SHAOYANG XINNING LFG POWER GENERATION PROJECT

CARBON CHECK (INDIA) PRIVATE LIMITED

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Project ID	5336
Verification period	01-July-2023 to 28-February-2025
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Client	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd.

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Summary:

- **A description of the project**

The project "Shaoyang Xinning LFG Power Generation Project" employs CDM methodology; ACM0001 Large-scale Consolidated Methodology, "Flaring or use of landfill gas", Version 19.0/B02/. The project activity is a landfill gas recovery and power generation project located at Laohutuo Landfill in Hengqiao Village, Wantang Town, Xinning County, Shaoyang City, Hu'nan Province, P.R. China, of which the main purpose is to use landfill gas for electricity generation. The total installed capacity of the project activity is 2.134 MW consisting of 2 sets of 1.067 MW generators. The project uses LFG from Laohutuo Landfill site for power generation.

- **A description of the validation and verification**

Carbon Check (India) Private Ltd. (Carbon Check) has been contracted by Climate Bridge (Shanghai) Ltd., the consultant, to carry out the joint validation and verification of the project "Shaoyang Xinning LFG Power Generation Project" in China/25/. The Validation and Verification is based on the desk review of the VCS JPD&MR /01/, supporting emission reduction calculation spread sheets /02/ and other relevant supporting documents made available to the verification team by the project proponent accompanied by the interviews. This verification involves the period of 01-July-2023 to 28-February-2025.

The project "Shaoyang Xinning LFG Power Generation Project" employs the approved CDM Methodology: ACM0001 Large-scale Consolidated Methodology: Flaring or use of landfill gas, Version 19.0/B02/. The project became operational on 01-July-2023, which has been confirmed from the JPD&MR V2.4/01/ and supporting evidence provided by the PP/07/.

The project aims to capture and destroy methane from the Laohutuo Landfill in Shaoyang City, Hu'nan Province, using combustion engines. The electricity produced from this process is then sold to the local grid, resulting in a net reduction of CO_2e emissions.

- **The purpose and scope of validation and verification**

Purpose: The purpose of validation is to have a thorough and independent assessment of the proposed project activity against the applicable VCS requirements, particularly the project's baseline, monitoring plan, and compliance with the relevant VCS and host Party criteria. These are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Carbon Check's objective is to perform a thorough, independent assessment of the validation of the project activity.

The purpose of the verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources are sufficient, definitive and presented in a concise and transparent manner. The monitoring plan, monitoring report, and the project's compliance with relevant VCS, UNFCCC, and host party criteria are verified to confirm that the project has been

implemented in accordance with the previously registered design and conservative assumptions, as documented.

Scope: Validation scope is defined as an independent and objective review of the Project Description section 1.1 of the Joint PD & MR/01/. The Joint PD & MR is reviewed against the relevant criteria and guidance documents provided by VCS which include the following: VCS Program Guide (v4.4, dated 29-August-2023), VCS Standard (v4.7, dated 16 April 2024), Program Definitions (v4.5, dated 16-April -2024), Registration & Issuance Process (v4.6, dated 16 October 2024) VCS Validation and Verification Manual (v3.2, dated 19-October-2016) applicable at the time in order to confirm that the project meets the applicability conditions of the selected baseline and CDM methodology; ACM0001 Large-scale Consolidated Methodology Flaring or use of landfill gas, Version 19.0, also assess the claims and assumptions made in the JPD&MR V2.4 without limitation on the information provided by the project participants.

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered VCS JOINT PD & MR.
- To verify the implemented monitoring plan with the registered VCS Joint PD & MR and applied baseline and monitoring methodology.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

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

  The validation consists of the following four phases:

  I. Desk review, involving:

  - Review of the data and information presented to verify their completeness.
  - Review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
  - Evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

II. **Onsite assessment involving:**

- Assessment of the implementation and operation of the proposed VCS project activity as per the VCS Joint PD & MR.
- Verification of implemented monitoring plan as per the VCS Joint PD & MR and applied baseline and monitoring methodology.
- Review of information flows for generating, aggregating, and reporting the monitoring parameters.
- Interview with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS Joint PD & MR.
- A cross-check between information provided in the monitoring report and data from other sources such as inventories, purchase records, or similar data sources.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS Joint PD & MR and the selected methodology.
- Review of calculations and assumptions made in determining the GHG data and emission reductions.
- Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

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

  A risk-based approach has been followed to perform this Joint Validation & Verification. During the course of Joint Validation & Verification, a total of 12 findings were raised, which includes:

  - 05 Corrective Action Request (CAR); 07 Clarification Requests (CLs) and 00 Forwarded Action Request (FAR)
  - All the raised findings have been successfully resolved by the PP.

- **Any uncertainties associated with the validation and verification**

There are no uncertainties associated with the joint validation & verification of the project activity. The validation and verification have been done with a reasonable level of assurance.

The VCS Joint PD & MR v2.4/01/, emissions reduction calculations /02/ along with the supporting documents provided are in line with all the VCS requirements /B01/. The validation and verification team has detected no further uncertainties or quality restriction

- **Summary of the validation and verification conclusions**

Carbon Check (India) Private Ltd. concludes the Joint Validation & Verification with a positive opinion that the VCS Project "Shaoyang Xinning LFG Power Generation Project" as described in the joint PD - MR (version 2.5, dated 15-October-2025) /01/, meets all applicable VCS requirements, including

those specified in the VCS Standard (v4.7, dated 16 April 2024), relevant methodology, tools, and guidelines.

The selected baseline and monitoring methodology (CDM methodology; ACM0001 Large-scale Consolidated Methodology, Flaring or use of landfill gas, Version 19.0) is applicable to the project and correctly applied. Carbon Check (India) Private Ltd. Therefore, requests the registration of the project as a VCS project.

In Carbon Check's opinion, the emission reductions reported for the "Shaoyang Xinning LFG Power Generation Project" in the monitoring report are fairly and correctly stated. Carbon Check is therefore able to certify that the emission reductions from the "Shaoyang Xinning LFG Power Generation Project" The average annual and total GHG emission reduction expected from the grouped project is expected to be 37,355 tCO_2e and 373,553 tCO_2e, respectively, over the 10-year fixed crediting period. The project activity has achieved an emission reduction of 54,194 tCO_2e over the current Monitoring period, from 01-July-2023 to 28-February-2025.

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1 INTRODUCTION

1.1 Objective

The purpose of this Joint validation & Verification audit is to conduct an independent assessment of the project to determine whether the project complies with the validation criteria as set out in section 1.2 of this report including their material accuracy. This report is to document the compliance of the VCS project "**Shaoyang Xinning LFG Power Generation Project.**" (hereafter referred to as "project") with the requirements of the Verified Carbon Standard (VCS) and the applied CDM methodology/B02/. As per the VCS PD & MR/01/, the project is owned by Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd (hereafter referred to as "PP").

As per the VCS Joint PD & MR/01/, VVB has ascertained the following on the VCS project:

Table I:

Applied methodology	CDM Methodology "ACM0001: Flaring or use of landfill gas - Version 19.0"/B02/
Sectoral scope	1: Energy industries (renewable-/non-renewable sources) 13: Waste handling and disposal

The validation and verification objective of the project includes:

- ✓ Assessment of compliance with the VCS Program Guide/B01/, VCS Standard version 4.7/B01/ and other relevant VCS requirements/B01/.
- ✓ Assessment of compliance with the applied CDM methodology ACM0001 Version 19.0/B02/.
- ✓ Assessment of project compliance with the relevant rules including host country legislation.
- ✓ Evaluation of monitoring plan and develop conclusions regarding the monitoring methodology and the collection archiving of data relevant to GHG emissions estimation and baseline emissions.
- ✓ Evaluation of the calculation of GHG emissions, including appropriateness of source, sink, and reservoirs, the correctness and transparency of formula and factor used, assumptions related to estimating GHG emission reductions and uncertainties.
- ✓ To develop conclusion based on validation criteria, submission of corrective action requests, clarification requests and forward action requests, as applicable.

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1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the Project Description (PD), project design, the project's baseline study and monitoring plan and other relevant documents. The PD is reviewed against the relevant criteria and decisions by the VCS Program, and against the approved baseline and monitoring methodology. Carbon Check has employed a risk-based approach in the validation, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The joint validation and verification of this project is based on the Joint PD & MR /01/ emission reduction calculation spreadsheets /02/, supporting documents made available to the verifier /03/ – /39/ and information collected through performing onsite visit interviews/15/. Furthermore, publicly available information was considered as far as available and required.

Carbon Check has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

The joint validation and verification are carried out on the basis of the following requirements, applicable for this project:

- VCS Program Guide v4.4
- VCS Standard v4.7
- VCS Program Definitions v4.5
- Registration & Issuance Process v4.6
- VCS Validation and Verification Manual v 3.2
- ACM0001: Flaring or use of landfill gas, Version 19.0
- Other relevant rules, including the host country legislation.

The scope of this joint validation and verification, by independent checking of objective evidence, is as follows:

- To verify that the project is implemented as described in the joint VCS Joint PD & MR.
- To assess the project's compliance with other relevant rules including the host country legislation.
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions without any double counting.

- To establish that the data reported are accurate, complete, consistent, transparent, and free of material error or omission by checking the monitoring records and the emissions reduction calculation.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.
- The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The method and criteria used for verification consisted of the following phases:

1.Completeness check and desk review

2.On site interviews with stakeholders

3.Resolution of outstanding issues and issuance of final verification report and applicable VCS Validation and Verification Deeds of Representation.

Carbon Check conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification team VVBs did not provide any consulting or recommendations for the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

1.3 Reasonableness of Assumptions and Level of Assurance

The Joint validation and verification report is based on the Joint PD & MR v2.5/01/, supporting documents /02-39/ made available to the Validation and Verification team and information collected through performing interviews.

The verification has been planned and organized to achieve a:

☒ Reasonable level of assurance as per VCS Standard (v4.7)

☐ Limited level of assurance

The threshold for quantitative materiality with respect to the aggregate of errors, omissions and misrepresentations, relative to the total reported GHG emission reductions and/or removals was limited to one percent, as required by section 4.1.10 of the VCS Standard version 4.7/B01/.

