



GUIZHOU XINTIAN CMM POWER GENERATION PROJECT



Project title	Guizhou Xintian CMM Power Generation Project
Project ID	2762
Monitoring period	01-March-2022 to 31-March-2025
Original date of issue	25-Nov-2025
Most recent date of issue	09-March-2026
Version	3.0
VCS Standard Version	4.7
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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Guizhou Xintian CMM Power Generation Project (hereafter referred to as “the Project”) refers to a power plant which utilizes low concentration coal mine methane (CMM) for power generation to supply electricity to the Xintian coal mine and to China Southern Power Grid (CSPG). The Project is located in Gantang Town, Qianxi County, Bijie City, Guizhou Province, People’s Republic of China, and developed by Yonggui Energy Development Co., Ltd. Xintian Branch (hereafter referred to as “the project proponent”).

Prior to the project initiation, the Xintian coal mine was equipped with CMM extraction facilities and all extracted CMM was directly vented into the atmosphere; the electricity consumed at coal mine was imported from China Southern Power Grid (CSPG), and the heat was provided by waste coal boilers.

The baseline scenario is the same as the conditions existing prior to the project initiation.

The purpose of the Project is to utilize the extracted low concentration CMM to produce electricity. No coal bed methane (CBM)¹ or ventilation air methane (VAM) utilization is involved. It was planned that CMM power generators with a total capacity of 17.6 MW (2 × 0.5 MW, 7 × 0.6 MW, 2 × 1.2 MW and 10 × 1 MW) would be installed for the Project; power generators of 7.6 MW (2 × 0.5 MW, 7 × 0.6 MW, 2 × 1.2 MW) were first installed during the first monitoring period(26-Sep-2020 to 28-Feb-2022).

In the second monitoring period (01-March-2022 to 31-March-2025), the project proponent upgraded the equipment based on CMM availability. Between 21-March-2022 and 31-March-2022, 14 units of 1 MW power generators (totaling 14 MW) were installed, and the previously installed 7.6 MW capacity generators (2 × 0.5 MW, 7 × 0.6 MW, 2 × 1.2 MW) were retired. The remaining 3.6 MW will be installed in a later stage if the CMM supply is sufficient. Corresponding upgrades to monitoring equipment and system optimization were also implemented. Consequently, a project description deviation has been applied to this monitoring period. However, this project description deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. It does not affect the accuracy of the baseline emission calculations either, as the installed electricity generation capacity during this monitoring period did not exceed the designed capacity. More detailed information please refer to section 3.1 and section 3.2.2 of this MR.

¹ As per the methodology ACM0008 (version 08.0), coal bed methane is a generic term for the methane-rich gas naturally occurring in coal seams typically comprising 80 per cent to 95 per cent methane. The coal mine methane involved in the Project comprises less than 30% methane.

The generated electricity is supplied to the Xintian coal mine through the electricity distribution network in the coal mine area; part of the electricity produced by the Project is exported to CSPG after the coal mine demand is fully met. In consequence, the project activity displaces an amount of electricity generated by fossil fuel-fired power plants of the CSPG. In addition, by recovering waste heat from the generators to provide hot water for free to the coal mine, the project activity also displaces an amount of thermal energy which was provided by waste coal fired boilers prior to the project initiation; however, to be conservative, emission reductions will not be claimed for such displacement.

The Project achieves emission reductions in two aspects: 1) it reduces methane emissions by capturing and destroying methane which would have been directly vented into the air in the baseline scenario; 2) it reduces CO₂ emissions by displacing an amount of electricity that would otherwise have been supplied by CSPG. During the 10-year project crediting period (from 26-September-2020 to 25-September-2030), the total GHG emission reductions are estimated to be 5,529,129 tCO₂e, with estimated emission reductions of 552,913 tCO₂e on average per year.

During this (the second) monitoring period from 01-March-2022 to 31-March-2025, the Project achieved 1,058,186 tCO₂e of emission reductions.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/Verification	26-Sep-2020 to 28-Feb-2022	VCS	TÜV NORD CERT GmbH	1.43 years(521 days)
Verification	01-Mar-2022 to 31-Mar-2025	VCS	CTI Certification Co., Ltd.	3.08 years(1127 days)

1.3 Sectoral Scope and Project Type

Sectoral scope ²	1: Energy industries (renewable/non-renewable sources); 8: Mining/mineral production³.
Project activity type	CMM Power Generation Project

² Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

³ According to CDM Standard: Applicability of sectoral scopes (CDM-EB88-A04-STAN), which came into effect on 11 March 2016, certain baseline and monitoring methodologies have to be reclassified with respect to the linked sectoral scopes; the mandatory sectoral scopes linked to ACM0008 are 1 and 8. Please refer to the link for detailed information: <https://cdm.unfccc.int/methodologies/methodologiesAccrv6/index.html>

1.4 Project Proponent

Organization name	Yonggui Energy Development Co., Ltd. Xintian Branch
Contact person	XU Minghui
Title	Project manager
Address	Gantang Town, Qianxi County, Bijie City, Guizhou Province, People's Republic of China
Telephone	+86 021-23019950
Email	3542346576@qq.com

1.5 Other Entities Involved in the Project

Organization name	Climate Bridge (Shanghai) Ltd.
Role in the project	Consultant
Contact person	GAO Zhiwen
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China 200120
Telephone	+86 021-62462036
Email	projects@climatebridge.com

1.6 Project Start Date

Project start date	26-September-2020
Justification	According to VCS standard, the project start date is the date on which activities that lead to the generation of GHG emission reductions or removals are implemented. For this project, the project start date is 26-September-2020 when the first CMM generators of the Project started operation.

1.7 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☒ Ten years, fixed
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	☐ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)
Start and end date of first or fixed crediting period	26-September-2020 to 25-September-2030

1.8 Project Location

The Project is located in Gantang Town, Qianxi County, Bijie City, Guizhou Province, People's Republic of China. Its geographical coordinates are E 106° 6' 0.28", N 27° 6' 22.20". Its locations are shown in **Figure 1.2**.

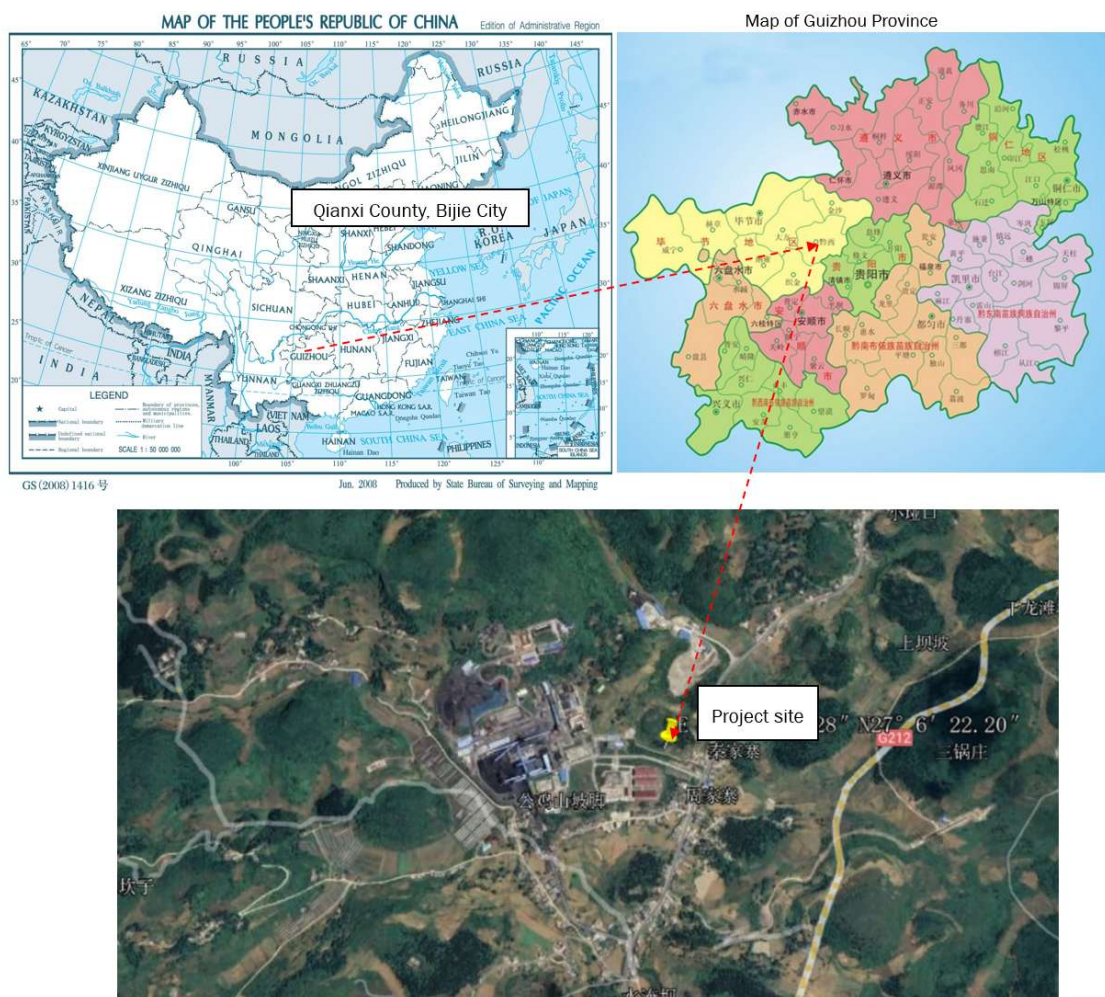


Figure 1.2 Location of the Project

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0008	ACM0008 “Abatement of methane from coal mines” ⁴	08.0
Tool	TOOL07	Tool to calculate the emission factor for an electricity system ⁵	07.0
Tool	TOOL05	Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation ⁶	03.0

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit?

☐ Yes ☒ No

⁴ <https://cdm.unfccc.int/methodologies/DB/YSD3FQ5WR3VPC9Q64CDTLXHLFVKKKU>

⁵ <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

⁶ <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-05-v3.0.pdf>

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system?

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.12 Sustainable Development Contributions

The Project utilizes coal mine methane (CMM) to generate power and produce heat. By destroying CMM that would have been vented into the atmosphere in the absence of the project activity, and by displacing part of the electricity that would have been supplied by the grid, the Project achieves significant GHG emission reductions. The Project provides long-term job opportunities to local people and contributes to the economic prosperity. In addition, the Project reduces CO₂ emissions per unit of value added.

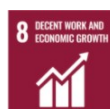
The Project contributes to achieving United Nations' Sustainable Development Goals (SDG) in the following aspects:



SDG 13: Achieving significant reductions in GHG as well as other air pollutants by destroying and utilizing methane. During each monitoring period, the GHG emission reductions will be calculated as per the methodology based on the monitored data.



SDG 9: Reducing CO₂ emissions per unit of value added. As the value added is difficult to measure and could have confidentially issues, another self-described indicator, CO₂ emissions per ton of coal produced, is used to quantify the contributions. During each monitoring period, the amount of coal produced will be collected so that this indicator could be calculated.



SDG 8: Creating long-term job opportunities and contributing to local economic prosperity. During each monitoring period, the pay rolls and the labors contracts will be collected to monitor and report this contribution.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	8.5	8.5.2 Unemployment rate, by sex, age and persons with disabilities Project Level indicator: The number of long-term jobs by the implementation of the project.	Implemented activities to increase	30 people (15 female and 15 males) have been employed by the project as long-term employee during this reporting period (01-March-2022 to 31-March-2025, both days included).	30 people have been employed by the project as long-term employees over the project lifetime.
2)	9.4	9.4.1 CO ₂ emission per unit of value added Project Level indicator: CO ₂ emission per metric tonne of coal produced	Implemented activities to decrease	During this monitoring period, coal mine has produced 3,513,359 t coal. As the project achieved 1,058,186tCO ₂ e emission reductions during this reporting period. The project decreased 0.30 ⁷ tCO ₂ e emission for each tonne of coal produced.	The project decreased cumulatively 0.35 ⁸ tCO ₂ e emissions per ton of coal produced for the 4,023,736 tons of coal over the project lifetime.

