for this industry published in China. The audit team also checked the similar CDM project ref. 8196 “Shanxi LuAn Group Gaohe Mine VAM Destruction and Utilization Project” applying similar RTO technologies, same benchmark has been

		applied. Therefore, selected benchmark value was found to be appropriate for this project. This CAR is closed.
CAR-6 The Total static investment in the PD version 1.0 listed on the VCS pipeline is found different from the Feasibility Study Report.	This is a typo and has been corrected. IRR has been recalculated.	The data in the revised joint PD & MR and the IRR calculation spreadsheet was checked and confirmed in consistency with the Feasibility Study Report. IRR has been corrected with the corrected value of Total static investment. This CAR is closed.
CAR-7 As per the Tool03, if default values from IPCC are selected for the fossil fuel consumed by the project shall apply IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2019 Refinement to 2006 IPCC Guidelines on National GHG Inventories.	The upper limit value of relevant parameter is renewed. ER is renewed accordingly.	The revised PD & MR was checked and it has been confirmed that upper limit value of relevant parameter is renewed. ER is renewed accordingly. This CAR is closed.
CAR-8 The technical flow chart/diagram of monitoring system shall include the monitoring points of inlet and outlet of the RTOs.	The technical flow and project boundary is repainted. The monitoring plan is repainted, too. Monitoring equipment is presented properly.	The revised PD & MR was checked and it has been confirmed that technical flow chart/diagram of monitoring system includes the monitoring points of inlet and outlet of the RTOs. This CAR is closed.
CAR-9 The values of the parameter $Eff_{ox,y}$ is calculated incorrectly in the emission reductions calculation spreadsheet.	ER sheet is recalculated and corrected.	The emission reductions calculation spreadsheet has been checked and it has been confirmed that values of the parameter $Eff_{ox,y}$ is corrected. This CAR is closed.