1.4 Summary Description of the Project

The project “Shaoyang Xinning LFG Power Generation Project” employs CDM methodology; ACM0001 Large-scale Consolidated Methodology Flaring or use of landfill gas, Version 19.0/B02/. The project activity is a landfill gas recovery and power generation project located at

Laohutuo Landfill in Hengqiao Village, Wantang Town, Xinning County, Shaoyang City, Hu'nan Province, P.R. China, of which the main purpose is to use landfill gas for electricity generation. The total installed capacity of the project activity is 2.134 MW consisting of 2 sets of 1.067 MW generators. The project uses LFG from Laohutuo Landfill site for power generation. Before the implementation of the project activity, the LFG generated from the Laohutuo Landfill was released into the atmosphere; the equivalent amount of electricity generated by the project activity was supplied by the fossil-fuel-dominated Central China Power Grid (CCPG). The baseline scenario is the same as the conditions existing prior to the implementation of the project activity. Greenhouse gas (GHG) emissions will be reduced by avoiding CO_2 emissions from those fossil fuel-based) power plants connected to the grid and by avoiding GHG emissions from releasing LFG into the atmosphere at the landfill site.

The project owner for the project activity is Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd, which owns the rights to VERs/39/

The project activity has been implemented in accordance with the joint VCS PD and MR /01/, and the emission reductions are calculated conservatively as per the applied methodology/B02/. The Project is expected to supply a total of 86,999.34 MWh electricity to CCPG during the fixed 10-year crediting period (from 01-July 2023 to 30-June-2033), with an annual average amount of 8,699.93 MWh. The average annual and total GHG emission reduction expected from the grouped project is expected to be 37,355 tCO_2e and 373,553 tCO_2e, respectively, over the 10-year fixed crediting period. During this monitoring period(01-July-2023 to 28-February 2025), a total amount of 11,257.770 MWh electricity has been supplied to the grid and the Project has achieved an emission reduction of 54,194 tCO_2e.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

Climate Bridge (Shanghai) Ltd. has appointed the VVB, Carbon Check (India) Private Ltd., to carry out the joint validation and verification of the project “Shaoyang Xinning LFG Power Generation Project" with regards to the relevant requirements of VCS Standard Version 4.7 /B01/.

The joint validation and verification include a thorough and independent assessment of the proposed project against the applicable VCS requirements /B01/, in particular the project's baseline, additionality, monitoring plan, and compliance with relevant VCS and host party criteria. The validation involves an assessment of the project to confirm that the project meets the applicability conditions of the selected methodology, ACM0001. version 19/B02/, and to assess the claims and assumptions made in the Joint PD and MR v2.5/01/ without limitation on the

information provided by the project participants. The overall joint validation and verification were conducted using Carbon Check's internal procedures.

The Joint validation and verification consist of the following three phases:

1. Completeness check and desk review of the joint PD and MR, monitoring plan, monitoring methodology, applicable tools in particular attention to the frequency of measurements, quality of metering equipment including calibration requirements, QA/QC procedures and other relevant documents.
2. On-site visit interviews (including follow-up interviews with project stakeholders, when deemed necessary). The onsite interviews include the following:
    - An assessment of the implementation and operation of project activity with respect to joint PD and MR v2.5.
    - Review of information flows for generating, aggregating, and reporting the monitoring parameters.
    - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with the monitoring plan of the project.
    - Cross check of information and data provided in the monitoring report with purchase records or similar data sources.
    - Review of assumptions made in calculating the emission reductions (if any). Implementation of QA/QC procedure in-line with the VCS joint PD & MR and methodology requirements.
3. Resolution of outstanding issues and the registration and issuance of the final joint validation and verification report and as applicable the VCS validation and verification Deed of Representation.

A time frame envisaged for this assignment is as follows:

Milestone description	Time
Date of contract signing with the VVB	01-November-2024
Submission of On-site audit plan to Client	02-March-2025
Submission of NOVS for to VERRA	17-February-2025
Submission of requisite documents to the VVB by client	14-February-2025
On-site Audit	11-March-2025
Submission of DVR to Client	22-March-2025

2.2 Document Review

During the document review, Carbon Check has applied standard auditing techniques including but not limited to document reviews and on-site interviews, review of the applicable/applied methodology and its underlying formulae and calculations to assess the quality of information provided. The validation and verification were performed primarily based on the review of the VCS joint PD & MR v2.5 and the supporting documentation. This process included:

- A review of data and information presented by the PP to verify their completeness.
- A review of the MP and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the QA/QC procedures, and
- An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

The Joint PD and MR v1.0 /01/ was initially reviewed and Carbon Check requested the PP to present the supporting information and documents /03/-/39/. The documents were reviewed by Carbon Check. Through the process of the validation and verification, the revised Joint PD and MR, monitoring report and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by the Carbon Check team.

The list of documents referred during the course of this verification has been provided in Appendix-1.1.

2.3 Interviews

The table below describes the onsite interview process and further identifies personnel, including their roles, who were interviewed and/or provided information additional to that provided in the joint project description & MR v2.5/01/ and any supporting documents.

A physical onsite visit to the project activity was undertaken on 11-March-2025 to assess the implementation and operation of the project activity and to review evidence, and interview key personnel to confirm evidence associated with the data generation, aggregation, and calculation and reporting of the monitoring parameters. The onsite visit assessment addressed:

- An assessment of the project implementation and operation as per the JPD&MR V2.5 (including physical inspection to confirm physical existence and operation of project components);
- Review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the monitoring report /02/.

The key personnel interviewed, and the main topics of the interviews are summarized in the table below.

Table 01: On-site interview process

Sl. no	Date	Name	Organisation	Topic	Persons Interviewed
/01/	11-March-2025	Xinhua Hu	Xinning Xinzhongshui-manager	1.Project Design 2. Project Implementation status 3.Project start date and Project Location 4. Baseline Scenario 5.Baseline Identification and Additionality 6.Qualification and Training 7.Monitoring and reporting documentation 8.Quality Assurance – Management and operating system 9.Social and Environmental Impacts 10.Local Stakeholders meeting process 11. Compliance with relevant laws 12. Roles and responsibility, Data Management, Data archive policy and Reporting 13. Child labor 14. Status of landfill 15. Methane generation	Muhammed Suhail K, Stefimol T A & Nara Shen
/02/	11-March-2025	Lin Keming	Manager – Climate Bridge	1.Project Design 2. Project Implementation status 3.Project start date and Project Location	Muhammed Suhail K, Stefimol T A & Nara Shen

				4. Baseline Scenario 5.Baseline Identification and Additionality 6.Qualification and Training 7.Monitoring and reporting documentation 8.Quality Assurance – Management and operating system 9.Social and Environmental Impacts 10.Local Stakeholders meeting process 11. Compliance with relevant laws 12. Roles and responsibility, Data Management, Data archive policy and Reporting 13. Child labor 14. Status of landfill 15. Methane generation	
/03/	11-March-2025	Peiyao Wang	Climate Bridge	1.Project Design 2. Project Implementation status 3.Project start date and Project Location 4. Baseline Scenario 5.Baseline Identification and Additionality 6.Qualification and Training 7.Monitoring and reporting documentation 8.Quality Assurance – Management and operating system 9.Social and	Muhammed Suhail K, Stefimol T A & Nara Shen

				Environmental Impacts 10.Local Stakeholders meeting process 11. Compliance with relevant laws 12. Roles and responsibility, Data Management, Data archive policy and Reporting 13. Child labor 14. Status of landfill 15. Methane generation	
/04/	11-March-2025	Yi Kang	Climate Bridge	1.Project Design 2. Project Implementation status 3.Project start date and Project Location 4. Baseline Scenario 5.Baseline Identification and Additionality 6.Qualification and Training 7.Monitoring and reporting documentation 8.Quality Assurance – Management and operating system 9.Social and Environmental Impacts 10.Local Stakeholders meeting process 11. Compliance with relevant laws 12. Roles and responsibility, Data Management, Data archive policy and Reporting 13. Status and Operation of MSW landfill.	Muhammed Suhail K, Stefimol T A & Nara Shen

				14. Data collection and data flow	
/05/	11-March-2025	Guanghna Gong	Xinning Xinzhongshui	Project implementation and operation, monitoring procedure, grievance, Monitoring and measuring system	Muhammed Suhail K, Stefimol T A & Nara Shen
/06/	11-March-2025	Jigi yaw	LSC	Project implementation and operation, monitoring procedure and grievance	Muhammed Suhail K, Stefimol T A & Nara Shen
/07/	11-March-2025	Yanping deng	Landfill staff	Project implementation and operation, monitoring procedure, grievance, Monitoring and measuring system	Muhammed Suhail K, Stefimol T A & Nara Shen
/08/	11-March-2025	Hailiang Yu	Villager	Project implementation and operation, monitoring procedure and grievance	Muhammed Suhail K, Stefimol T A & Nara Shen
/09/	11-March-2025	Zhengjie Wang	Xinning Xinzhongshui - Staff	Project implementation and operation, monitoring procedure, grievance, Monitoring and measuring system	Muhammed Suhail K, Stefimol T A & Nara Shen
/10/	11-March-2025	Huilan Zhaw	Xinning - Staff	Project implementation and operation, monitoring procedure, grievance, Monitoring and measuring system	Muhammed Suhail K, Stefimol T A & Nara Shen

2.4 Site Visits

Carbon Check (India) Pvt. Ltd. has conducted an on-site inspection to confirm the implementation and operation status of the project activity. A reasonable level of assurance has been maintained through the on-site visit for the purpose of validation and verification as follows:

- An assessment of the implementation and operation of the project activity through onsite interviews with the representatives of the project proponent and end users.
- Confirmation of the pre-project scenario
- Confirmation of the applicability of the methodology and monitoring and controlling instruments and operational arrangements.
- Confirm the data collection procedures are implemented in accordance with the MP
- Assessment of the project boundaries
- Assessment of the monitoring provisions by checking the monitoring arrangement.
- A review of information aggregating and reporting of the monitoring parameters
- A check of the observations of monitoring practices against the requirements of the VCS Joint PD & MR and the applied monitoring methodology.
- A review of calculations and assumptions made in determining the GHG data and ERs, and
- An identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters

2.5 Resolution of Findings

This section summarizes the findings from the joint validation & verification of the project activity. In this section the findings from the document review, assessments and onsite interviews are provided. Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

- Clarification requests (CLs): Project reporting lacks transparency and further information is needed to determine if a material discrepancy is present.
- Corrective action requests (CARs): The VVB has identified a material discrepancy or non-conformance that the project proponent must address.

The validation & verification team identified 05 CARs and 07 CLs. All CAR and CLs raised by Carbon Check (India) Private Limited during this joint validation & verification have been resolved by the PP. Please refer to Appendix 4 below for the details of the CARs/CLs and their

closure. If this was not completed, the ERs cannot be certified and recommended for issuance to the VCS Registry.