⁷ 1,058,186tCO₂e / 3,513,359 tonnes of coal = 0.30 tCO₂e per tonne of coal.

⁸ Xintian coal mine has produced 510,377 tonne of coal with a total emission reduction of 350,473 tCO₂e during the first monitoring period. Therefore, (1,058,186+350,473)/(3,513,359+510,377) = 0.35 tCO₂e per tonne of coal.

3)	13.0	13.0 Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	The project has prevented the release of 1,058,186 tonnes of carbon into the atmosphere during the monitoring period.	Prevented the release of 1,408,659 ⁹ tonnes of carbon into the atmosphere.
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⁹ Including 350,473 tCO₂e in the 1st MP, 1,058,186tCO₂e in the 2nd MP. From 26-September-2020 onwards, an accumulated GHG emission reduction of 1,408,659 tCO₂e have been achieved by the project.

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the monitoring report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	The stakeholder identification process for the project involved a step-by-step approach. Initially, the project proponent performed a project scope analysis. This included evaluating the geographic boundary, potential environmental impacts, and the communities served by the project. Following this, the project proponent engaged in a stakeholder mapping exercise, identifying individuals and organizations with a vested interest or potential influence over the project. Interviews and surveys were conducted with residents, businesses, and subject matter experts to gather various perspectives. The following people are considered as the stakeholders of this project during the implementation stage. • Personnel of Xintian coal mine. • Local residents around the project area. • Government officials.
Legal or customary tenure/access rights	Applicable legal frameworks and existing agreements govern land use and access rights. The project activities do not involve alterations to the existing legal or customary tenure/access rights of stakeholders, indigenous people(IPs), local communities (LCs), or customary rights holders, as the land is already designated for industrial purposes.
Stakeholder diversity and	The economic sources of the stakeholders mainly come

changes over time	from farming, migrant work, individual enterprises and working in enterprises and governments. The project employs some local residents and increases their income. The project has no other impact on economic diversity within stakeholder groups. The stakeholders involved in the project are all Han, no minority ethnic groups are involved, and there is no cultural difference among Han people, which has no impact on social and culture diversity within stakeholder groups. The interactions between the stakeholder groups are mainly collaboratively, involves project information sharing and joint decision-making. Workers in government departments come from different backgrounds and have different expertise and experience. Government authorities are responsible for regulating and approving the operation of the project, and different government authorities have different policies and regulations. In conclusion, the members of each group will adjust, but their groups do not change much in terms of society, economy, culture, etc. over time.
Expected changes in well-being	The Project provides long-term job opportunities to local people and contributes to the economic prosperity and clean electricity supply.
Location of stakeholders	Stakeholders in this project located at the project site and within 5 kilometers of it.
Location of resources	The project is in Xintian Coal Mine and no identified stakeholders own or have customary access to the land and resources occupied by the project.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	To collect the opinions of local stakeholders during the project operation period, the project proponent has set up an ongoing communication mechanism distributing questionnaires or communicating with stakeholders by
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	phone or other means.
Date(s) of stakeholder consultation	10-April-2022 01-May-2023 01-June-2024
Communication of monitored results	Communications with Local stakeholders are being carried out at periodic intervals, and stakeholders are informed one week in advance. The project proponent prepared 30 questionnaires for stakeholders each year, and all copies were collected with valid answers. Detailed information of the project was communicated to the local authority, who informed the neighborhood committee and the local residents, the comments and suggestions from residents were collected by the local authority meanwhile. Regarding environmental impact or safety issues, the relevant responsible personnel would be promptly notified for inspection and corrective action upon receiving the feedback, and an immediate report would be submitted to the company management. There were no negative comments received for the project in this monitoring period. 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.
Consultation records	No negative feedback was received in public announcement, and the local community expressed their approval for the project. A total of 90 questionnaires (30 questionnaires per year) were distributed to stakeholders, and all questionnaires have been recollected. All surveyed members of the public are aware of the operation of the project and believe that the operation of the project will be beneficial or basically have no impact on their lives, and all in favour of the operation of the project under the premise of taking environmental protection measures to ensure that the emission standards are met. All questionnaires of the stakeholder consultation were submitted to the company management department.
Stakeholder input	During the project operation, feedback from stakeholders

	through surveys regarding the project were collected and regularly reported to company management. Regarding environmental impact or safety issues, the relevant responsible personnel would be promptly notified for inspection and corrective action upon receiving the feedback, and an immediate report would be submitted to the company management. There were no negative comments received for the project in this monitoring period. 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.
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2.1.3 Free, Prior, and Informed Consent

Consent	During the ex-ante local stakeholder consultation, the project proponent collected comments from stakeholders on the project activity. Survey questionnaires were distributed to relevant personnel of the Xintian Coal Mine, local villagers and government officials by the project proponent on 20-August-2019. In general, local stakeholders were supportive of the project construction. The project is located at Xintian Coal Mine. The project has obtained approval from the local government in accordance with laws and regulations prior to project construction. In addition, the project proponent has conducted regular local stakeholders' consultation, and all stakeholders have agreed and supported the operation of the project. Therefore, the project complies with the relevant VCS regulations for FPIC. There are no ongoing or unresolved conflicts for this project.
Outcome of FPIC	Local stakeholders are supportive of the construction of the project. Most surveyed stakeholders think the project improves regional economic development without adverse environmental impact. The survey shows that the project has not encroached on land, relocated people without consent, and forced physical or economic displacement, and the stakeholders are supportive of the project.

2.1.4 Grievance Redress Procedure

The project proponent designates a person responsible for recording and collecting conflicts and grievances of the local community, and the related resolution process is as follows. 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 methods such as arbitration and courts if necessary. Finally, the entire complaints or grievances redress process shall be dealt within 30 days.

Grievances received	Resolution and outcome
No grievance received	The stakeholders can register any opinions and suggestions on the project in the opinion book at any time, or stakeholders can visit the official website of Department of Ecology and Environment of Bijie City or call directly to reflect, report problems or give comments at any time. There is no grievance raised during the monitoring period.

2.1.5 Public Comments

Summary of comments received	Actions taken
Public comments are not applicable for this monitoring period. No comments were received during the stakeholder consultation period, nor were any submitted through other channels regarding the project.	There are no comments received.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

The project proponent, Yonggui Energy Development Co., Ltd. Xintian Branch. has sufficient capacity and experience in project management, and the project has been running since 26-September-2020 without any problems.

The project management team possesses the capacity to engage with the community, including effective communication, understanding of the community's historical, cultural, economic, and social contexts, as well as organizing community meetings and activities and coordinating the involvement of diverse stakeholders.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified	The construction and operation of the project will strictly comply with all national environmental emission standards and will not pose any risk to stakeholders. The project will provide socio-economic and environmental benefits. It will not cause negative impacts on stakeholders' livelihood or employment.
Risks to stakeholder participation	No risk identified	The mechanism for on-going communication with local stakeholders has been set up. Stakeholders are free to reach the reflection portals anytime anywhere and face no barrier or pressure to report the problems without leaving their name or showing face.
Working conditions	No risk identified	According to EIA, the project owner has established and improved the safety production responsibility system; formulated safety production rules and regulations and operating procedures; formulated and implemented the safety production education and training plan. These measures ensure the effective implementation of safety production investment, eliminate safety hazards in time, and carry out the standardization construction of safety production.
Safety of women and girls	No risk identified	Article 12 of Labour Law of the People's Republic of China enforces: Labourers, regardless of their ethnic group, race, sex, or religious belief, shall not be discriminated against in employment. The project owner obeys the anti-discrimination rules set out in the law
Safety of minority and marginalized groups, including children	No risk identified	Article 12 of Labour Law of the People's Republic of China enforces: Labourers, regardless of their ethnic group, race, sex, or religious belief, shall not be discriminated against in employment. And article 15 enforces: The employing units are prohibited from recruiting minors under the age of 16. The project owner strictly obeys the law.
Pollutants (air, noise, discharges to water, generation of waste,	No risk identified	Measures have been identified in the EIA of the project to mitigate environmental pollution caused by construction and

and release of hazardous materials and chemical pesticides and fertilizers)

operation, which were implemented as per environment pollution-related laws and regulations and supervised by the local government. The environmental impacts and associated mitigation measures during the monitoring period are summarized as following:

The environmental impacts and associated mitigation measures during the monitoring period are summarized as follows:

1 Air pollution

The power generators release CO₂, SO₂, NO_x, total suspended particulate (TSP), etc. It is estimated that the Project releases 1.91 tonnes of soot, 7.54 tonnes of NO_x and 3.90 tonnes of SO₂ per year. The TSP and NO_x emissions meet Period V requirements in the national standard *Limits and Measurement Methods for Exhaust Pollutants from Compression Ignition and Gas Fueled Positive Ignition Engines of Vehicles (III, IV, V)* (GB 17691-2005).

2 Wastewater

The domestic wastewater is treated in a sedimentation tank. Circulating cooling water does not contain any pollutants. Other wastewater generated during the operation is used in dust-controlling road spray or vegetation watering.

3 Noise

Noise is generated by the CMM generators, cooling towers and circulating water pumps. Mufflers and vibration dampers have been designed for the machinery. The generators and the pumps are located inside of buildings, which are built with reinforced concrete and soundproof materials. The cooling towers, however, are built outdoors; mufflers are installed at their air inlets and outlets, and porous polyurethane foam pads are installed to further reduce the noise. Noise emission from the project operation complies with Category 2 requirements in the national standard *Emission Standard for Industry Enterprise Noise at Boundary* (GB 12348-2008) both during the daytime and the night, and the environmental noise at the residential settlement satisfies Category 2 requirements in the national standard *Environmental Quality Standard for Noise* (GB 3096-2008).

4 Solid waste

Domestic solid waste is collected in bins and transported to the landfill site. Dust and sludge collected from the gas filters and the sedimentation tanks are collected and then removed by staff members from the sanitation department. Harmful or dangerous solid waste, such as waste oil, are stashed temporarily in a storage room before being transported and treated by a qualified company; the collection, storage, transport and handling of dangerous solid waste shall comply with *Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes* (GB 18599-2001).

In conclusion, the environmental impact during the project operation is minor. The project can reduce greenhouse gas emissions and environmental pollution caused by methane release and coal-fired power generation. The project proponent takes appropriate measures to minimize adverse environmental impacts.

Furthermore, from the public information¹⁰, the project has obtained the pollutant discharge permit with a validity period from 22-February- 2023 to 21-February-2028. The project owner uploads the monthly pollutant discharge emission report to the National Pollutant Discharge Permit Management Information Platform every month. Based on the monthly emission reports, the pollutant emission indicators comply with the relevant emission standards.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified ¹¹	Mitigation or preventative measure(s) taken
Discrimination	No risk identified	Article 12 of Labour Law of the People's Republic of China enforces: Labourers, regardless of their ethnic group, race, sex, or religious belief, shall not be discriminated against in employment. The project proponent strictly obeys the anti-discrimination rules set out in the law. No discrimination has occurred or will occur.
Sexual harassment	No risk identified	Article 40 of Law of People's Republic of China for the Protection of Women's Rights and Interests enforces: Sexual harassment of women is prohibited. Women victims have the right to complain to their units and relevant authorities. The project proponent strictly obeys the anti-discrimination rules set out in the law. No discrimination or sexual harassment has occurred or will occur.
Gender equity in labor and work	No risk identified	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 provide the legal enforcement for

¹⁰

<https://permit.mee.gov.cn/perxxgkinfo/xkgkAction!xkgk.action?xkgk=getxxgkContent&dataid=25b870c1426448f3a31059f291c08b2b>

¹¹ The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		gender equity in labour and work. The project proponent strictly obeys the law.
Forced labor	No risk identified	Article 244 of the Criminal Law of the People's Republic of China [Crime of Forced Labor] Anyone who forces another person to work by means of violence, threat or restriction of personal freedom shall be sentenced to fixed-term imprisonment of not more than three years or detention, and shall be fined; if the circumstances are serious, he shall be sentenced to fixed-term imprisonment of not less than three years but not more than 10 years, and shall be fined. The project proponent strictly obeys the law.
Child labor	No risk identified	Article 15 of the Labor Law of the People's Republic of China states: "Employers are prohibited from employing minors under the age of sixteen. The project proponent strictly obeys the law.
Human trafficking	No risk identified	All the labour is hired from normal paths. Labourers have the right to resign anytime. Article 15 of Labour Law of People's Republic of China enforces: The employing units are prohibited from recruiting minors under the age of 16. The project proponent strictly obeys the law.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The project strictly follows the Labour Law of People's Republic of China. The legal rights and interests of all employees are protected. The project is committed to upholding the rights of IPs, LCs, and customary rights holders by engaging in ongoing, informed consultations, obtaining their free, prior, and informed consent for any activities, and ensuring that their cultural heritage and traditional knowledge are respected and preserved by international human rights law, the United Nations Declaration on the Rights of Indigenous Peoples, and ILO Convention 169.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
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No risk identified	There were no Indigenous Peoples and Cultural Heritage in the project area.
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2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The project is a construction built in State-owned construction industrial land, which does not involve infringement or occupation of property rights.

2.3.5 Benefit Sharing

As the project does not impact property rights described in Section 2.3.4 above, the following information is irrelative.

Summary of the benefit sharing plan	Not applicable.
Benefit sharing during the monitoring period	Not applicable.

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	According to EIA of the project, the project has no further impact on biodiversity and ecosystems.
Soil degradation and soil erosion	No risk identified	According to EIA of the project, the project has no further impact on the soil.
Water consumption and stress	No risk identified	Based on the FSR report, the project selects treated mine drainage as the water source for production and living purposes. Given the power station's minimal water demand, this ensures a reliable water supply. The project has little impact on water consumption and stress.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	The project is located at Xintian coal mine and there are no rare, threatened, or endangered species in the project area.
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Areas needed for habitat connectivity	According to the EIA of the project, the project has no impact on habitats and areas needed for habitat connectivity for rare, threatened, or endangered species.
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	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, and threatened, endangered species	No risk identified	According to the EIA of the project, the project is located at Xintian coal mine and there are no rare, threatened, or endangered species in the project area.
Areas for habitat connectivity	No risk identified	According to the EIA of the project, the project has no impact on habitats and areas needed for habitat connectivity for rare, threatened, or endangered species.

2.4.2 Introduction of species

Not applicable as the project does not plant or introduce any species.

2.4.3 Ecosystem conversion

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	No risk identified	Not applicable as the project is a non-AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The purpose of the Project is to utilize the extracted low concentration CMM to produce electricity.

According to the approved Feasibility Study Report of the Project, it was planned that CMM power generators with a total capacity of 17.6 MW (2 × 0.5 MW, 7 × 0.6 MW, 2 × 1.2 MW and 10 × 1 MW) would be installed. However, power generators of 7.6 MW (2 × 0.5 MW, 7 × 0.6 MW, 2 × 1.2 MW) were installed during the first monitoring period (from 26-Sep-2020 to 28-Feb-2022), leaving the remaining 10 MW (10 × 1MW) to be installed later depending on the CMM availability.

In the second monitoring period (01-Mar-2022 to 31-Mar-2025), the project proponent upgraded the equipment based on CMM availability. Between 21-Mar-2022 and 31-Mar-2022, 14 units of 1 MW power generators (totaling 14 MW) were installed, and the previously installed 7.6 MW capacity generators (2 × 0.5 MW, 7 × 0.6 MW, 2 × 1.2 MW) were retired.

Therefore, during this monitoring period (01-Mar-2022 to 31-Mar-2025), 14 sets of CMM power generation units with a total capacity of 14 MW have been installed.

The implementation timeline of the project is shown below:

Table 3-1 Implementation timeline of the Project

Key event	Date
The construction started	24-Sep-2019
The generators of 7.6 MW started operation (also the start of the crediting period of the Project)	26-Sep-2020
Period of generators and equipment upgrading	21-Mar-2022 (the first day of upgrading) to 31-Mar-2022 (the last day of upgrading)
The generators of 14 MW started operation	01-Apr-2022

The technical process of the project after the upgrading is shown in Figure 3-1. The low concentration CMM is delivered through methane extraction pumps to the pre-treatment system for safety treatment and then goes into the gas engines for power generation. The generated electricity is for internal coal mine consumption and may be exported to the grid if there is a surplus. The waste heat from the generators is recovered by the waste heat boilers and supplied to coal mines.

The technical process of the project before the upgrading is shown in Figure 3-2.

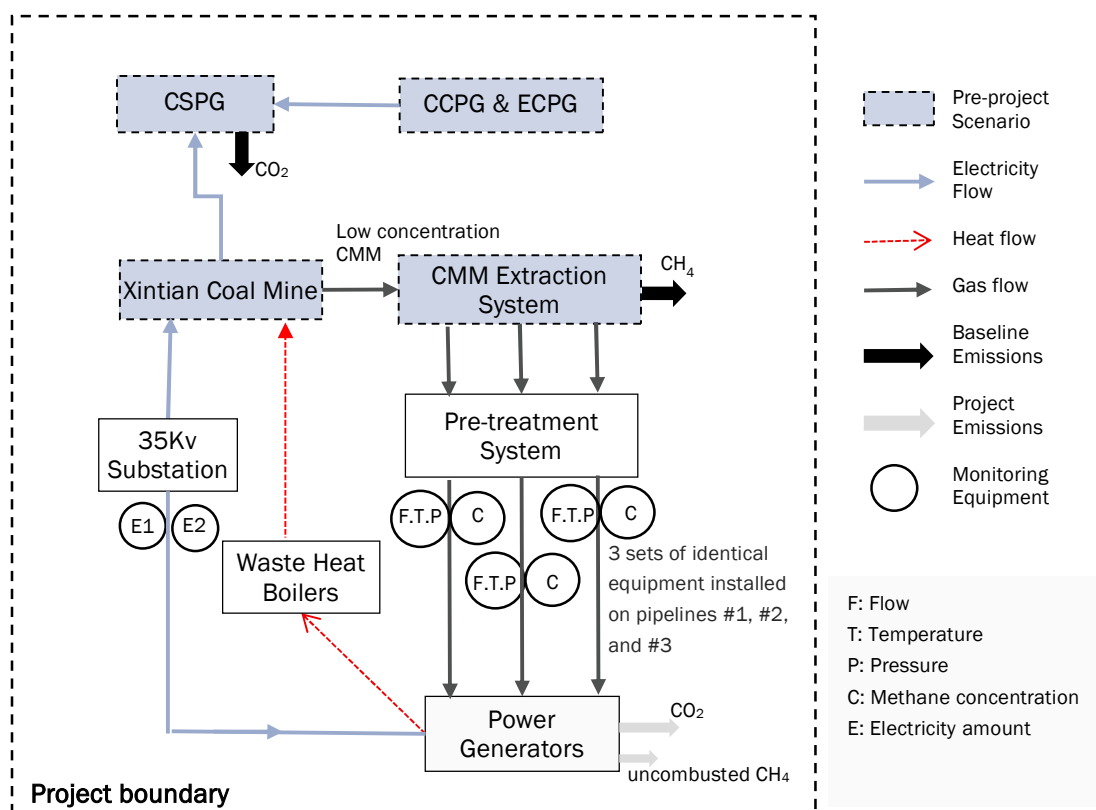


Figure 3-1 Diagram of the gas and energy flow within the project boundary after the upgrading

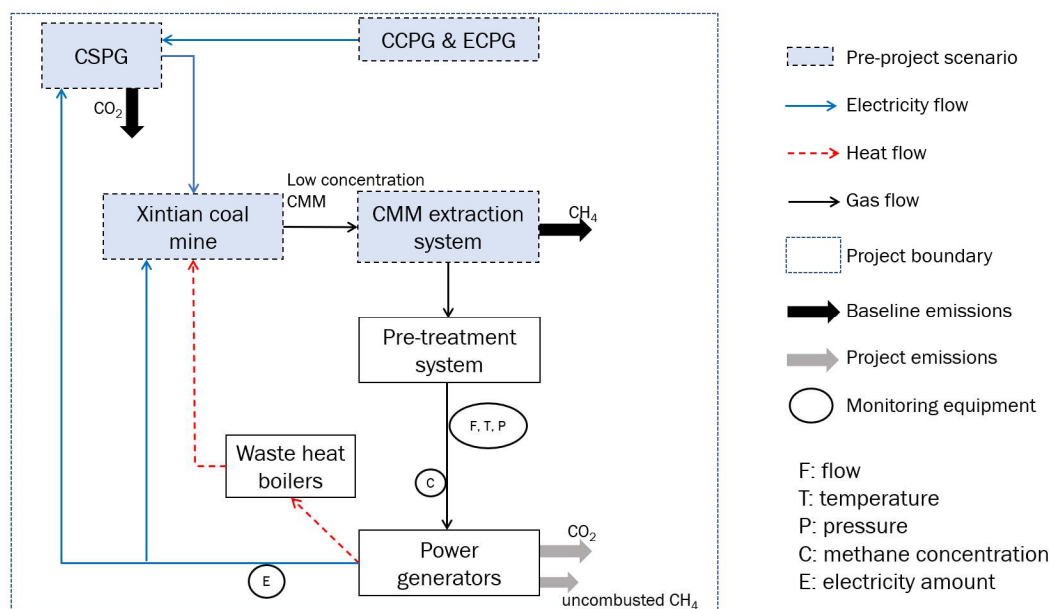


Figure 3-2 Diagram of the gas and energy flow within the project boundary before the upgrading

Table 3-2 shows the key technical specifications of CMM power generators installed.

Table 3-2 Technical specifications of CMM power generators

Operation Period	26-Sep-2020 ¹² to 31-Mar-2022 ¹³			Since 01-Apr-2022 ¹⁴
Type	500GF1-1RW _D	600GF1-1RW _D	1200GF1-1RW _D	P1000GF
Supplier	Henan Diesel Engine Heavy Industry Co., Ltd.			
Quantity	2	7	2	14
Rated power (kW)	500	600	1,200	1,000
Rated current (A)	1,083	1,083	1,083	68
Rated voltage (V)	400	400	800	10,500
Rated speed (r/min)	1,000	1,000	2,000	1,500
Frequency (Hz)	50	50	50	50
Power factor	0.8	0.8	0.8	0.8
Lifetime (years)	10	10	10	≥ 20

In conclusion, during this monitoring period (01-Mar-2022 to 31-Mar-2025), the power generation setup was updated. The old 7.6 MW generator set was in operation until 31-Mar-2022. It was then permanently replaced by a new 14 MW power station, which has been in service from 01-Apr-2022 onwards.

Operational Timeline:

Old Generators (7.6 MW): 01-Mar-2022 to 31-Mar-2022

New Generators (14 MW): 01-Apr-2022 to 31-Mar-2025

There were no other changes including project proponent or other entities.

3.2 Deviations

3.2.1 Methodology Deviations

There is no methodology deviation for the project.

¹² The generators of 7.6 MW started operation, also the start of the crediting period of the Project.

¹³ During the replacement of generator units, the power generation operations of the existing equipment will not be stopped immediately but phased out gradually. Since coal mine methane (CMM) is continuously extracted and not directly vented into the atmosphere, it continues to be used for power generation. Therefore, the existing equipment will remain in operation throughout the upgrade until all generator units are fully replaced. Accordingly, the operational period of the existing equipment is recorded until March 31, 2022.