2.5.1 Forward Action Requests

A forward action request (FAR) should be issued, where:

Forward Action Request (FAR) is to be raised when the monitoring and reporting require attention and/or adjustment for the next verification period. FARs does not relate to VCS requirements for issuance of ERs achieved during subject monitoring.

No FARs has been raised by Carbon Check during this joint validation and verification.

3 VALIDATION FINDINGS

3.1 Project Details

The project activity is a landfill gas recovery and power generation project of which the main purpose is to use landfill gas for electricity generation. The total installed capacity of the project activity is 2.134 MW consisting of 2 sets of 1.067 MW generators.

The project uses LFG from the Laohutuo Landfill site for power generation. During the 10-year fixed crediting period, the power generated by the project is expected to be 86,999.34 MWh which will be exported to the grid. The Project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants of Central China Power Grid (CCPG). Meanwhile by utilizing the landfill gas recovered by project, the project activity avoids the emission of methane that would be generated under landfill condition. It's estimated that the project activity could achieve GHG emission reductions of 373,553 tCO_2e during the 10-year crediting period, with annual emission reductions of 37,355 tCO_2e.

The project activity is located at Laohutuo Landfill in Hengqiao Village, Wantang Town, Xinning County, Shaoyang City, Hu'nan Province, P.R. China. The project activity has been developed by Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd. The geographic coordinates of the project activity are longitude of 110°49'34.54"E and latitude of 26°29'39.41"N, which is confirmed by site visit.

The Project activity has been approved by Chinese government by checking the Project FSR approval /03/ and Environmental Impact Assessment (EIA) approval /04/. The project started construction on 30-December-2022 confirmed by checking construction contract /08/ and commissioned on 01-July-2023 by checking Completion receipt/07/ and crosschecking with electricity sales receipt/18/.

By checking Environmental Impact Assessment (EIA) Approval /04/, the assessment team confirmed that the project activity has been approved by Shaoyang Municipal Bureau of Ecology and Environment Xinning Branch on 27-December-2022.

The document was translated by Shenzhen ODB Translation Co., Ltd., a certified translation service provider holding ISO 17100 accreditation. The VVB has cross-checked the translator's business license/41/ and certification/42/ to confirm its validity. Based on this verification, the EIA approval is deemed authentic and demonstrates that the project activity has received government authorization in accordance with national environmental regulations.

The VVB verified the corresponding Pollutant Discharge Permit issued by Shaoyang Municipal Bureau of Ecology and Environment, administered by the Ministry of Ecology and Environment of the People's Republic of China/43/. The permit is valid from 13-July-2022 to 12-July-2028. The web pages and relevant screenshots were translated and certified by Shenzhen ODB Translation Co., Ltd. (ISO 17100 certified)/41//42/, and the translator's credentials have been cross-verified.

As stipulated under Article 11 of the Regulation on the Administration of Permitting of Pollutant Discharges[1] (State Council Order No. 736, issued 24 January 2021), a pollutant discharge permit may only be issued to entities that have:

1. Obtaining an approval document for the environmental impact report (form) of the construction project in accordance with the law, or having completed filing procedures for the environmental impact registration form.
2. The discharge of pollutants shall comply with the requirements of the pollutant discharge standards, and the discharge of key pollutants shall comply with the requirements of the technical standards for applying for and issuing pollutant discharge permits, the approval document for the environmental impact report (form), and the requirement for the control of the total volume of key pollutants discharged; and if the production and operation venue of the pollutant discharge entity is located in a key area or river basin which fails to meet the national environmental quality standards, the pollutant discharge entity shall also comply with the special requirements of the relevant local people's government for improving ecological and environmental quality.
3. The use of a pollution prevention and control facility can achieve the compliance with the requirements for permitted concentration of discharge or conformity with the feasible technology for pollution prevention and control.
4. The monitoring loci, indicators, and frequency, among others, of the self-monitoring plan comply with the national self-monitoring standards.Given that the project proponent holds a valid Pollutant Discharge Permit meeting these regulatory prerequisites/43/, and that the current monitoring period falls within its validity, the VVB concludes that the project's operation and pollution performance are consistent with the applicable legal and environmental authorization requirements.

[1] Regulation on the Administration of Permitting of Pollutant Discharges

The above mentioned translations on Article 11 has been done by lawinfochina.com which has been crosschecked by VVB to recognize as an authoritative source. Accordingly, the VVB concludes that the project is genuine and reliable, with its pollutant discharge activities remaining in continuous compliance throughout the current monitoring period.

Accordingly, based on the verification of the above public records and certified translations, the VVB confirms that the project activity has obtained credible and valid governmental approvals, satisfying Verra's requirement under VCS Standard v4.7, Section 1.2.1 and Section 3.7.1

Carbon Check checked through on-site audit and desk review confirms that the details of the project proponent is as below:

Organization name	**Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd.**
Contact person	HU Shenghua
Title	Project Manager
Address	Hengqiao Village, Wantang Town, Xinning County, Shaoyang City, Hu'nan Province, P.R. China
Telephone	+86 021-23019950
Email	3542346576@qq.com

Carbon Check checked through on-site audit and desk review confirms that the details of the other entity involved is as below:

Organization name Role in the project	Climate Bridge (Shanghai) Ltd. 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	gao.zhiwen@climatebridge.com

Overall, it is confirmed that the joint PD&MR v2.5 is accurate, complete, and provides an understanding of the nature of the project.

Item	Evidence gathering activities, evidence checked, and assessment conclusion

Audit history	The Joint validation & verification of this project activity was conducted by Carbon Check (India) Private Ltd.
Sectoral scope	1: Energy industries (renewable-/non-renewable sources) 13: Waste handling and disposal
AFOLU project category, if applicable	Not applicable since the project activity was not an AFOLU project.
Project activity type	By checking joint PD&MR v2.5 and applied methodology, it is confirmed that the project activity type of the project belongs to Energy industries (renewable-/non-renewable sources) (scope 01) and Waste handling and disposal (scope 13).
General eligibility of the project to participate in the VCS Program	• By checking joint PD&MR and applied methodology, it is confirmed that the project activity type of the project belongs to Energy industries (renewable-/non-renewable sources) (scope 01) and Waste handling and disposal (scope 13). • The project fully met the requirements related to pipeline listing deadline, the opening meeting with the VVB, and the validation deadline by checking information on the VCS website. • By checking VCS website, it is confirmed that the applied methodology for the project is eligible under the VCS Program as large-scale methodology. • By checking Project FSR approval /03/ and site visit, it is confirmed that the project is not a fragmented part of a larger project or activity that would otherwise exceed such limits.
AFOLU project eligibility, if applicable	Not Applicable
Transfer project eligibility, if applicable	Not applicable
Project design	• Not appliable since the project is not a grouped project activity.
Project ownership	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd. is the project owner of project activity and they have the legal right to control and operate the project activity.

<table>
<tr><td></td><td>The project ownership has been checked by the assessment team and demonstrated through checking Project FSR approval /03/, EIA Approval/04/ business license /05/ and Power Purchase Agreement/06/</td></tr>
<tr><td>Project start date</td><td>By checking completion receipt/07/ and crosschecking with electricity sales receipt /18/and invoices via onsite interview/15/, it was verified the project started commercial operation on 01-July-2023, which is the start date of the project activity.</td></tr>
<tr><td>Project crediting period</td><td>The project activity adopts 10-year fixed crediting period.

Crediting Period Start date: 01-July-2023

Crediting Period End date: 30-June-2033</td></tr>
<tr><td>Project scale</td><td>The project scale is categorized as “Project”.

As per the section 1.11 of the VCS JPDMR, V2.5 /01/, the project activity generates an emission reduction of 37,355 tCO_2e /year which is less than < 300,000 tCO_2e/year, thus complies with eligibility of “Project” scale provided in the section 3.10 of the VCS Standard, V4.7.

In order to verify the scale of the project activity, VVB has reviewed the documents such as Joint PD&MR v2.5 /01/ and ER sheet /02/and the confirms the scale of the project activity is “Project “.</td></tr>
<tr><td>Likelihood of achieving estimated GHG emission reduction or removals</td><td>As the estimated annual average GHG emission reductions or removal per year is 37,355 tCO_2e, which is less than 300,000 tCO_2e per year, the project falls in the category of Project
<table>
<tr><th>Calendar year of crediting period</th><th>Estimated GHG emission reductions or removals (tCO_2e)</th></tr>
<tr><td>01-July-2023 to 31-December-2023</td><td>16,219</td></tr>
<tr><td>01-January-2024 to 31-December-2024</td><td>34,068</td></tr>
</table>
</td></tr>
</table>

01-January-2025 to 31-December-2025	35,141
01-January-2026 to 31-December-2026	36,097
01-January-2027 to 31-December-2027	36,952
01-January-2028 to 31-December-2028	37,719
01-January-2029 to 31-December-2029	38,413
01-January-2030 to 31-December-2030	39,042
01-January-2031 to 31-December-2031	39,616
01-January-2032 to 31-December-2032	40,141
01-January-2033 to 30-December-2033	20,145
Total estimated ERRs during the first or fixed crediting period	**373,553**
Total number of years	**10**
Average annual ERRs	**37,355**

	The above estimated emission reduction is confirmed by VVB assessment team via emission reduction calculation spreadsheet/02/. The calculation is conservative and this is acceptable to the assessment team. The likelihood of achieving estimated GHG emission reduction is high.
Technologies and measures implemented by the project activity	The project activity is a landfill gas recovery and power generation project of which the main purpose is to use landfill gas for electricity generation. The total installed capacity of the project activity is 2.134 MW consisting of 2 sets of 1.067 MW generators. The project consists of LFG collection, transmission and treatment system, with subsequent electricity generation and grid connection system. **Gas collection system** The gas collection system includes wells, pipelines, and blowers. The blowers draw the LFG extracted from the gas wells, and then the LFG is transported via the pipelines to the pre-treatment system **Gas pre-treatment system** Before entering the gas engines, the LFG is pre-treated so that impurities and moisture are removed to avoid corrosion of the electricity generation system. In addition, the pre-treatment system maintains the LFG in a continuously stable condition before the gas generator inlets. The pre-treatment includes filtration, dehumidification, cooling and pressurization **Power generation system** Two gas generators with a rated capacity of 1.067 MW each have been installed, and they are fed with the LFG to generate electricity, which is then exported to the grid. The service provided by the project is electricity. In the baseline scenario, the same amount of electricity would have been supplied by power plants connected to the grid. **Flare system** A flare system has been installed to combust LFG when the power generators are out of operation or under maintenance for a long time; however, such emission reductions will not be included in the calculation to follow the conservation principle.