¹⁴ The remaining 3.6 MW will be installed in a later stage if the CMM supply is sufficient. The technical specifications of which will be included in the future if they are installed.

3.2.2 Project Description Deviations

There was a project description deviation for the project during this monitoring period, which is discussed in detail below:

According to the registered VCS-PD, It was planned that CMM power generators with a total capacity of 17.6 MW (2×0.5 MW, 7×0.6 MW, 2×1.2 MW and 10×1 MW) would be installed for the Project; power generators of 7.6 MW (2×0.5 MW, 7×0.6 MW, 2×1.2 MW) were first installed during 1st monitoring period, leaving the remaining 10 MW (10×1 MW) to be installed later depending on the CMM availability.

During this monitoring period, considering the low efficiency of the previous generator units and the available CMM is increasing, , the project proponent decided to replace the generating units and upgrade the supporting systems. The original 11 generating units were removed and replaced with 14 new units, increasing the total installed capacity to 14 MW (14×1 MW). The remaining 3.6 MW MW will be installed in a later stage if the CMM supply is sufficient. Installation and commissioning were completed on 01-April-2022. Other upgrades included updating the electrical system to enable connection to Guizhou Province's online power monitoring system. Additionally, the coal bed methane delivery pipeline configuration was expanded from one to three pipelines to enhance gas transmission capacity.

The upgraded total installation capacity remains within the approved project capacity which is 17.6 MW and complies with relevant laws and regulations¹⁵. For detailed information on equipment upgrades and modifications, please refer to the table below.

¹⁵ According to Article 37 of the regulation of "Measures for the Administration of the Approval and Filing of Enterprise Investment Projects" issued by National Development and Reform Commission dated 08-March-2017, for projects that have obtained the project approval document, if one of the following circumstances applies, the project entity shall promptly submit an application for modification in writing to the original project approval authority.

The construction location undergoes a change; (2) The investment scale, construction scale, or construction content undergoes significant changes ; (3) The project modification may have significant adverse impacts on economic, social, environmental and other aspects; (4) Other major circumstances that require adjustments to the content specified in the project approval document.

The upgraded total installation capacity remains within the approved project capacity which is 17.6 MW and it does not fall under the above four circumstances. Thus, it is no need to apply for modification to the original project approval authority.

Furthermore, according to the review comments on Environmental Protection Completion Acceptance of the project in April 2025, the upgrading does not constitute a major modification and therefore, there is no need for re-approval.

Table 3-3 Details of equipment upgrades ¹⁶

Equipment	Details	26-Sep-2020 ¹⁷ to 31-Mar-2022 ¹⁸	Since 01-Apr-2022
Power generators	Quantity	11	14
	Capacity	7.6 MW in total (2 ×0.5 MW, 7 ×0.6 MW, 2 ×1.2 MW)	14 MW in total (14× 1 MW)
Bidirectional electricity meter	Quantity	1	2
	Position	At the power supply line out of the power plant	E1&E2 (measure the amount of electricity exported to the coal mine and the grid by the project, and electricity imported from the grid through the coal mine): At the low voltage 10KV side of the 35kV substation
Gas analyzer	Quantity	1	3
	Position	CMM inlet of the power generators	CMM inlet (3 pipelines) of the power generators
Multiparameter measuring instrument for methane	Quantity	1	3
	Position	CMM inlet of the power generators	CMM inlet (3 pipelines) of the power generators

The impact to the applicability of the methodology, additionality or the appropriateness of the baseline scenario by the project deviation is analysis as follows:

¹⁶ After the upgrade, the installed capacity has been increased to 14MW. However, due to insufficient gas supply during actual operation, there were 3-4 generator units remain unoperated each month, resulting in an actual operating installed capacity of approximately 11MW. Based on this 11MW actual operating scale, the annual operating hours for the second monitoring period are 4,941 hours (4,941 h= 167,824.150 MWh × 365 days / 1,127 days / 11MW). In contrast, the average annual operating hours for the first monitoring period were 4,660 hours (4,660 h= 50,551.9 MWh × 365 days / 521 days/ 7.6 MW). Additionally, considering the internal-use rate of 6%, the electricity generation per unit volume of methane of the project in the second monitoring period is calculated as 2.83 kWh/m³ (2.83 = 168,667.488 MWh*1.06 / 63,087,857 m³), which is higher than the 2.78 kWh/m³ recorded in the first monitoring period (2.78 = 50,551.9 MWh*1.06 / 19,292,917.65 m³). Therefore, both the operation hours and power generation efficiency per cubic meter of pure gas have been improved after the upgrade.

¹⁷ The generators of 7.6 MW started operation, also the start of the crediting period of the Project.

¹⁸ During the replacement of generator units, the power generation operations of the existing equipment will not be stopped immediately but phased out gradually. Since coal mine methane (CMM) is continuously extracted and not directly vented into the atmosphere, it continues to be used for power generation. Therefore, the existing equipment will remain in operation throughout the upgrade until all generator units are fully replaced. Accordingly, the operational period of the existing equipment is recorded until 31-March-2022.

Table 3-4 Applicability of Methodology, Tools, Additionality and Baseline Scenario

Type	Applicability criteria	The project according to PD	The project after deviation
Methodology ACM0008	1. This methodology applies to project activities that aim for the use and/or destruction of the methane extracted/obtained from a working or abandoned coal mine(s). The project activities include any of the following methods to treat the methane captured: (a) The methane is destroyed without energy production, for example through flaring; (b) The methane is used to produce energy. This may include electricity, heat, vehicle fuel, etc.	Applicable. The project uses the low concentration CMM extracted from the coal mine for power generation to supply electricity to the coal mine where the Project is located. Therefore, scenario (b) is applicable to the Project.	Applicable. The deviation does not change the purpose and project activities of the project Therefore, the project after deviation is applicable to condition of (b).
	2. Emission reductions can be claimed for displacing or avoiding energy from other sources	Applicable. The emissions reduction of the project comes from two sources: 1) Methane (CH ₄) emissions as a result of the previously vented gas that will be captured and destroyed in the project scenario; 2) CO ₂ emissions from the production of the equivalent amount of electricity replaced by the Project that would otherwise have been purchased from the CSPG.	Applicable. The deviation does not change the most feasible baseline scenario.
	3. Methane used in the project activities shall be extracted using the following techniques: (a) Surface drainage boreholes to capture coal bed methane (CBM) or methane from open cast mines; (b) Underground boreholes in the mine, surface goaf wells, underground boreholes, gas drainage galleries or other	Applicable. 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)'.	Applicable. The deviation does not change extraction techniques of methane. Therefore, the project after deviation is applicable to condition of (b).

	goaf gas capture techniques, including gas from sealed areas, to capture coal mine methane(CMM); (c) Mine ventilation system to dilute and remove ventilation air methane (VAM); (d) Surface drainage boreholes in the case of sealed abandoned mines or ventilation system in the case of ventilated mines to capture abandoned mine methane (AMM).	The Project activity does not involve the extraction or utilization of CBM, VAM or AMM.	
	4. The remaining share of the methane, to be diluted for safety reason, may still be vented.	Applicable. Prior to the project initiation, the extracted CMM was directly and completely vented; the Project utilizes the extracted CMM for power generation. The remaining unused share of the methane is still vented for safety reasons.	Applicable. The deviation does not change safety venting of unused methane.
	5. In the case of open cast mines, in addition to the conditions listed above, project activities should meet the following requirements: (a) The mines should have had a working mining concession for at least three years prior to the start of project; (b) Only pre-mining drainage from wells placed within the area to be mined are eligible for crediting; (c) For the calculation of emission reductions, all provisions for CBM should be followed for the open cast mine methane.	NA. The coal mine involved in the Project is not an open cast mine.	NA. The deviation does not change the nature of the coal mine.
	6. 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; (b) Use CO₂ or any other fluid/gas to enhance CBM drainage before mining takes place; (c)	NA. The Project did not use CO₂ or any other fluid/gas for CBM drainage before mining took place. In fact, the Project does not involve the extraction or utilization of CBM. The Project does not use CMM from	NA. The deviation does not change the project activities.

	Methane extraction from abandoned mines that are flooded due to regulation.	open cast mining or abandoned mines.	
	7. The methodology does not apply to project activities that involve use and/or destruction of CBM or OCM if the baseline scenario identification resulted in partial use and/or destruction of CBM or OCM.	NA. The project does not involve use and/or destruction of CBM or OCM.	NA. The deviation does not change the baseline scenario.
	8. Emission reductions due to the use and/or destruction of CBM or OCM cannot be claimed if surface drainage to capture CBM or methane from open cast mine(s) is used within the project boundaries prior to the implementation of the project activity.	NA. The project does not involve use and/or destruction of CBM or OCM.	NA. The deviation does not change the project activities.
Additionality		The methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality (version 07.0)” is applied in the project. Based on the analysis, the proposed project is additional.	The deviation does not change the applicability of the methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality (version 07.0)”. The investment analysis in the registered PD shows that without revenue from carbon credits, the project IRR(after tax) was 3.61% and considering the carbon credits revenue, the project IRR was 18.82%. In 2022, the project’s generator capacity was upgraded to 14 MW. The IRR was recalculated accordingly. Without carbon credit revenue, the IRR was 5.95% ¹⁹ , and including carbon credit revenue, it was 22.65%. If the remaining 3.6MW will be

¹⁹ According to the review comments on Environmental Protection Completion Acceptance in April 2025, as far, the actual total static investment was 92,000,000 CNY, therefore, the static investment was changed from 92,950,900 CNY in the registered Joint PD-MR to 92,000,000CNY. Meanwhile, the annual average OM cost converted from 26,903,402 CNY to 19,310,093CNY based on the actual installed capacity (7.6MW in the first two operation years and 14MW from the third operation years) and the designed installed capacity (17.6MW). And the expected electricity supplied and tariff were remained the same as the registered Joint PD-MR for the re-calculation Project IRR.

		installed in the seventh year, the static investment and OM cost would be increased, and the IRR would be lower than the IRR of 5.95%. This indicates that, given the deviation from the registered PD, the project remains financially unattractive. Thus, the project is still additional considering the project description deviation.
Baseline Scenario	Combinations of methane extraction of prior to, during and after the mining; Xintian coal mine was equipped with CMM extraction facilities and all extracted CMM was vented into the atmosphere directly; The electricity consumed at coal mine and supplied to China Southern Power Grid (CSPG) if there is any electricity surplus was imported from China Southern Power Grid (CSPG) dominated by fossil fuel-fired power plants.	The deviation has no impact on the baseline scenario.

Based on the analysis above, it can be concluded that this deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. It does not affect the accuracy of the baseline emission calculations either, as the actual amount of electricity generated during the monitoring period did not exceed the designed generation capacity. In accordance with para. 3.21.2 (2) of the VCS Standard v4.7, the project deviation is described and justified in the monitoring report.

3.3 Grouped Projects

The Project is not a grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$MT_{BL,s,i,y}$
Data unit	tCH ₄
Description	Methane from source <i>s</i> that would have been captured and destroyed by use <i>i</i> in the baseline scenario in the year <i>y</i>
Source of data	Data provided by the project proponent
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	In the baseline scenario, no CMM from any source would have been captured or destroyed by any use. Therefore, $MT_{BL,s,i,y}$ is 0.
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	$EF_{EL,k,y}, EF_{EL,j,y} (EF_{grid,CM,y})$
Data unit	tCO ₂ /MWh
Description	Combined margin emission factor for the grid in year <i>y</i>
Source of data	1. 2019 Baseline Emission Factors for Regional Power Grids in

	China ²⁰ , <i>Calculation Instructions for 2019 Baseline OM Emission Factors for Regional Power Grids in China</i> ²¹ and <i>Calculation Instructions for 2019 Baseline BM Emission Factors for Regional Power Grids in China</i> ²² published by the Ministry of Ecology and Environment of China; 2. TOOL07 (version 07.0)
Value applied	0.50885
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per TOOL07 (version 07.0) based on official data published by the Ministry of Ecology and Environment of China
Purpose of Data	Calculation of baseline emissions and project emissions
Comments	According to Section 4.1, the ex ante option is selected to calculate $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ and hence $EF_{grid,CM,y}$, which will be fixed throughout the crediting period; therefore, both parameters $EF_{EF,k,y}$ and $EF_{EF,j,y}$ are fixed throughout the crediting period.