The flare system has a rated power of 1.5 KW/H and a capacity of 1500 m^3/h. Since the pre-treatment system has a designed flow rate of 1100 – 1400 Nm^3/h, the capacity is adequate for all LFG generated. The size of the flare is 680 mm×4800 mm

The technical specifications are mentioned as below and the same were checked during on-site visit and checking technical specification of equipment /38//36/:

System	Parameter	Value
Gas collection system	Type	Integrated system with impermeable cover and vertical wells
	Capture efficiency	50%
Gas pre-treatment system	Type	QC-02, QC-03
	Number	1
	Capacity	1100 – 1400 Nm^3/h
Power generation system	Type	JGS 320 GS -L,L
	Number	2
	Rated capacity	1.067 MW
	Rated frequency	50 Hz
	Rated voltage	400 V
	Rated current	1540 A
	Lifetime	24 yr
	Manufacturer	Jenbacher GmbH & Co OG

	<table><tr><td rowspan="4">Flare system</td><td></td><td></td></tr><tr><td>Type</td><td>HJ-100</td></tr><tr><td>Number</td><td>1</td></tr><tr><td>Power</td><td>1.5 KW/H</td></tr><tr><td></td><td>Size</td><td>680 mm×4800 mm</td></tr></table> By site visit interview, it is confirmed that when the engines are scheduled to shut down, the LFG collection system reduces the gas in advance. There is no LFG is collected and left in the entire project system during the planned shutdown. During any malfunction of LFG power generators, the LFG collection system will reduce the intake volume according to the current situation, and other small amounts of LFG will enter to the pipeline and LFG stabilization cabinet for temporary storage. After the engines return to normal, the LFG collection system will adjust to increase the intake volume. The same has been also confirmed from the review of LFG Collection System Design/36/.
Implementation schedule of the project activity or activities	The Project activity has been approved by China's government by checking Project FSR approval /03/ and Environmental Impact Assessment (EIA) approval/04/. The project started construction in 30-December-2022 confirmed by construction order and commissioned on 01-July-2023 by checking operation log and on-site visit interview/15/.
Project location	The Project is located in Hengqiao Village, Wantang Town, Xinning County, Shaoyang City, Hu'nan Province, P.R. China. The coordinates at the center of the project site are 26°29'39.41"N, 110°49'34.54"E. which is confirmed through checking online GPS map during site visit/15/.
Conditions prior to project initiation	Before the implementation of the project activity, the electricity generated by the project would be supplied by CCPG in the baseline scenario and the LFG combusted would be vented to atmosphere without utilization.

	The same has been confirmed by checking FSR/09/, Project FSR approval /03/ and site visit/15/.
Project compliance with applicable laws, statutes and other regulatory frameworks	Assessment team confirms that the Project has been approved by P. R. China's government by checking the Project FSR approval /03/ and Environmental Impact Assessment (EIA) approval/04/. By checking laws and regulation, it is confirmed that the project activity is in complicance with all laws and regulations in China[23]
Double counting and participation under other GHG programs	**Projects registered (or seeking registration) under other GHG program(s) and Rejection by other GHG programs** The project has neither been registered nor seeking registration under any other GHG programs. The Project is not rejected by other GHG programs. The project is seeking registration only in VCS program. The declaration /10/ for the same is checked and found correct by the assessment team. VVB also checked the following registries to confirm the same. The details of the registries checked are as follows: • http://www.irecstandard.org/ • http://cdm.unfccc.int/ • http://www.goldstandard.org/ • https://ccer.cets.org.cn/ • http://verra.org/ It is confirmed that the project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program. REC Mechanism database of P. R. China has been crosschecked and found that the project activity is not accredited / registered under REC mechanism. Furthermore, although China has re-

[22] https://www.ndrc.gov.cn/xwdt/tzgg/202206/P020220602315650388122.pdf

[3] https://www.gov.cn/zhengce/zhengceku/2021-05/14/5606349/files/bd8ca92c767f4b8786b9374a76e0d1fd.pdf

	launched domestic GHG program as CCER, based on current regulation, the project is not eligible under CCER[4]. The project has provided all information required on whether it is registered or seeking registration under any other GHG programs as the project only apply under VCS Standard. The Project is not rejected by other GHG programs as the project only apply under VCS Standard.
No double claiming with emissions trading programs or binding emission limits	VVB confirms that the net GHG emission reductions generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits. The assessment team checked the REC Mechanism database of China and Chinese Emission Trading System (Chinese ETS) /26//27/ and found that the project activity is not accredited / registered under REC mechanism or Chinese ETS. Thus, the assessment team concluded that the project activity is not involved on other Emissions trading programs and other binding limits. Furthermore, as per "Notice on Key Work Related to the Management of Greenhouse Gas Emission Reports for Enterprises in 2022" /28/ issued by Ministry of Ecology and Environment of P. R. China, China has a national emissions trading scheme covering thermal power generation industry. However, power generation using landfill gas is excluded and thus no emission cap was enforced for the project proponent.
No double claiming with other forms of environmental credit	The Project has no intend to generate any other form of GHG related environmental credit for GHG emission reductions or removals claimed under the VCS Program. Renewable energy certificates are available for trading in the host country. By checking REC Mechanism database of China /26/ as well as I REC website /27/, it was verified only covering wind, solar, hydro and biomass power was covered. Therefore, it was verified the project activity is not included in REC Mechanism database of China.
Supply chain (Scope 3) emissions double claiming	It is confirmed that the project is to capture and utilize the landfill gas which otherwise will be released to atmosphere,

[4] https://ccer.cets.org.cn/client/home

	and it will not impact the emissions of goods and services in a supply chain, i.e. Scope 3 emissions.
Sustainable development contributions	The project activity would contribute to sustainable development in the region in following aspects confirmed by on-site audit: **SDG 13 Climate Action**: The project will recover and destroy landfill gas that consists mainly of greenhouse gas methane and would otherwise be released directly into the atmosphere, effectively reducing greenhouse gas emissions, which contributes to the China's commitment to peak carbon dioxide emissions before 2030; **SDG 7 Affordable and Clean Energy**: Increase electricity production from renewable sources, which will certainly reduce the consumption of fossil fuel in Central China Power Grid and further help to achieve the national action to promote renewable energy development; **SDG 8 Decent Work and Economic Growth**: The project activity can provide employment opportunities for local villagers, which will have a positive effect on the local economy. Sustainable development priorities are illustrated in the People's Republic of China National Report on Sustainable Development issued on 01/06/2012. Sustainable development priorities of the Report related to the project are promoting new energy development, strengthening environmental pollution control and responding to climate change. Methane is an ideal clean fuel. Each cubic meter of methane contains about 360,000 kJ calorific value, LFG recovery and utilization will supplement the energy supply of the grid and contributes to the new energy development in China. Odour from landfill negatively impacts on residents around the landfill. Implementation of the project will reduce odours through LFG collection and will thus mitigate the impact of landfill odour on people's daily lives. Landfill gas contains nearly 50% of methane and methane is a greenhouse gas some 28 times more potent than carbon dioxide. LFG recovery and utilization is contribution to mitigating global warming

SDG Target	SDG Indicator	Project activity contribution

	7.2	7.2.1 Renewable electricity share in the total final energy consumption	Total 86,999.34 MWh of renewable energy generated during the crediting period (01-July-2023 to 30-June-2033). Total 11,257.770 MWhof renewable energy generated during the monitoring period (01-Jul-2023 to 28-Feb-2025). The values can be crosschecked from sales receipt, invoices etc w.r.t Electricity generation/18/.
	8.5	8.5.1 Average hourly earnings of employees, by sex, age, and occupation	The project activity employs 6 permanent and full-time employees through its operational company. (Crediting period and Monitoring period) Confirmed from employee records provided by the PP/23/ and on-site interviews/15/,
	13.0	13.0 Tonnes of greenhouse gas	The project is expected to avoid

		emissions avoided or removed	anthropogenic emissions of greenhouse gases (GHG) of **373,553** tCO_2e during the crediting period. For the monitoring period, the project activity avoided emissions of greenhouse gases (GHG) of 54,194 tCO_2e. The values has been cross checked and confirmed from ER sheet/02/
Additional information relevant to the project	**Leakage Management** As per methodology ACM0001 (Version 19.0), no leakage effects are accounted for. Therefore, leakage management does not apply to the Project. **Commercially sensitive information** No commercially sensitive information has been excluded from the public version of the project description. The details are presented transparently to the assessment team for analysis which lead to positive conclusion for this joint validation and verification. **Any additional relevant information** As confirmed with PP, VVB is able to confirm that there are no additional relevant information that may have a bearing on the eligibility of the project, the reductions or removals, or the quantification of the project's reductions or removals.		

3.2 Project Activity Instances in Grouped Projects

The project activity is not a grouped project and hence, this section is not applicable.

3.3 Safeguards

3.3.1 Stakeholder Engagement and Consultation

3.3.1.1 Stakeholder Identification

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder identification	Stakeholders were identified and assessed according to the guidelines outlined in section 3.18.1 of the VCS standard, v.7 /B01/. During validation and verification process VVB found that a comprehensive approach was taken to identify all the relevant stakeholders of the project. The VVB team thoroughly examined the legal, environmental, and socio-economic impacts associated with the project activity while evaluating and analyzing stakeholders and stakeholder groups. This involved mapping out the persons, groups, and entities who are directly or indirectly affected by the project (i.e., those deriving income, livelihood, and/or community value from the project). These stakeholders were further evaluated based on how deeply affected they may be by the project, and those most impacted have been included in the stakeholder engagement. Residents of the nearby village, Staff of the project and Relevant administrative staff of the local government were identified as the stakeholders for this project activity. Based on this comprehensive assessment, it is determined that the stakeholder identification process has effectively captured all (potential) stakeholders. The approach to stakeholder identification is considered appropriate for the project's context.
Legal or customary tenure/access rights	The project is in in Hengqiao Village, Wantang Town, Xinning County, Shaoyang City, Hu'nan Province, P.R. China. By checking Project FSR approval /03/, approved by The Shaoyang Development and Reform Commission, it is confirmed that the Project

	was built in the reserved area of the Laohutuo landfill, which is state owned and managed by the local government. Hence, it has been confirmed that the project activities do not involve conflicts on 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.
Stakeholder diversity and changes over time	The project involves diverse stakeholder groups, including local residents, project staff, and government officials, each with different social and educational backgrounds. Local residents are mostly elderly with low education levels and incomes, working as farmers or in temporary landfill jobs. Project staff are generally better educated, with men handling technical roles and women in administrative positions. Government officials, the most educated and socially influential group, supervise and regulate the project. All stakeholders are Han, with no ethnic or cultural diversity present. Interaction among stakeholders is largely collaborative, with the project offering limited economic benefits to residents through employment opportunities, though group composition and diversity change very little over time.
Expected changes in well-being	The project aims to enhance local environmental conditions by cutting greenhouse gas (GHG) emissions and delivering a clean source of electricity. Utilizing methane for power generation reduces harmful emissions, unpleasant odors, and air pollution, thereby contributing to a healthier ecosystem. These environmental benefits positively impact both nearby communities and the power plant workforce. The project also creates job opportunities for local residents, helping to alleviate unemployment in the area. Over time, these positions may allow residents to boost their income. In summary, the project promotes both environmental protection and economic growth within the local community. By site visit /15/and checking Project FSR approval /03/, the same has been confirmed.
Location of stakeholders	Residents of the nearby villages that may be influenced by the Project refer to communities around the project site, and most staff of the project live in urban area of Xinning County, southeast of the project site. The local government is located in the urban center of Xinning County in the southeast of the LFG power plant. The stakeholder identification of the project activity is found to be reasonable.