Data / Parameter	$TDL_{j,y}$
Data unit	%
Description	Average technical transmission and distribution losses for providing electricity to source j in year y
Source of data	TOOL05 (version 03.0)
Value applied	3
Justification of choice of data or description of measurement methods and procedures applied	As per TOOL05 (version 03.0), the default value of 3% shall be used for project and leakage electricity consumption sources if the electricity consumption by all project and leakage electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies is smaller than the electricity consumption of all baseline electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies. The Project corresponds to Scenario A (Electricity consumption from the grid) described in TOOL05 (version 03.0); the electricity consumption by all project and leakage electricity consumption

²⁰ <http://mee.gov.cn/ywgz/ymqhbh/wsqtkz/202012/W020201229610353340851.pdf>

²¹ <http://mee.gov.cn/ywgz/ymqhbh/wsqtkz/202012/W020201229610353816665.pdf>

²² <http://mee.gov.cn/ywgz/ymqhbh/wsqtkz/202012/W020201229610354442145.pdf>

	sources (which is 0 for ex ante estimation, which will be monitored during the project operation as per the monitoring plan) is smaller than the electricity consumption of all baseline electricity consumption sources (39,360 MWh annually according to the FSR), which justifies the use of 3% as default values for project and leakage electricity consumption sources for the project.
Purpose of Data	Calculation of project emissions.
Comments	The parameter will be updated according to the latest version of TOOL05.

Data / Parameter	CEF_{CH_4}
Data unit	tCO ₂ e/tCH ₄
Description	Carbon emission factor for combusted methane
Source of data	ACM0008 (Version 08.0)
Value applied	2.75
Justification of choice of data or description of measurement methods and procedures applied	Default value set out in ACM0008 (version 08.0)
Purpose of Data	Calculation of project emissions
Comments	44/16 = 2.75 tCO ₂ e/tCH ₄

Data / Parameter	D_{CH_4}
Data unit	kg/m ³
Description	Density of methane under normal conditions of temperature and pressure
Source of data	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	0.67
Justification of choice of data or description of measurement methods and procedures applied	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Purpose of Data	Used to convert the parameter $MT_{PJ,s,i,y}$ from volume unit to mass unit. $MT_{PJ,s,i,y}$ (the amount of methane from source <i>s</i> captured and destroyed by use <i>i</i> in the project activity in year <i>y</i>) is monitored and recorded in volume (m ³) and then converted to mass (t) based on the parameter D_{CH_4} .

Comments	Normal conditions of temperature and pressure are defined as 1 atm and 293.15K.
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4.2 Data and Parameters Monitored

Data / Parameter	$MT_{PJ,s,i,y}$			
Data unit	tCH ₄			
Description	Methane from source <i>s</i> captured and destroyed by use <i>i</i> in the project activity in year <i>y</i>			
Source of data	Calculated from the monitored data			
Description of measurement methods and procedures to be applied	Three multi-parameter measuring instruments for gas drainage simultaneously measure the CMM flow, temperature and pressure; three gas analyzers measure the methane concentration; the amount of methane utilized in power generation is thus calculated based on the monitored data.			
Frequency of monitoring/recording	Measured continuously and recorded regularly			
Value monitored	Monitoring period	Monitored value (m ³ CH ₄)	Conservative value (m ³ CH ₄)	Conservative Value (tCH ₄)
	01-Mar-2022 to 31-Dec-2022	15,650,414	14,336,561	9,605.48
	01-Jan-2023 to 31-Dec-2023	21,147,188	19,371,882	12,979.16
	01-Jan-2024 to 31-Dec-2024	20,367,468	18,657,619	12,500.59
	01-Jan-2025 to 31-Mar-2025	5,922,787	5,425,569	3,635.13
	Total (01-Mar-2022 to 31-Mar-2025)	63,087,857	57,791,631	38,720.36
Please refer to the ER spreadsheet for monthly values.				
Monitoring equipment	Three multi-parameter measuring instruments for gas drainage simultaneously measure the CMM flow, temperature and pressure with the function of automatic transition to normal conditions. The CMM flow is measured as a volumetric flow rate and then converted to mass flow rate using the methane density (D_{CH_4}, in kilograms per cubic meter), which is 0.67 kg/m³. Three gas analyzers measure the methane concentration. The detailed information of multi-parameter measuring instruments are as			

follows.

Monitoring equipment	Multi-parameter measuring instruments for gas drainage simultaneously measure the CMM flow, temperature and pressure					
Position	CMM inlet (3 pipelines) of the power generators					
	Pipeline #1		Pipeline #2		Pipeline #3	
Model	GD3 (01-Apr-2022 newly installed monitoring system after upgrading)	GD3 (01-Sep-2022 changed the flow meter)	GD3(01-Apr-2022 newly installed monitoring system after upgrading)	GD3 (25-Aug-2024 changed the flow meter)	GD3(B) (the old monitoring system before upgrading)	GD3 (01-Sep-2022 changed the flow meter)
Serial No.	G0005190516	G0005220250	G0004210246	G0005220230	2020020737	G0010210403
Accuracy	Flow meter: $\pm 1.5\%$ Pressure transmitter: $\pm 1.5\%$ for 10.0~100.0 kPa, $\pm 0.75\%$ for 100.0~200.0 kPa Temperature transmitter: $\pm 1.0^{\circ}\text{C}$					
Usage period during this MP	01-Apr-2022 to 31-Aug-2022	01-Sep-2022 to 31-Mar-2025	01-Apr-2022 to 24-Aug-2024	25-Aug-2024 to 31-Mar-2025	01-Mar-2022 to 31-Aug-2022 ²³	01-Sep-2022 to 31-Mar-2025
Calibration Date	02-Sep-2021	17-May-2025	09-Sep-2021; 23-Apr-2025	06-May-2025	19-Sep-2021	23-Apr-2025
Validity	01-Sep-2022	16-May-2026	08-Sep-2022; 22-Apr-2026	05-May-2026	18-Sep-2022	22-Apr-2026

The detailed information of gas analyzers are as follows.

Position	CMM inlet (3 pipelines) of the power generators				
	Pipeline #1		Pipeline #2		Pipeline #3
Model	GJG100J (01-Apr-2022 newly installed gas analyzer after upgrading)		GJG100J (01-Apr-2022 newly installed gas analyzer after upgrading)		GJG100H(C) (the old gas analyzer before upgrading) GJG100J(A) (25-Dec-2024 changed the gas analyzer)
Serial No.	L0105190984		L0107191579		200001224 L0112242049
Accuracy	For methane concentration between 0 and 1%, the margin of error is 0.07%; for methane concentration between 1% and 100%, the margin of error is 7% of the measured value.				
Usage period during this MP	01-Apr-2022 ²⁴ to 31-Mar-2025		01-Apr-2022 to 31-Mar-2025		01-Mar-2022 ²⁵ to 24-Dec-2024 25-Dec-2024 to 31-Mar-2025
Calibration Date	02-Jun-2021; 01-May-2025		02-Jun-2021; 01-May-2025		19-Sep-2021; 01-May-2025 01-May-2025;
Validity	01-Jun-2022; 30-Apr-2026		01-Jun-2022; 30-Apr-2026		18-Sep-2022; 30-Apr-2026 30-Apr-2026

²³ The equipment was used on the old pipeline before the upgrade and continues to be used on the new pipeline #3 after the upgrade.

²⁴ The upgrade was finished on 31-Mar-2022, the new 14MW generators was started operation from 01-Apr-2022.

²⁵ The equipment was used on the old pipeline in 1st MP and before the upgrade and continues to be used on the new pipeline #3 after the upgrade.

QA/QC procedures to be applied	Due to the monitoring equipments were not calibrated on time, and due to the indication error in the delayed calibration report of April and May 2025 being within the maximum permission error, the amount of methane captured and destroyed in the project activity has been conservatively adjusted by applying the lower limits of maximum permissible error: -1.5% for gas flow measured by the gas analyzers and -7% for methane concentration measured by the multiparameter measuring instruments. Thus, the corrected value = The monitored value * (1-1.5%) * (1-7%). To be conservative, data from 01-Mar-2022 to 31-Mar-2025 was also deducted the maximum permissible error. Please refer to the ER calculation sheet for more details. All electronic data and paper documents must be archived and kept for at least two years after the end of the project crediting period.
Purpose of the data	Calculation of baseline emissions.
Calculation method	-
Comments	-

Data / Parameter	$MM_{ELEC,y}$			
Data unit	tCH ₄			
Description	Methane measured sent to use of power generation in year y			
Source of data	Calculated from the monitored data			
Description of measurement methods and procedures to be applied	Three multi-parameter measuring instruments for gas drainage simultaneously measure the CMM flow, temperature and pressure; three gas analyzers measure the methane concentration; the amount of methane utilized in power generation is thus calculated based on the monitored data.			
Frequency of monitoring/recording	Measured continuously and recorded regularly			
Value monitored	Monitoring period	Monitored value (m ³ CH ₄)	Conservative value (m ³ CH ₄)	Conservative Value (tCH ₄)
	01-Mar-2022 to 31-Dec-2022	15,650,414	14,336,561	9,605.48
	01-Jan-2023 to 31-Dec-2023	21,147,188	19,371,882	12,979.16
	01-Jan-2024 to 31-Dec-2024	20,367,468	18,657,619	12,500.59

	01-Jan-2025 to 31-Mar-2025	5,922,787	5,425,569	3,635.13			
	Total (01-Mar-2022 to 31-Mar-2025)	63,087,857	57,791,631	38,720.36			
	Please refer to the ER spreadsheet for monthly values.						
Monitoring equipment	Three multi-parameter measuring instruments for gas drainage simultaneously measure the CMM flow, temperature and pressure with the function of automatic transition to normal conditions.						
	The CMM flow is measured as a volumetric flow rate and then converted to mass flow rate using the methane density (D_{CH_4} , in kilograms per cubic meter), which is 0.67 kg/m ³ .						
	Three gas analyzers measure methane concentration.						
	The detailed information of multi-parameter measuring instruments are as follows.						
	Monitoring equipment	Multi-parameter measuring instruments for gas drainage simultaneously measure the CMM flow, temperature and pressure					
	Position	CMM inlet (3 pipelines) of the power generators					
		Pipeline #1		Pipeline #2		Pipeline #3	
	Model	GD3 (01-Apr-2022 newly installed monitoring system after upgrading)	GD3 (01-Sep-2022 changed the flow meter)	GD3(01-Apr-2022 newly installed monitoring system after upgrading)	GD3 (25-Aug-2024 changed the flow meter)	GD3(B) (the old monitoring system before upgrading)	GD3 (01-Sep-2022 changed the flow meter)
	Serial No.	G0005190516	G0005220250	G0004210246	G0005220230	2020020737	G0010210403
	Accuracy	Flow meter: $\pm 1.5\%$ Pressure transmitter: $\pm 1.5\%$ for 10.0~100.0 kPa, $\pm 0.75\%$ for 100.0~200.0 kPa Temperature transmitter: $\pm 1.0^{\circ}\text{C}$					
	Usage period during this MP	01-Apr-2022 to 31-Aug-2022	01-Sep-2022 to 31-Mar-2025	01-Apr-2022 to 24-Aug-2024	25-Aug-2024 to 31-Mar-2025	01-Mar-2022 to 31-Aug-2022 ²⁶	01-Sep-2022 to 31-Mar-2025
	Calibration Date	02-Sep-2021	17-May-2025	09-Sep-2021	06-May-2025	19-Sep-2021	23-Apr-2025
	Validity	01-Sep-2022	16-May-2026	08-Sep-2022	05-May-2026	18-Sep-2022	22-Apr-2026
	The detailed information of gas analyzers are as follows.						
	Position	CMM inlet (3 pipelines) of the power generators					
Pipeline #1		Pipeline #2		Pipeline #3			
Model	GJG100J (01-Apr-2022 newly installed gas		GJG100J (01-Apr-2022 newly installed gas		GJG100H(C) (the old gas analyzer before changed the		