Location of resources	The project is in an existing landfill and no identified stakeholders own or have customary access to the land and resources occupied by the project.

3.3.1.2 Stakeholder Consultation and Ongoing Communication

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder engagement process	By checking joint PD&MR v2.5 /01/, Stakeholder Meeting Notice /11/, Stakeholder Meeting Minutes /12/ and interviewing stakeholders and PP during site visit/15/, it was verified a stakeholder meeting was held on 27-September-2023 to collect stakeholders' comments for the project activity. Via interviewing stakeholders and PP during site visit/15/, it was verified before the stakeholder consultation meeting, the project information with contact information was published on the bulletins at and nearby the project site to invite Local stakeholders. The project proponent has put up public announcements on bulletin boards at the landfill and at neighbourhoods near the project site on various dates two weeks ahead of the consultation By checking questionnaires /13/, it was verified a survey was carried out to collect comments from local residents through distributing and collecting responses to a easy-designed questionnaire. PP considered the differences and interactions between the stakeholder groups, the stakeholders involved in the questionnaire survey were thereby local residents with different sex, age groups, education background and occupation, which are within different social, economic, and cultural diversity. The questionnaire includes a brief summary of the project activity, including the project design, impacts of the project and other relevant key information. In total 26 out of 26 questionnaires were returned with a 100% response rate.
Consultation outcome	Overall, the project is positively received by local stakeholders, who believe it will enhance livelihoods, boost the local economy, and increase the clean electricity supply with minimal environmental harm. Employment generation and economic development are seen as key benefits. On review of the questionnaires/13/ some concerns were raised about potential air, water, and noise pollution, the project proponent addressed these with references to strict environmental standards and mitigation measures. Wastewater treatment will comply

	with national standards, and the project is not expected to add environmental stress. Measures are also in place to minimize emissions and noise pollution. The inclusive consultation process and commitment to FPIC and VCS validation further strengthen stakeholder confidence and project credibility.
Ongoing communication	The project owner has established a comprehensive and ongoing communication mechanism to ensure stakeholder engagement throughout the operation phase. Regular meetings, questionnaires, and multiple communication channels—such as phone calls, emails, and bulletin boards—enable stakeholders to stay informed and voice their concerns. A clear grievance mechanism is in place, allowing residents to submit complaints directly or through local representatives. The project proponent commits to reviewing the grievance register weekly and responding to complaints within one week. Any necessary updates or changes to the project are addressed through careful assessment, transparent communication, and continuous feedback until resolution. This process reflects a strong commitment to stakeholder inclusion and accountability.Grienance register has been reviewed by the VVB/14/ Ongoing consulations has been carried out on 14-September-2023 and 24-September-2024 which covers the current monitoring period. Therefore, it is able to confirm the ongoing communication process with the local stakeholders and grievance handling procedure is in place with effectiveness.
Stakeholder input	By checking the questionnaires/13/, meeting minutes/12/ and site visit/15/, confirm that the local stakeholder has no major negative comments for the construction of the project activity, and minor negative comments have been considered with mitigation measurements

3.3.1.3 Free, Prior, and Informed Consent

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Obtaining consent	By checking Project FSR approval /03/ and EIA approval/04/ issued by government, it is confirmed the project has been approved by Chinese government.

	By checking the business license/05/, it is confirmed that the project owner has the legal right to use the LFG generated from landfill site for power generation. By checking questionnaires, grievance expression book, meeting minutes and site visit, it is confirmed that local stakeholders held full right for FPIC. Therefore, it is confirmed that the project activity does not violate any legal rights held by stakeholders, indigenous people (IPs), local communities (LCs), and customary rights holders.
Outcome of FPIC discussion	The project has been approved by Chinese government and local management institute. And local stakeholders have no major negative comments for the construction and operation of the project. The project has not encroached on land, relocated people without consent, and forced physical or economic displacement/15/.

3.3.1.4 Grievance Redress Procedure

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Development process	By checking grievance expression book /14/ and site visit/15/, it is confirmed that a grievance expression book will be put in the office of the project, which is used to collect stakeholders' views about the project. Project proponent will be checking the comments in the book on a regular basis, and record responses. The project information with contact information has also been posted on the bulletins at and nearby the project site/15/. If any grievances are received during the project construction and operation, the project proponent will take on a series of reactions to resolve stakeholders' concerns. When stakeholders express their misgivings in the questionnaire survey, the project proponent will explain related issues including the corresponding measures on time. Therefore, it is able to confirm the ongoing communication process with the local stakeholders and grievance handling procedure is in place with effectiveness.
Grievance redress procedure	The project proponent will address all grievances received during construction and operation through timely and structured responses. Concerns raised via surveys, phone, email, or direct communication will be explained within a week, followed by personal communication

	to clarify actions and gather feedback. If project updates are needed, appropriate solutions will be implemented, and progress will be shared with complainants until the issue is fully resolved. During the onsite inspection interviews and based on document review /15/, it can be confirmed that grievance addressal procedure has been designed and is implemented according to section 2.1.2 of the Joint PD & MR v2.5 /01/ and that it is effective in its aim

3.3.1.5 Public Comments

No comment was received during the public comment period from 03-February-2025 to 05-March-2025 on the Verra Registry site:

https://registry.verra.org/app/projectDetail/VCS/5336.

The methodology applied has been changed from AMS-III.G: Landfill methane recovery (Version 10.0) and AMS-I.D: Grid connected renewable electricity generation (Version 18.0) to ACM 0001: Flaring or use of landfill gas (Version 19.0), which has been approved by VERRA. The project has redone the public comment period due to the methodology change as requested by VERRA. The first public comment period was from 25-Novemver-2024 to 25-December-2024, and the later public commenting period for the final applied methodology is from 03- February-2025 to 05-March-2025. No comments were received during the public comment period for the Project.

Comments received	Actions taken by the project proponent	Evidence gathering activities, evidence checked, and assessment conclusion
N/A	N/A	N/A

3.3.2 Risks to Local Stakeholders and the Environment

3.3.2.1 Management Experience

By checking Business License/05/, it was verified the Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd was established on 20-May-2022, with main business scope containing “power generation”. Therefore, the assessment team deemed PP has expertise or experience in implementing similar project activities and engaging communities.

By checking EIA Approval/04/ and Project FSR approval /03/ issued by government, it is confirmed the project has been approved by Chinese government which means the government recognize the experience of PP for project construction and operation. Moreover, the project owner of the project has developed several LFG projects and therefore has extensive development and management experience

3.3.2.2 Risk Assessment

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Natural and human-induced risks to stakeholders' wellbeing	By checking EIA Approval/04/ and Project FSR approval /03/issued by government, it is confirmed the project has been approved by Chinese government, in this sense, the project meets all the requirement of regulation and laws set up by Chinese government in aspect of environment, health and safety. On the other hand, the project would contribute following changes in well being according to Project FSR approval : *1.* Economic well-being – the project activity is likely to provide employments to the locality thus economic well beings are expected; *2.* Environmental well-being – (a) as this project activity reduces the methane emissions in atmosphere by recovering and utilizing LFG to generate electricity, it will bring environmental well-being in the locality. (b) Total electricity generation supplied by the project to the grid is estimated to be 86,999.34 MWh for the entire crediting period, which could replace the equivalent electricity from fossil fuel based grid. Therefore, it was verified no natural and human-induced risks has been identified to stakeholders' wellbeing
Risks to stakeholder participation	By checking Project FSR approval /03/and EIA approval/04/ issued by government, it is confirmed the project has been approved by Chinese government, in this sense, the project should meet all the requirement of regulation and laws set up by Chinese government in aspect of environment, health and safety. Also, during the site visit, no risks has been identified to stakeholder participation.
Working conditions	Upon reviewing the Project FSR approval /03/and EIA approval/04/ issued by the Chinese government, it is

	confirmed that the project has received official authorization. This confirmation indicates that the project meets all applicable environmental, health, and safety regulations and legal requirements set forth by the Chinese government. Also, during the site visit/15/, it is confirmed that PP provides safety training/32/ and adequate labor protection supplies for the employees. Training records has been cross verified /32/by the VVB for the conformance of the same. No risks identified for working conditions
Safety of women and girls	As per the section 2.2 of the Joint PDMR, v2.5/01/, the project does not identify any risk related to women and girls since all legal working conditions are already verified and ensured by the PP. Through onsite visit observations and interviews/15/ with the employees at the factory, VVB has confirmed that PP maintains a safe working conditions for women and girls. Employee roster/23/ has been verified by the VVB for the conformance of the same.
Safety of minority and marginalized groups, including children	As per the statement provided in the section 2.2 of the Joint PD&MR/01/, there were no identified risk to Safety of minority and marginalized groups, including children, since all legal working conditions are already verified and ensured by the PP. An effective feedback mechanism was established to ensure that community members can give feedback on their opinions and problems at any time. Through onsite visit observations/15/ and interviews with the employees and relevant stakeholders, VVB has confirmed the PP maintains a safe working conditions for minority and marginalized groups, including children. Employee roster/23/ has been verified and all the people working there are above 18 years of age.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials,	As per the statement provided in section 2.2 of the Joint PD&MR v2.5 /01/, the project identified no risk to both

and chemical pesticides and fertilizers)	staff and project beneficiaries related to pollutants. PP adheres to Environmental Law existing in the country. By checking Project FSR approval /03/and EIA approval /04/issued by government, it is confirmed the project has been approved by Chinese government, in this sense, the project should meet all the requirement of regulation and laws set up by Chinese government in aspect of environment, health and safety. During the construction phase, the raise dust, noise, wastewater and solid wastes caused by project construction will be treated according to the measures in EIA report /17, and there will be no significant impact on the environment.