²⁶ The equipment was used on the old pipeline before the upgrade and continues to be used on the new pipeline #3 after the upgrade.

	analyzer after upgrading)	analyzer after upgrading)	upgrading)	gas analyzer)
Serial No.	L0105190984	L0107191579	200001224	L0112242049
Accuracy	For methane concentration between 0 and 1%, the margin of error is 0.07%; for methane concentration between 1% and 100%, the margin of error is 7% of the measured value.			
Usage period during this MP	01-Apr-2022 ²⁷ to 31-Mar-2025	01-Apr-2022 to 31-Mar-2025	01-Mar-2022 ²⁸ to 24-Dec-2024	25-Dec-2024 to 31-Mar-2025
Calibration Date	02-Jun-2021; 01-May-2025	02-Jun-2021; 01-May-2025	19-Sep-2021; 01-May-2025	01-May-2025;
Validity	01-Jun-2022; 30-Apr-2026	01-Jun-2022; 30-Apr-2026	18-Sep-2022; 30-Apr-2026	30-Apr-2026
QA/QC procedures to be applied	Due to the meters not being calibrated on time, and due to the indication error in the delayed calibration report of April and May 2025 being within the maximum permissible error, the amount of methane captured and destroyed in the project activity has been conservatively adjusted by applying the lower limits of maximum permissible error: -1.5% for gas flow measured by the gas analyzers and -7% for methane concentration measured by the multiparameter measuring instruments. Thus, the corrected value = The monitored value * (1-1.5%) * (1-7%). To be conservative, for the entire monitoring period (from 01-Mar-2022 to 31-Mar-2025), data was deducted the maximum permissible error. Please refer to the ER calculation sheet for more details. All electronic data and paper documents must be archived and kept for at least two years after the end of the project crediting period.			
Purpose of the data	Calculation of project emissions			
Calculation method	-			
Comments	-			

Data / Parameter	<i>GWP_{CH4}</i>
Data unit	tCO ₂ e/tCH ₄
Description	Global warming potential of methane
Source of data	IPCC <i>Fifth Assessment Report</i>
Description of measurement	As per VCS Standard v4.7, for GHG emission reductions occurring on or after 01-Jan-2021, all ex-ante estimates and ex-post calculations

²⁷ The upgrade was finished on 31-Mar-2022, the new 14MW generators was started operation from 01-Apr-2022.

²⁸ The equipment was used on the old pipeline in 1st MP and before the upgrade and continues to be used on the new pipeline #3 after the upgrade.

methods and procedures to be applied	shall be converted to CO ₂ e using GWP values from the IPCC <i>Fifth Assessment Report</i> (AR5); for GHG emission reductions occurring on or before 31-Dec-2020, all ex-ante estimates and ex-post calculations may be converted to CO ₂ e using either the GWP values from the IPCC <i>Fourth Assessment Report</i> (AR4) or those from AR5. The Project applies GWP_{CH_4} value from AR5 for both ex-ante estimates and ex-post calculations and for GHG emission reductions occurring both before and after 01-Jan-2021. According to AR5, the 100-year GWP value of methane is 28 tCO ₂ e/CH ₄ .
Frequency of monitoring/recording	The parameter will be updated by referring to the latest requirement of VCS Standard as well as the IPCC report.
Value monitored	28
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of baseline emissions and project emissions
Calculation method	-
Comments	-

Data / Parameter	$EG_{use,k,y}$ ($EG_{PJ,y}$)		
Data unit	MWh		
Description	Energy of type k displaced by the project activity in year y		
Source of data	Monitored		
Description of measurement methods and procedures to be applied	From 21-Mar-2022 to 31-Mar-2022, the old bidirectional electricity meter (E in Figure 3-2) is applied to measure the amount of electricity exported by the project activity. From 01-Apr-2022 to 31-Mar-2025, two bidirectional electricity meters (E1&E2 in Figure 3-1) are applied to measure the amount of electricity exported by the project activity, which replaced the old meter E. All electronic data and paper documents must be archived and kept for at least two years following the end of the project crediting period.		
Frequency of monitoring/recording	Measured continuously and recorded monthly		
Value monitored	Monitoring period	Monitored value (MWh)	Conservative value (MWh)
	01-Mar-2022 to 31-Dec-2022	41,803.531	41,594.513

	01-Jan-2023 to 31-Dec-2023	56,690.376	56,406.924
	01-Jan-2024 to 31-Dec-2024	54,290.462	54,019.010
	01-Jan-2025 to 31-Mar-2025	15,883.119	15,803.703
	Total (01-Mar-2022 to 31-Mar-2025)	168,667.488	167,824.151
Monitoring equipment	Please refer to the ER spreadsheet for monthly values.		
	Bidirectional electricity meters.		
	Position	At the power supply line out of the power plant	At the low voltage 10KV side of the 35kV substation
	Model	DSZ535 (Old meter E)	DSZ331 (New meters E1 and E2)
	Serial No.	200124504142	231158365400026 2311583654000028
	Accuracy	± 0.5%	± 0.5%
	Usage period during this MP	01-Mar-2022 to 31-Mar-2022 ²⁹	01-Apr-2022 to 31-Mar-2025 01-Apr-2022 to 31-Mar-2025
	Calibration Date	20-Sep-2021	20-Nov-2025 20-Nov-2025
	Validity	19-Sep-2022	19-Nov-2026 19-Nov-2026
	QA/QC procedures to be applied	Due to the newly installed electricity meter was not calibrated on time and and the indication error in the delayed calibration report dated on 20-Nov-2025 is less than the maximum permission error, for the entire monitoring period (from 01-Mar-2022 to 31-Mar-2025), amount of monitored values of electricity generation by the project has been conservatively adjusted by applying the maximum permissible error (-0.5%). Additional information can be found in the ER calculation sheet. All electronic data and paper documents must be archived and kept for at least two years after the end of the project crediting period.	
Purpose of the data		Calculation of baseline emissions	
Calculation method		-	
Comments		Electricity transaction notes (ETNs) will be used for cross-check, and the conservative values will be selected.	

Data / Parameter	$EC_{PJ,j,y}$
Data unit	MWh

²⁹ The electricity meter was used in 1st MP and continued to be used until the finish of the upgrade.

Description	Quantity of electricity consumed by the project electricity consumption source j in year y																														
Source of data	Monitored																														
Description of measurement methods and procedures to be applied	From 21-Mar-2022 to 31-Mar-2022, one bidirectional electricity meters (E in Figure 3-2) is applied to measure the amount of electricity imported from the grid. From 01-Apr-2022 to 31-Mar-2025, two newly installed bidirectional electricity meters (E1&E2 in Figure 3-1) are applied to measure the amount of electricity imported from the grid. All electronic data and paper documents must be archived and kept for at least two years following the end of the project crediting period.																														
Frequency of monitoring/recording	Measured continuously and recorded monthly																														
Value monitored	<table><tr><th>Monitoring period</th><th>Monitored value (MWh)</th><th colspan="2">Conservative value (MWh)</th></tr><tr><td>01-Mar-2022 to 31-Dec-2022</td><td>1.832</td><td colspan="2">1.841</td></tr><tr><td>01-Jan-2023 to 31-Dec-2023</td><td>0.745</td><td colspan="2">0.749</td></tr><tr><td>01-Jan-2024 to 31-Dec-2024</td><td>0.765</td><td colspan="2">0.769</td></tr><tr><td>01-Jan-2025 to 31-Mar-2025</td><td>0.178</td><td colspan="2">0.179</td></tr><tr><td>Total (01-Mar-2022 to 31-Mar-2025)</td><td>3.520</td><td colspan="2">3.538</td></tr></table> Please refer to the ER spreadsheet for monthly values.			Monitoring period	Monitored value (MWh)	Conservative value (MWh)		01-Mar-2022 to 31-Dec-2022	1.832	1.841		01-Jan-2023 to 31-Dec-2023	0.745	0.749		01-Jan-2024 to 31-Dec-2024	0.765	0.769		01-Jan-2025 to 31-Mar-2025	0.178	0.179		Total (01-Mar-2022 to 31-Mar-2025)	3.520	3.538					
Monitoring period	Monitored value (MWh)	Conservative value (MWh)																													
01-Mar-2022 to 31-Dec-2022	1.832	1.841																													
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Monitoring equipment	Bidirectional electricity meter. <table><tr><td>Position</td><td>At the power supply line out of the power plant</td><td colspan="2">At the low voltage 10KV side of the 35kV substation</td></tr><tr><td>Model</td><td>DSZ535 (Old meter E)</td><td colspan="2">DSZ331 (New meters E1 and E2)</td></tr><tr><td>Serial No.</td><td>200124504142</td><td>2311583654000026</td><td>2311583654000028</td></tr><tr><td>Accuracy</td><td>± 0.5%</td><td>± 0.5%</td><td>± 0.5%</td></tr><tr><td>Usage period during this MP</td><td>01-Mar-2022 to 31-Mar-2022³⁰</td><td>01-Apr-2022 to 31-Mar-2025</td><td>01-Apr-2022 to 31-Mar-2025</td></tr><tr><td>Calibration Date</td><td>20-Sep-2021</td><td>20-Nov-2025</td><td>20-Nov-2025</td></tr><tr><td>Validity</td><td>19-Sep-2022</td><td>19-Nov-2026</td><td>19-Nov-2026</td></tr></table>			Position	At the power supply line out of the power plant	At the low voltage 10KV side of the 35kV substation		Model	DSZ535 (Old meter E)	DSZ331 (New meters E1 and E2)		Serial No.	200124504142	2311583654000026	2311583654000028	Accuracy	± 0.5%	± 0.5%	± 0.5%	Usage period during this MP	01-Mar-2022 to 31-Mar-2022 ³⁰	01-Apr-2022 to 31-Mar-2025	01-Apr-2022 to 31-Mar-2025	Calibration Date	20-Sep-2021	20-Nov-2025	20-Nov-2025	Validity	19-Sep-2022	19-Nov-2026	19-Nov-2026
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Usage period during this MP	01-Mar-2022 to 31-Mar-2022 ³⁰	01-Apr-2022 to 31-Mar-2025	01-Apr-2022 to 31-Mar-2025																												
Calibration Date	20-Sep-2021	20-Nov-2025	20-Nov-2025																												
Validity	19-Sep-2022	19-Nov-2026	19-Nov-2026																												

³⁰ The electricity meter was used in 1st MP and continued to be used until the finish of the upgrade.

QA/QC procedures to be applied	Due to electricity meters (M1&M2) not being calibrated on time, and the indication error in the delayed calibration report dated on 20--Nov-2025 is less than the maximum permission error, monitored value of quantity of electricity consumed by the project has been conservatively adjusted by applying the upper limits of maximum permissible error (+0.5%) for the whole monitoring period.
Purpose of the data	Calculation of project emissions
Calculation method	-
Comments	Electricity transaction notes (ETNs) will be used for cross-check, and the conservative values will be selected.