3.3.3 Respect for Human Rights and Equity

3.3.3.1 Labor and Work

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Discrimination	By site visit/15/, it is confirmed no discrimination and sexual harassment detected. The project does not create any direct or indirect impacts on gender equality and/or the situation of women. The project has well-established HR policies/24/ that strictly prohibit all forms of discrimination inclusive of staff and contracted workers employed by third parties. These policies ensure no discrimination on race, gender, disability, or any other characteristic occurring during the design or implementation phases. Workers, including women, are provided with equal pay for equal work under these regulations.
Sexual harassment	As described in the section 2.2 of the JPDMR, v2.5/01/, PP and its project operation has established HR policy which strictly prohibit all forms of sexual harassment inclusive of staff and contracted workers employed by third parties /24/. Employees are provided with safe and effective reporting channels and procedures for handling reported information quickly. By site visit/15/, it is confirmed no discrimination and sexual harassment detected.

	VVB confirms the statement provided in the Joint PD&MR V2.5 is found appropriate and is verified by checking the relevant documents/24/ and by interviewing the local stakeholders and staff during the onsite visit/15/
Equal pay for equal work	Equal pay for equal work is ensured by the company. VVB verified the same by HR policy /24/, by onsite interviews/15/. Employment contracts/29/ and Pay slip samples/30/ have been verified and confirmed that equal pay for equal work is ensured. Therefore, it is confirmed equal opportunities have been provided by the project activity in the context of gender equity and pay for labor and work.
Gender equity in labor and work	The project-employed women are provided equal pay for equal work. No discrimination on gender is allowed due to the HR policy/24/ By site visit/15/, it is confirmed no Gender inequity in labor and work detected. By checking HR Records/24/ and interviewing staff/15/ from the project owner, it was verified the Project design neither increase women's workload nor prevent them from engaging in other activities. The Project has equal opportunity for women and men to contribute both in volunteer and working positions. The project has HR policy and same is followed equally.
Forced labor	As discussed in section 2.3.1 of the JPD&MR, V2.5/01/, PP follows strict rules against any type of violence against human rights, discrimination, sexual, religion, moral or physical abuse. Forced labor is an illegal activity in the host country and the local labor compliance takes into account of the same. Further, China is a party to ILO and forced labour is illegal in China. China has relevant laws and regulations in place prohibiting forced and compulsory labor, such as the Labour Contract Law, Women's Rights Protection Law, Prohibition of Child Labor Regulation[5]. Via checking HR Records/24/ and interviewing staff /15/ from the project owner, it was verified the project fully

[5] https://www.gov.cn/banshi/2005-05/25/content_905.htm

	complies with the relevant laws and respects fundamental right of employee. VVB by reviewing the labor law existing in the country, onsite visit observations and interview with the employees/20/ confirms that the above statement is found appropriate.
Child labor	China has strict prohibition for child labour. The project does not involve child labour neither in construction nor at operation of project activity. In the HR policy/24/ is also mentioned that no child labour will be entertained. The same was confirmed by the assessment team through checking HR Records/24/ and site interview/15/. By site visit, it is confirmed no human trafficking, forced labor, and child labor detected. HR policy of the project owner strictly follows the laws and regulations in China; child labor is totally prohibited. Employee roster /23/ has been crosschecked to confirm the age of the employees and all the employees are above 18 years of age.
Human trafficking,	By site visit/15/ and HR records/24/, it is confirmed no human trafficking, forced labor, and child labor detected.

3.3.3.2 Human Rights

Risks identified	Evidence gathering activities, evidence checked, and assessment conclusion
None	By checking Project FSR approval /03/ and EIA approval/04/ issued by government, it is confirmed the project has been approved by Chinese government, in this sense, the project should meet all the requirement of regulation and laws set up by Chinese government in aspect of human rights. The project is committed to upholding the rights of LPs, LCs, and customary rights holders by engaging in ongoing, informed consultations, obtaining FPIC for any activities, and ensuring that their cultural heritage and traditional knowledge are respected and preserved by international human

	rights law[6], the United Nations Declaration on the Rights of Indigenous Peoples[7], and ILO Convention 169[8].

3.3.3.3 Indigenous Peoples and Cultural Heritage

Risk identified	Evidence gathering activities, evidence checked, and assessment conclusion
None	By checking EIA report approved by government, it is confirmed that no indigenous peoples present in or within the area of influence of the project, the project area does not include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture. Hence not applicable for the project.

3.3.3.4 Property Rights

Risks identified	Evidence gathering activities, evidence checked, and assessment conclusion
None	Not applicable as no IPs', LCs', and customary rights holders' property rights was identified

3.3.3.5 Benefit Sharing

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Process used to design the benefit sharing plan	VVB had cross verified the relevant documents such as ownership documents/04//05/ and onsite visit/ observations/15/. Upon the same, it has been confirmed that the project activity is a landfill gas (LFG) recovery and utilization project developed by Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd. Hence, Project activity does not involve the benefit sharing plan

[6] https://www.ohchr.org/en/instruments-and-mechanisms/international-human-rights-law

[7] https://www.un.org/esa/socdev/unpfii/documents/faq_drips_en.pdf

[8] https://normlex.ilo.org/dyn/nrmlx_en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169

Summary of the benefit sharing plan	VVB had cross verified the relevant documents such as ownership documents/04//05/ and onsite visit/ observations/15/. Upon the same, it has been confirmed that the project activity is a landfill gas (LFG) recovery and utilization project developed by Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd. Hence, Project activity does not involve the benefit sharing plan
Approval and dissemination of benefit sharing plan	VVB had cross verified the relevant documents such as ownership documents/04//05/ and onsite visit/ observations/15/. Upon the same, it has been confirmed that the project activity is a landfill gas (LFG) recovery and utilization project developed by Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd. Hence, Project activity does not involve the benefit sharing plan
Benefit sharing during the monitoring period	VVB had cross verified the relevant documents such as ownership documents/04//05/ and onsite visit/ observations/15/. Upon the same, it has been confirmed that the project activity is a landfill gas (LFG) recovery and utilization project developed by Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd. Hence, Project activity does not involve the benefit sharing plan

3.3.4 Ecosystem Health

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Impacts on biodiversity and ecosystems	In section 2.4 of the Joint PD&MR V2.5/01/, the PP identified no risk related to biodiversity and ecosystems. By checking EIA report /17/approved by government, and onsite visit/15/it is confirmed that the project has no negative impacts on biodiversity and ecosystems.
Soil degradation and soil erosion	According to EIA report /17/approved by government, and onsite visit/15/of the project, the project has no further impact on the soil.
Water consumption and stress	According to the EIA report /17/approved by government, and onsite visit/15/, the project does not add wastewater stress and has little impact on the environment.

	"Domestic Waste Landfill Pollution Control Standard" (GB16889-1997) "Domestic Waste Leachate" [9]Level I standard is being followed.

3.3.4.1 Rare, Threatened, and Endangered species

Risk identified	Evidence gathering activities, evidence checked, and assessment conclusion
Species and habitat	By checking EIA report/17/ approved by the Shaoyang Municipal Bureau of Ecology and Environment, it is confirmed that the project isn't located in, or adjacent to habitats for rare, threatened, or endangered species.
Areas needed for habitat connectivity	By checking EIA report/17/ approved by Shaoyang Municipal Bureau of Ecology and Environment, it is confirmed that the project isn't located in, or adjacent to habitats for rare, threatened, or endangered species.

3.3.4.2 Introduction of Species

Species introduced	Evidence gathering activities, evidence checked, and assessment conclusion
N/A	N/A

Existing invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
N/A	N/A

	Evidence gathering activities, evidence checked, and assessment conclusion
Invasive species	According to the EIA report /17/of the project, no invasive species existed on the project site before construction. In the project design, the Project does not involve the introduction of any plant or animal species

3.3.4.3 Ecosystem conversion

Risks Identified	Evidence gathering activities and evidence checked

[9] https://www.doc88.com/p-9324746893637.html

Ecosystem conversion	Not applicable as the project is not an ARR, ALM, WRC or ACoGS project.

3.4 Application of Methodology

3.4.1 Title and Reference

The Project use one of the CDM-approved methodologies:

- **ACM0001, Flaring or use of landfill gas, version 19.0**

The associated tools in the Project include:

- CDM TOOL04 "Emissions from Solid Waste Disposal Sites "Version 08.1
- CDM TOOL05 "Baseline, Project and/or Leakage Emissions from Electricity Consumption and Monitoring of Electricity Generation" Version 03.0;
- CDM TOOL07 " Tool to Calculate the Emission Factor for an Electricity System" Version-07.0;
- CDM TOOL08 " Tool to determine the mass flow of a greenhouse gas in a gaseous stream" Version-03.0;
- CDM TOOL32 " Positive Lists of Technologies" Version-04.0;.