Data / Parameter	$Eff_{i,y} (Eff_{ELEC,y})$
Data unit	%
Description	Efficiency of methane destruction in use i (for the Project, i represents power generation)
Source of data	Chapter 4 (page 4.45), Volume 2 Energy, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, no update in the 2019 refinement version.
Description of measurement methods and procedures to be applied	IPCC reference
Frequency of monitoring/recording	-
Value monitored	99.5
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	-
Comments	The parameter has been updated according to the latest IPCC reference.

4.3 Monitoring Plan

The monitoring plan presented in the registered VCS PD assures that real, measurable, long-term GHG emission reductions can be monitored, recorded and reported. It is a crucial

procedure to identify the final VCU of the project. This monitoring plan was fully implemented by the project proponent during this monitoring period. The details of the monitoring plan are specified as follows:

(A) Data and parameters to be monitored and the monitoring equipment

Figure 4-1 shows the positions of the monitoring instruments in the technical process of the Project; Table 4-1 lists the corresponding parameters monitored. The technical information of the monitoring instruments installed please refer to Table 3-3.

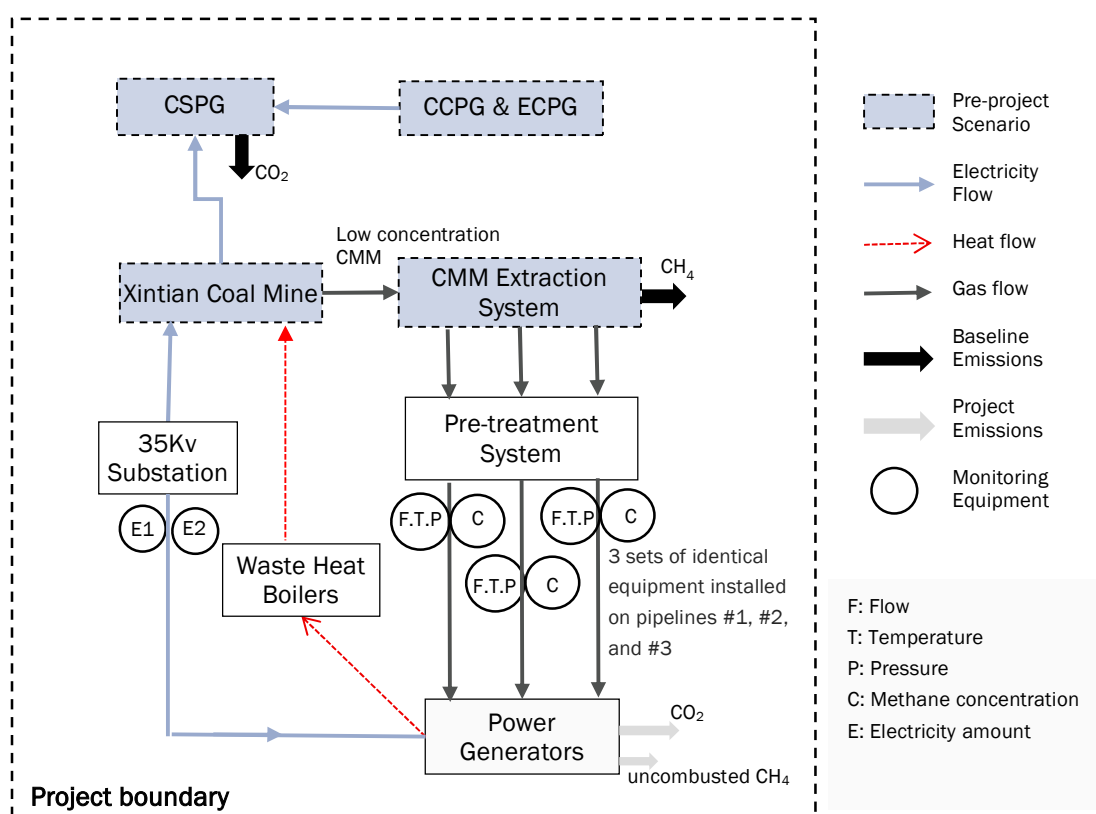


Figure 4-1 Technical process of the Project (with monitoring instruments shown in ovals)

Table 4-1 Corresponding parameters monitored

Position	Parameter(s)	Description
CMM inflow monitoring	$MT_{PJ,s,i,y}$ and $MM_{ELEC,y}$	Methane concentration, gas flow rate, pressure and temperature are continuously monitored on-site and are used to calculate methane from source s captured and destroyed by use of power generation and methane measured sent to use of power generation.

Electricity monitoring	$EG_{Use,k,y} (EG_{PJ,y})$	Electricity generation by the project activity is continuously monitored.
Electricity monitoring	$EC_{PJ,j,y}$	Electricity consumption for the project activity is continuously monitored.
/	GWP_{CH_4}	Global warming potential of methane, which will be updated according to relevant data sources.
/	$Eff_{i,y} (Eff_{ELEC,y})$	Efficiency of methane destruction in use i , which will be updated according to relevant data sources.

(B) Management Structure

The project proponent has appointed a specific VCS team in charge of data recording and collection to ensure the successful implementation of the monitoring activities. Figure 5-2 shows the operation and management structure of the monitoring team.

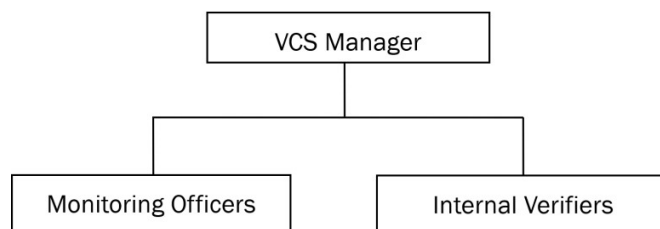


Figure 4-2 Management structure of the monitoring team

A VCS manager has been appointed to take full responsibility for the overall monitoring plan in the corresponding CMM power plant. The monitoring activities, including measurement of extracted gas volume and recording of electricity generation and consumption, are carried out by a team of monitoring officers. In addition, the project proponent has also appointed internal verifiers in charge of internal check of the measured data, collection of relevant receipts and invoices, and calculation of the emission reductions. A monitoring manual regarding the Project, which stipulates detailed duties and responsibilities of all members of the monitoring team, has been developed and serves as the basis of the monitoring plan.

(C) Data collection

The monitoring officers are responsible for data collection. They read and collect the monitored data regularly. The computer system automatically monitors and records relevant data. The automatic records serve as the main data source for the calculation of emission reductions. All data files, relevant purchase invoices and sales receipts will be collected by a designated monitoring officer, who shall prepare backup in time and archive all documents in a proper and secure manner.

(D) Quality assurance

All monitoring instruments for monitoring have been chosen in accordance with VCS requirements and are calibrated regularly for accuracy by a qualified third party in compliance with relevant industry standards. To facilitate verifications, the monitoring team archives and keeps the calibration records, along with the data files of project monitoring.

Routine error checks are conducted on site at the point of data storage to detect data measuring/transmission failures or malfunctions. In the case of malfunction of the monitoring instrument, the equipment supplier will provide technical support to engage in the problem promptly, and emission reductions during the corresponding period will be calculated conservatively.

The installation of the electricity metering equipment fulfills the requirements of the industry standard *Technical Administrative Code of Electric Energy Metering* (DL/T 448-2016).

The installation of the multi-parameter measuring instrument for gas drainage and the gas analyzer fulfills the industry standards *Technical Specifications for Multi-parameter Measuring Equipment of Pipeline Gas Drainage* (MT/T 642-1996) and *Non-dispersive Infrared Methane Transmitters for Coal Mine* (JJG 1138-2017).

(E) Data file management

All monitored data are electronically archived at the end of each month and the electronic data files are archived in both disk copy and printed hard copy. Other documents in paper e.g., maps, forms and EIA reports are preserved in good conditions as well. All data collected as part of the monitoring must be archived electronically and be kept at least for two years after the end of the crediting period. The project proponent will provide original records and documents if necessary.

(F) Emergency procedure

In case of any failure or malfunction of any monitoring instrument, the project participant and the equipment suppliers will repair or displace it as soon as possible, and the emission reductions achieved during the troubleshooting period will be calculated conservatively.

During the reported monitoring period, no emergency occurred, and on event, which might impact the monitoring plan, the applied methodology or the calculation of emission reductions, occurred.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per the methodology ACM0008 (version 08.0), baseline emissions are calculated as follows:

$$BE_y = BE_{MD,y} + BE_{MR,y} + BE_{Use,y} \quad \text{Equation (1)}$$

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)

1. Methane destruction in the baseline

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

2. Methane venting in the baseline

The amount of methane that would have been emitted to the atmosphere in the baseline scenario shall be determined as follows:

$$BE_{MR,y} = \sum_i \sum_s (MT_{PJ,s,i,y} - MT_{BL,s,i,y}) \times GWP_{CH_4} \quad \text{Equation (2)}$$

Where:

$BE_{MR,y}$	=	Baseline emissions from release of methane into the atmosphere in year y that is avoided by the project activity (t CO ₂ e)
$MT_{PJ,s,i,y}$	=	Methane from source s captured and destroyed by use i in the project activity in year y (t CH ₄)
$MT_{BL,s,i,y}$	=	Methane from source s that would have been captured and destroyed by use i in the baseline scenario in the year y (t CH ₄)

i	=	Use of methane (flaring, power generation, etc.)
s	=	Source of methane that would have been captured, sent to and destroyed by use i in the baseline scenario in the year y . This may include eligible CBM, CMM, VAM, eligible AMM and eligible OCM
GWP_{CH_4}	=	Global warming potential of methane (t CO ₂ e/t CH ₄). As per VCS Standard v4.1, projects that complete validation on or before 31 July 2021 shall use GWP values from IPCC Fifth Assessment Report (AR5) for ex-post calculations. According to AR5, the 100-year GWP value of methane is 28 tCO ₂ e/CH ₄ .

In the baseline scenario, no CMM would have been captured and destroyed; therefore, $MT_{BL,s,i,y}$ is 0.

Equation (2) is simplified as follows:

$$BE_{MR,y} = \sum_i \sum_s MT_{PJ,s,i,y} \times GWP_{CH_4} \quad \text{Equation (3)}$$

The calculation result of $BE_{MR,y}$ is shown in Table 5-1.

Table 5-1 Calculation of $BE_{MR,y}$

Monitoring period	$MT_{PJ,s,i,y}$ tCH ₄	GWP_{CH_4} tCO ₂ e/tCH ₄	$BE_{MR,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	9,605.48	28	268,953
01-Jan-2023 to 31-Dec-2023	12,979.16	28	363,416
01-Jan-2024 to 31-Dec-2024	12,500.59	28	350,016
01-Jan-2025 to 31-Mar-2025	3,635.13	28	101,783
Total (01-Mar-2022 to 31-Mar-2025)	38,720.36	28	1,084,168

3. Baseline emissions from the production of power, heat or vehicle fuels

The baseline emissions from displacement of power or heat generation, or supply of vehicle fuels are given by the following equation:

$$BE_{Use,y} = \sum_k (EG_{Use,k,y} \times EF_{k,y}) \quad \text{Equation (4)}$$

Where:

$BE_{Use,y}$	=	Baseline emissions from energy displaced by the project activity in year y
--------------	---	--

(t CO₂)

$EG_{Use,k,y}$ = Energy of type k displaced by the project activity in year y (energy unit)

$EF_{k,y}$ = Baseline emissions factor for energy type k production in year y (t CO₂/energy unit)

k = Energy type displaced by the project activity

The project activity replaces power generation that would have been supplied by the grid in the baseline scenario; the emission reductions achieved in this way will be calculated. As per the registered VCS PD, the emission reductions for replacing heat supply will not be claimed. Also, the baseline scenario does not include vehicle operation fuelled by methane produced by the project activity, i.e., the project does not involve replacing vehicle fuel supply. Therefore, Equation (4) is simplified as follows:

$$BE_{Use,y} = EG_{Use,k,y} \times EF_{ELEC} \quad \text{Equation (5)}$$

As per the methodology, ACM0008 (version 08.0), if the baseline scenario includes power generation that would be replaced by the project activity, the emission factor for displaced electricity is calculated as per the latest version of the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”, i.e., TOOL 05 (version 03.0).