3.4.2 Applicability

Methodology ID	Applicability condition	Justification of compliance
ACM0001	3. The methodology is applicable under the following conditions: (a) Install a new LFG capture system in an existing or new (Greenfield) SWDS where no LFG capture system was or would have been installed prior to the implementation of the project activity; or (b) Make an investment into an existing LFG capture system to increase the recovery rate or change the use of the captured LFG, provided that: (i) The captured LFG was vented or flared and not used prior to the implementation of the project activity; and (ii) In the case of an existing active LFG capture system for which the amount	Applicable. a) By checking the FSR /09/, Project FSR approval /03/ and on-site audit/15/, VVB has confirmed that the project involves the installation of a new LFG capture system in an existing SWDS. The same aligns with criteria number a.

	of LFG cannot be collected separately from the project system after the implementation of the project activity and its efficiency is not impacted on by the project system: historical data on the amount of LFG capture and flared is available; (c) Flare the LFG and/or use the captured LFG in any (combination) of the following ways: (i) Generating electricity; (ii) Generating heat in a boiler, air heater or kiln (brick firing only) or glass melting furnace; and/or (iii) Supplying the LFG to consumers through a natural gas distribution network; (iv) Supplying compressed/liquefied LFG to consumers using trucks; (v) Supplying the LFG to consumers through a dedicated pipeline; (d) Do not reduce the amount of organic waste that would be recycled in the absence of the project activity.	b)By checking the FSR /09/, Project FSR approval /03/ and on-site audit/15/, VVB has confirmed that there wasn't a LFG capture system prior to the implementation of the project. Hence, this criterion is not applicable. c) By checking the FSR /09/, Project FSR approval /03/ and on-site audit/15/, VVB has confirmed that the project uses the captured LFG to generate electricity, which corresponds to point (i). This criterion is applicable d) By checking the FSR /09/, Project FSR approval /03/ and on-site audit/15/, the implementation of the project does not reduce the amount of organic waste that would be recycled in the absence of the project. All the solid waste is disposed of in the Laohutuo landfill site. Hence, criteria is satisfied.
	4. The methodology is only applicable if the application of the procedure to identify the	The criteria is applicable.

	baseline scenario confirms that the most plausible baseline scenario is: (a) Atmospheric release of the LFG or capture of LFG and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons; and (b) In the case that the LFG is used in the project activity for generating electricity and/or generating heat in a boiler, air heater, glass melting furnace or kiln: (i) For electricity generation: that electricity would be generated in the grid or in captive fossil fuel fired power plants; and/or (ii) For heat generation: that heat would be generated using fossil fuels in equipment located within the project boundary; (c) In the case of LFG supplied to the end-user(s) through natural gas distribution network, trucks or the dedicated pipeline, the baseline scenario is assumed to be displacement of natural gas. (d) In the case of LFG from a Greenfield SWDS, the identified baseline scenario is atmospheric release of the LFG or capture of LFG in a managed SWDS and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons.	The most plausible baseline scenario of the project is: (a) LFG from Laohutuo landfill site is emitted to the atmosphere directly. (b) Equivalent electricity generated by the project is supplied by the CCPG.
	5. This methodology is not applicable: (a) In combination with other approved methodologies. For instance, ACM0001 cannot be used to claim emission reductions for the displacement of fossil fuels in a kiln or glass melting furnace, where the purpose of the CDM project activity is to implement energy efficiency measures at a kiln or glass melting furnace;	Not applicable. The project does not involve in combination with other approved methodologies. Further, the management of the SWDS in the project activity is not

	(b) If the management of the SWDS in the project activity is deliberately changed during the crediting in order to increase methane generation compared to the situation prior to the implementation of the project activity.	deliberately changed and there is no increase in methane generation compared to the situation prior to the implementation of the project activity. The same has been confirmed from Onsite visit and interviews/15/
	6.The applicability conditions included in the tools referred to below also apply.	Applicable. The Project meets all applicability conditions included in the applied tools.
TOOL04	3. The tool can be used to determine emissions for the following types of applications: (a) Application A: The CDM project activity mitigates methane emissions from a specific existing SWDS. Methane emissions are mitigated by capturing and flaring or combusting the methane (e.g. "ACM0001: Flaring or use of landfill gas"). The methane is generated from waste disposed in the past, including prior to the start of the CDM project activity. In these cases, the tool is only applied for an ex ante estimation of emissions in the project design document (CDM-PDD). The emissions will then be monitored during the crediting period using the applicable approaches in the relevant methodologies (e.g. measuring the amount of methane captured from the SWDS); (b) Application B: The CDM project activity avoids or involves the disposal of waste at a SWDS. An example of this application of the tool is ACM0022, in which municipal solid waste (MSW) is treated with an alternative option, such as composting or anaerobic digestion, and is then prevented from being disposed of in a SWDS. The methane is generated from waste disposed or avoided from disposal during the crediting period.	Applicable. The project collects the methane from the existing landfill site and uses it to generate the electricity. The Project meets the requirements of Application A. The same has been confirmed on the review of FSR/09/ and onsite visit/15/

	In these cases, the tool can be applied for both ex ante and ex post estimation of emissions. These project activities may apply the simplified approach detailed in 0 when calculating baseline emissions.	
	4. These two types of applications are referred to in the tool for determining parameters.	The same is applicable.
	5. In the case that: (a) different types of residual waste are disposed or prevented from disposal; or that (b) both MSW and residual waste(s) are prevented from disposal, then the tool should be applied separately to each residual waste and to the MSW.	The Project does not involve disposal or preventing from disposal of residual waste. Hence the criteria is not applicable
TOOL05	If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer; (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid; or (c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer	The Project meets the requirement of Scenario A that the electricity consumption is from the grid. The same has been confirmed from onsite visit/15/ and review of FSR/09/.

	can be provided with electricity from the captive power plant(s) and the grid.	
	This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated: (a) Scenario I: Electricity is supplied to the grid; (b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or (c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.	It has been confirmed by the VVB that, the Project meets the requirement of Scenario I and supply electricity to the grid – CCPG, by the review of PPA/06/, FSR/03/ and onsite visit/15/
	7. This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO_2 emissions.	There were no captive renewable power generation technologies installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The same has been confirmed by onsite visit/15/
TOOL07	3. This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The electricity generated by the Project is supplied to the grid - CCPG., which has been confirmed on review of PPA/06/, FSR/03/ and onsite visit/15/. The criteria is applicable.
	4. Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures	The emission factor for the project electricity system is calculated only for the grid power

	related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	plants[10]. Hence, the criteria is applicable.
	5. In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Applicable. The project's electricity system is totally located in P.R.China, which is not an Annex I country.
	6. Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	In case there are biofuels involved, the value applied to the CO_2 emission factor of biofuels is zero.
TOOL08	5. Typical applications of this tool are methodologies where the flow and composition of residual or flared gases or exhaust gases are measured for the determination of baseline or project emissions.	Applicable. The project collects methane from the Laohutuo landfill site and uses it to generate electricity. The flow of methane is measured for the determination of baseline emissions and project emissions.

[10] https://ccer.cets.org.cn/notice/noticeDetail?bulletinInfoId=1259913708889575424

		The same has been confirmed from FSR/09/.
	6. Methodologies where CO_2 is the particular and only gas of interest should continue to adopt material balances as the means of flow determination and may not adopt this tool as material balances are the cost effective way of monitoring flow of CO_2.	For the Project and the applied methodology ACM0001, both CH_4 and CO_2 are involved, but CH_4 instead of CO_2 is the particular gas of interest.
	7. The underlying methodology should specify: (a) The gaseous stream the tool should be applied to; (b) For which greenhouse gases the mass flow should be determined; (c) In which time intervals the flow of the gaseous stream should be measured; and (d) Situations where the simplification offered for calculating the molecular mass of the gaseous stream (equations (3) or (17)) is not valid (such as the gaseous stream is predominantly composed of a gas other than N_2).	Applicable. It is confirmed that the gaseous stream determined the baseline emissions is LFG which mainly contains fraction of CH_4, which corresponds to point (a) and (b). The monitoring of the gas flow is continuous, and the data are recorded every day in the daily operation records/20/, which corresponds to (c). Point (d) is not applicable as the gaseous stream is composed of CH_4 instead of N_2. The same has been confirmed through the onsite visit/15/
TOOL32	4. The use of this methodological tool is not mandatory for the project participants of a CDM project activity or CDM PoA for demonstrating their additionality.	Applicable. The project selects the use of the tool to demonstrate the

		additionality. Hence, the criteria are applicable. The same has been confirmed on review of JPD&MR V2.5/01/.
	5. This methodological tool shall be applied in conjunction with a small-scale or large-scale methodology which refers to this tool.	Applicable. The project applies tool conjunction with large-scale methodology ACM0001/B02/ which refers to this tool.
	6. The positive lists as contained in section 5 of this tool are valid up to 10 March 2025. Notwithstanding the provisions on the validity of new, revised and previous versions of methodologies and methodological tools in the "Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools", there will be no grace period for the application of this tool and the validity of the positive list after this date, including in cases where further technologies are added to the positive list through revisions of this tool before this date.	Applicable. The project collects the LFG from Laohutuo landfill site and uses it to generate the electricity, with a total capacity of 2.134 MW, which conforms to 5.1.1 (a) "The LFG is used to generate electricity in one or several power plants with a total nameplate capacity that equals or is below 10 MW". However, as per paragraph 4 of tool 32/B07/ The positive lists as contained in section 5 of this tool are valid up to 10-March-2025. However, Verra issued a Clarification to TOOL32[11] on March 18-March-2025, clarifying

[11] https://verra.org/wp-content/uploads/2025/03/Clarification-to-CDM-TOOL32_final.pdf

		that the tool is active for use in the VCS Program until 30-September-2025. Hence the choice of PP is found to be appropriate.

3.4.3 Project Boundary

As per ACM0001, the project boundary of the project activity shall include the site where the LFG is captured and, as applicable:

(a) Sites where the LFG is flared or used (e.g. flare, power plant, boiler, air heater, glass melting furnace, kiln, natural gas distribution network, dedicated pipeline or biogas processing facility);

(b) Captive power plant(s) (including emergency diesel generators) or power generation sources connected to the grid, which are supplying electricity to the project activity;

(c) Captive power plant(s) (including emergency diesel generators) or power generation sources connected to the grid, which are supplying electricity in the baseline that is displaced by electricity generated by captured LFG in the project activity;

(d) Heat generation equipment or sources which are supplying heat in the baseline that is displaced by heat generated by captured LFG in the project activity; and

(e) The transportation of the compressed/liquefied LFG from the biogas processing facility to consumers.

It is confirmed by the assessment team that the project boundary of the project activity covers the entire LFG related system (including the collection system, the pre-treatment system and the power generation system as well as flare system) and all power plants connected to CCPG. Figure 3-1 of JPD&MR V2.5/01/ covers the project boundary which has been confirmed by VVB on the basis of on-site visit/15/. According to China DNA, CCPG covers Henan Province, Hubei Province, Hunan Province and Jiangxi Province.

The sources and GHG gases involved for the Project activity are as below:

Source		Gas	Included?	Justification/Explanation
Baseline	Emission from decomposition of waste at the SWDS site	CO_2	No	CO_2 emissions from decomposition of organic waste are not accounted for since CO_2 is also released under the project activity.