In the absence of the project activity, the amount of electricity supplied by the project would have been supplied by the grid, and hence the electricity source k corresponds to grid power supply; the parameter $EG_{Use,k,y}$ is equivalent to the net amount of electricity generated and supplied by the project activity using methane in year y which would have been supplied by the grid otherwise ($EG_{PJ,grid,y}$).

The calculation result of $BE_{Use,y}$ is shown in Table 5-2.

Table 5-2 Calculation of $BE_{Use,y}$

Monitoring period	$EF_{ELEC,y}$ MWh	$EG_{PJ,grid,y}$ tCO ₂ e/MWh	$BE_{Use,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	41,594.513	0.50885	21,165
01-Jan-2023 to 31-Dec-2023	56,406.924	0.50885	28,702
01-Jan-2024 to 31-Dec-2024	54019.010	0.50885	27,487
01-Jan-2025 to 31-Mar-2025	15,803.703	0.50885	8,041
Total (01-Mar-2022 to 31-Mar-2025)	167,824.151	0.50885	85,395

Combining the calculation results above, the baseline emissions are shown in Table 5-3.

Table 5-3 Calculation of baseline emissions

Monitoring period	$BE_{MD,y}$ tCO ₂ e	$BE_{MR,y}$ tCO ₂ e	$BE_{Use,y}$ tCO ₂ e	$BE_y =$ $BE_{MD,y} + BE_{MR,y}$ $+ BE_{Use,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	0	268,953	21,165	290,118
01-Jan-2023 to 31-Dec-2023	0	363,416	28,702	392,118
01-Jan-2024 to 31-Dec-2024	0	350,016	27,487	377,503
01-Jan-2025 to 31-Mar-2025	0	101,783	8,041	109,824
Total (01-Mar-2022 to 31-Mar-2025)	0	1,084,168	85,395	1,169,563

5.2 Project Emissions

Project emissions are calculated as follows:

$$PE_y = PE_{ME,y} + PE_{MD,y} + PE_{UM,y} \quad \text{Equation (6)}$$

Where:

PE_y = Project emissions in year y (tCO₂e)

$PE_{ME,y}$ = Project emissions from energy use to capture and use methane in year y (tCO₂e)

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

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

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

As per the methodology ACM0008 (version 08.0), emissions due to electricity consumption should be determined using the latest version of the “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation”, i.e., TOOL05 (version 03.0), which gives a generic approach for calculation of project emissions from consumption of electricity based on the quantity of electricity consumed, an emission factor for electricity generation and a factor to account for transmission losses, as follows:

$$PE_{ME,y} = PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EF,j,y} \times (1 + TDL_{j,y}) \quad \text{Equation (7)}$$

Where:

$PE_{EC,y}$	=	Project emissions from electricity consumption in year y (tCO ₂ e)
$EC_{PJ,j,y}$	=	Quantity of electricity consumed by the project electricity consumption source j in year y (MWh)
$EF_{EF,j,y}$	=	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

The calculation result of $PE_{ME,y}$ is shown in Table 5-4.

Table 5-4 Calculation of $PE_{ME,y}$

Monitoring period	$EC_{PJ,j,y}$ MWh	$EF_{grid,CM,y}$ tCO ₂ e/MWh	$TDL_{j,y}$ -	$PE_{EC,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	1.841	0.50885	3%	1
01-Jan-2023 to 31-Dec-2023	0.749	0.50885	3%	0.4
01-Jan-2024 to 31-Dec-2024	0.769	0.50885	3%	0.4
01-Jan-2025 to 31-Mar-2025	0.179	0.50885	3%	0.1
Total (01-Mar-2022 to 31-Mar-2025)	3.538	0.50885	3%	2

2. Combustion emissions from use 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.

$$PE_{MD,y} = \sum_i MD_{i,y} \times CEF_{CH_4} \quad \text{Equation (8)}$$

Where:

$PE_{MD,y}$	=	Project emissions from methane destroyed in year y (tCO ₂ e)
$MD_{i,y}$	=	Methane destroyed through use i in year y (tCH ₄)
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 (tCO ₂ e/tCH ₄)

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

$$MD_{i,y} = MM_{i,y} \times Eff_{i,y} \quad \text{Equation (9)}$$

Where:

$MD_{i,y}$ = Methane destroyed through use i in year y (tCH₄).

$MM_{i,y}$ = Methane measured sent to use i in year y (tCH₄). For the project, i is only for electricity, so $MM_{i,y} = MM_{ELEC,y}$.

$Eff_{i,y}$ = Efficiency of methane destruction in use i in year y (%). For the project, i is only for electricity, so $Eff_{i,y} = Eff_{ELEC,y}$.

As per the registered VCS PD, the emission reductions for replacing heat supply will not be claimed. Also, the project does not involve supply to gas grid. The only use of methane to be considered is for power generation. Therefore, Equation (8) is simplified as follows:

$$PE_{MD,y} = MD_{ELEC,y} \times CEF_{CH_4} = MM_{ELEC,y} \times Eff_{ELEC,y} \times CEF_{CH_4} \quad \text{Equation (10)}$$

The calculation of $PE_{MD,y}$ is shown in Table 5-5.

Table 5-5 Calculation of $PE_{MD,y}$

Monitoring period	$MM_{ELEC,y}$ tCH ₄	$Eff_{ELEC,y}$ -	CEF_{CH_4} tCO ₂ e/tCH ₄	$PE_{MD,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	9,605.48	99.5%	2.75	26,283
01-Jan-2023 to 31-Dec-2023	12,979.16	99.5%	2.75	35,515
01-Jan-2024 to 31-Dec-2024	12,500.59	99.5%	2.75	34,205
01-Jan-2025 to 31-Mar-2025	3,635.13	99.5%	2.75	9,947
Total (01-Mar-2022 to 31-Mar-2025)	38,720.36	99.5%	2.75	105,950

3. 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:

$$PE_{UM,y} = GWP_{CH_4} \times \sum_i MM_{i,y} \times (1 - Eff_{i,y}) \quad \text{Equation (11)}$$

Where:

$PE_{UM,y}$	=	Project emissions from un-combusted methane in year y (tCO ₂ e).
GWP_{CH_4}	=	Global warming potential of methane (tCO ₂ e/tCH ₄).
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 (tCH ₄). For the project, i is only for electricity, so $MM_{i,y} = MM_{ELEC,y}$.
$Eff_{i,y}$	=	Efficiency of methane destruction in use i in year y (%). For the project, i is only for electricity, so $Eff_{i,y} = Eff_{ELEC,y}$.

For the project, Equation (11) is simplified as follows:

$$PE_{UM,y} = GWP_{CH_4} \times MM_{ELEC,y} \times (1 - Eff_{ELEC,y}) \quad \text{Equation (12)}$$

The calculation of $PE_{UM,y}$ is shown in Table 5-6.

Table 5-6 Calculation of $PE_{UM,y}$

Monitoring period	$MM_{ELEC,y}$ tCH ₄	$Eff_{ELEC,y}$	GWP_{CH_4} tCO ₂ e/tCH ₄	$PE_{UM,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	9,605.48	99.5%	28	1,345
01-Jan-2023 to 31-Dec-2023	12,979.16	99.5%	28	1,818
01-Jan-2024 to 31-Dec-2024	12,500.59	99.5%	28	1,751
01-Jan-2025 to 31-Mar-2025	3,635.13	99.5%	28	509
Total (01-Mar-2022 to 31-Mar-2025)	38,720.36	99.5%	28	5,423

Combining the calculation results above, the project emissions are shown in Table 5-7.

Table 5-7 Calculation of project emissions

Monitoring period	$PE_{EC,y}$ tCO ₂ e	$PE_{MD,y}$ tCO ₂ e	$PE_{UM,y}$ tCO ₂ e	$PE_y =$ $PE_{EC,y} + PE_{MD,y} + PE_{UM,y}$ tCO ₂ e
01-Mar-2022 to 31-Dec-2022	1	26,283	1,345	27,629
01-Jan-2023 to 31-Dec-2023	0.4	35,515	1,818	37,334

01-Jan-2024 to 31-Dec-2024	0.4	34,205	1,751	35,957
01-Jan-2025 to 31-Mar-2025	0.1	9,947	509	10,457
Total (01-Mar-2022 to 31-Mar-2025)	2	105,950	5,423	111,377

5.3 Leakage Emissions

As per the methodology ACM0008 (version 08.0), 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 does not include thermal energy use, the leakage is taken as zero, i.e., $LE_y = 0$.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Based on the above calculation process, the emission reduction is summarized as follows:

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCUs (tCO ₂ e)	Removal VCUs (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-Mar-2022 to 31-Dec-2022	290,118	27,629	0	262,489	/	262,489
01-Jan-2023 to 31-Dec-2023	392,118	37,334	0	354,784	/	354,784
01-Jan-2024 to 31-Dec-2024	377,503	35,957	0	341,546	/	341,546
01-Jan-2025 to 31-Mar-2025	109,824	10,457	0	99,367	/	99,367
Total	1,169,563	111,377	0	1,058,186	/	1,058,186

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Mar-2022 to 31-Dec-2022	403,606	262,489	-34.96%	This monitoring period is from 01-March-2022 to 31-March-2025, with a total of 1,127 days. The previously annual estimated emission reductions have been adjusted based on the actual installed capacity. The amount of emission reductions for this monitoring period would be 1,537,685 tCO₂e³¹. The actual emission reductions in this monitoring period are 1,058,186tCO₂e. which is 31.18%³² less than the estimated value.the main reason was less CMM supply. Thus, the net GHG emission reduction during this monitoring period is not overestimated.
01-Jan-2023 to 31-Dec-2023	504,803	354,784	-29.72%	
01-Jan-2024 to 31-Dec-2024	504,803	341,546	-32.34%	
01-Jan-2025 to 31-Mar-2025	124,472	99,367	-20.17%	
Total	1,537,685	1,058,186	-31.18%	

³¹ The estimated annual emission reduction is 274,038 tCO₂e with the electricity generate capacity of 7.6 MW, 634,610 tCO₂e with the electricity generate capacity of 17.6 MW. Therefore, the estimated annual estimated emission reductions during this monitoring period is $274,038 \times (31/365) + 274,038/7.6 \times 14 \times (275/365) + 634,610/17.6 \times 14 + 634,610/17.6 \times 14 + 632,715/17.6 \times 14 \times (90/365) = 1,537,685$ tCO₂e.

³² $(1,058,188 \text{ tCO}_2\text{e} - 1,537,685 \text{ tCO}_2\text{e}) / 1,537,685 \text{ tCO}_2\text{e} = -31.18\%$. Please refer to the ER spreadsheet for more detailed information.

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

No commercially sensitive information has been excluded in the monitoring report in the public version.

APPENDIX 2: SUPPORTING EVIDENCE

Evidence for SDG Target 13.0:

The corresponding emission reduction in the first and second monitoring period have been listed in below table.

Start Date	End Date	ER _y (tCO ₂ e)
26-Sep-2020	28-Feb-2022	350,473
01-Mar-2022	31-Mar-2025	1,058,186
Total		1,408,659

Please refer to the Joint PD-MR for the emission reduction achieved during the first monitoring period, which is accessible from the link below:

<https://registry.verra.org/app/projectDetail/VCS/2762>

Evidence for SDF Target 9.4: the document of raw coal production statistics table of Guizhou Xintian Coal Mine provided has been submitted to VVB for verification.

Evidence for SDG Target 8.5: The payroll of the project staff, including name, gender, wage and other specific information has been submitted to VVB for verification. Thus, the payroll is not included as appendices to this report due to confidentiality requirement of the project proponent.