Source		Gas	Included?	Justification/Explanation
		CH_4	Yes	The major source of emissions in the baseline scenario is CH_4.
		N_2O	No	N_2O emissions are small compared to CH_4 emissions from SWDS. This is conservative.
	Emissions from electricity generation	CO_2	Yes	CO_2 is the major emission source, given that power generation is included in the project activity.
		CH_4	No	CH_4 is excluded for simplification. This is conservative.
		N_2O	No	N_2O is excluded for simplification. This is conservative.
	Emission from heat generation	CO_2	No	The project does not involve heat generation.
		CH_4	No	The project does not involve heat generation.
		N_2O	No	The project does not involve heat generation.
	Emissions from the use of natural gas	CO_2	No	The project does not involve the use of natural gas.
		CH_4	No	The project does not involve the use of natural gas.
		N_2O	No	The project does not involve the use of natural gas.
Project	Emissions from fossil fuel consumption for purposes other than electricity generation or transportation due to the project activity	CO_2	No	The project activity does not involve fossil fuel consumption for purposes other than electricity generation or transportation due to the project activity.
		CH_4	No	The project activity does not involve fossil fuel consumption for purposes other than electricity generation or transportation due to the project activity.
		N_2O	No	The project activity does not involve fossil fuel consumption for purposes other than electricity generation or transportation due to the project activity.

Source		Gas	Included?	Justification/Explanation
	Emissions from electricity consumption due to the project activity	CO_2	Yes	The project activity may use electricity from the CCPG, so CO_2 may be an important emission source.
		CH_4	No	This emission source is assumed to be very small.
		N_2O	No	This emission source is assumed to be very small.
	Emissions from flaring	CO_2	No	Not applicable
		CH_4	No	Not applicable
		N_2O	No	Not applicable
	Emissions from distribution of LFG using trucks and dedicated pipelines	CO_2	No	The project activity does not involve distribution of LFG using trucks or dedicated pipelines.
		CH_4	No	The project activity does not involve distribution of LFG using trucks or dedicated pipelines.
		N_2O	No	The project activity does not involve distribution of LFG using trucks or dedicated pipelines.

The selection and justification for inclusion or exclusion is appropriate and duly supported by the onsite observation during the onsite visit/15/. In addition to the table, a diagram of the project boundary, showing the physical locations of the various installations as part of the project activity are included in the Joint PD and MR V2.5/01/. The choice of GHGs is also appropriate to the context of the project description. There is no GHG source that is omitted. The VVB team concludes that the project boundary is justified for the project and in accordance with the applied methodology and applicable tools.

3.4.4 Baseline Scenario

As per ACM0001/B02/, the baseline scenario has been identified through simplified procedures in section 5.3.1 in ACM0001 /B02/, which is; LFG is assumed to be the atmospheric release of the LFG or capture of LFG and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons. If all or part of the electricity generated by the project activity is exported to the grid, the baseline

scenario for all or the part of the electricity exported to the grid is assumed to be electricity generation in existing and/or new grid-connected power plants.

As the selected large-scale methodology clearly mention the baseline scenario and the same has been opted in this project, therefore, no further analysis on baseline is required, which is in line with CDM Validation and Verification Standard for project activities version 03.0[12]

VVB has crosschecked FSR/09/ and through onsite visit/15/ confirmed that there was no LFG recovery and utilization in the landfill site before the Project construction. The baseline scenario for the part of the electricity exported to the grid is assumed to be electricity generation in grid-connected power plants in CCPG/09/. VVB confirms that the Project has been approved by Chinese government by checking the Project FSR approval /03/ and Environmental Impact Assessment (EIA) approval/04/. By checking laws and regulation, it is confirmed that the project activity is in complicate with all laws and regulations in China[13][14][15].

The project activity captures LFG to produce electricity and supplies to the grid. According to GB50869-2013 has been implemented from 01/03/2014, item 11.1.3 is a voluntary provision, and in P.R China, the LFG from almost all landfill sites is vented to the atmosphere directly[16][17].

The assessment team, therefore, concludes that the VCS JPD&MR V2.5 conforms to the guidance given by EB via CDM Validation and Verification Standard for project activities version 03.0 and VCS via VCS Standard v4.7 /B01/.

3.4.5 Additionality

Regulatory surplus

As per section 3.14.1 of VCS Standard, version 4.7: "The project shall demonstrate regulatory surplus at validation", the project proponent has stated in the section 3.5 updated joint PD&MR V2.4 that the project is not mandated by any law, statute or other regulatory framework in the host country i.e., in P.R China. Carbon Check has checked the relevant laws and regulations regarding:

- 14th Five-Year Plan for Renewable Energy Development"[18] published by the National Development and Reform Commission and National Energy Administration

[12] EB111_repan02_VVS-PA_(v03.0)

[13] https://www.ndrc.gov.cn/xwdt/tzgg/202206/P020220602315650388122.pdf

[14] https://www.gov.cn/zhengce/zhengceku/2021-05/14/5606349/files/bd8ca92c767f4b8786b9374a76e0d1fd.pdf

[15] Technical Code for Municipal Solid Waste Sanitary Landfill" (GB 50869-2013)

[16] https://jjgbdate.com/uploadfile/202403/8b5869f36e92eea.pdf

[17] Urban Construction Statistical Yearbook in China in 2022 (Table 12-2)

[18] https://www.ndrc.gov.cn/xwdt/tzgg/202206/P020220602315650388122.pdf

- 14th Five-Year Plan for Urban Domestic Waste Classification and Treatment Facilities Development"[19] published by the National Development and Reform Commission and Ministry of Housing and Urban-Rural Development - As described in the "the 14th Five-Year Plan for Renewable Energy Development[20]" published by the National Development and Reform Commission and National Energy Administration, and "the 14th Five-Year Plan for Urban Domestic Waste Classification and Treatment Facilities Development[21]"published by the National Development and Reform Commission and Ministry of Housing and Urban-Rural Development, the government encourages the construction of domestic waste treatment facilities to improve the ability of domestic waste treatment, and promotes the development of biomass power generation
- Technical Code for Municipal Solid Waste Sanitary Landfill" (GB 50869-2013)
- Renewable Energy Law of the People's Republic of China
- Catalogue for the Guidance of Industrial Structure Adjustment (2019 version)
- Standard for Pollution Control on the Landfill Site of Municipal Solid Waste" (GB 16889-2008) which became effective in 2008, issued by the Environment Protection Administration.

As per the above-mentioned laws, VVB confirms that there is no legal law and regulation to mandate the project owners to implement the project activity.

Assessment of Prior consideration of carbon revenue

Following timeline of the project has been assessed and confirmed to be accurate.

Time	Action	Reference
July-2022	Feasibility Study Report	/09/
24-August-2022	Project FSR Approval	/03/
15-August-2022	Board Resolution	/33/
November-2022	EIA Report	/17/
27-December-2022	EIA Report Approval	/04/

[19] https://www.gov.cn/zhengce/zhengceku/2021-05/14/5606349/files/bd8ca92c767f4b8786b9374a76e0d1fd.pdf

[20] https://www.ndrc.gov.cn/xwdt/tzgg/202206/P020220602315650388122.pdf

[21] https://www.gov.cn/zhengce/zhengceku/2021-05/14/5606349/files/bd8ca92c767f4b8786b9374a76e0d1fd.pdf

27-September-2022	FPIC	/12//13/
30-December-2022	Construction Commencement	/08/
01-July-2023	Operation Start	/07/

Section 3.13 in VCS standard (V4.7). states that “A project activity is additional if it can be demonstrated that the activity results in emission reductions or removals that are in excess of what would be achieved under a ‘business as usual’ scenario and the activity would not have occurred in the absence of the incentive provided by the carbon markets”. Moreover, Section 3.13.1 clearly mandates that “Additionality shall be demonstrated and assessed in accordance with the requirements set out in the methodology applied to the project.

The additionality of the project has been demonstrated by the PP as per the section 5.3.1.of the methodology, ACM0001, V19.0/B02/. As per the Methodological Tool, Tool 32 “Positive lists of technologies”/B07/, the project activities at new or existing landfills (greenfield or brownfield) are deemed automatically additional, if it is demonstrated that prior to the implementation of the project activities the landfill gas (LFG) was only vented and/or flared (in the case of brownfield projects) or would have been only vented and/or flared (in the case of greenfield projects) but not utilized for energy generation, and that under the project activities any of the following conditions are met:

(a) The LFG is used to generate electricity in one or several power plants with a total nameplate capacity that equals or is below 10 MW;

(b) The LFG is used to generate heat for internal or external consumption;

(c) The LFG is flared.

The project activity uses LFG which is collected from Laohutuo landfill site to generate electricity/15//09/. Prior to the implementation of the project activity, the LFG from Laohutuo landfill site was only vented, not utilized for energy generation. By interviewing local stakeholders, staff from local government, staff from Laohutuo landfill site /15/ /36/and checking website of local government, it is confirmed by the VVB that only the project activity uses LFG from Laohutuo landfill site to generate electricity/09/. By checking Project FSR approval /03/, FSR/09/ and EIA Approval/04/, the total installed capacity of the project activity is 2.134 MW, which is below 10 MW. Hence, the project activity is deemed automatically additional.

VVB confirms that the project activity is additional and income from VCUs is required to run the project.

3.4.6 Quantification of GHG Emission Reductions and Carbon Dioxide Removals

The detail analysis of baseline emissions, project emissions and leakage emissions calculation has been provided below.

Baseline Emissions

Baseline emissions are determined according to the following equation and comprise the following sources:

$$BE_y = BE_{CH4,y} + BE_{EC,y} + BE_{HG,y} + BE_{NG,y} \quad \text{(Equation 01)}$$

BE_y	=	Baseline emissions in year y (t CO_2e/yr)
$BE_{CH4,y}$	=	Baseline emissions of methane from the SWDS in year y (t CO_2e/yr)
$BE_{EC,y}$	=	Baseline emissions associated with electricity generation in year y (t CO_2/yr)
$BE_{HG,y}$	=	Baseline emissions associated with heat generation in year y (t CO_2/yr)
$BE_{NG,y}$	=	Baseline emissions associated with natural gas use in year y (t CO_2/yr)

(a) Methane emissions from the SWDS in the absence of the project activity;

(b) Electricity generation using fossil fuels or supplied by the grid in the absence of the project activity;

(c) Heat generation using fossil fuels in the absence of the project activity; and

(d) Natural gas used from the natural gas network in the absence of the project activity.

The project activity does not associated with heat generation and natural gas use by checking EIA Report, thus, $BE_{HG,y}$ = 0 and $BE_{NG,y}$ = 0.

Thus, for the project activity, $BE_y = BE_{CH4,y} + BE_{EC,y}$ (Equation 02)

Baseline emissions of methane from the SWDS ($BE_{CH4,y}$)

As per ACM0001, V19.0/B02/, Baseline emissions of methane from the SWDS ($BE_{CH4,y}$) is determined as follows:

$$\mathrm{BE_{CH4,y}} = ((1 - \mathrm{OX_{top\_layer}}) \times \mathrm{F_{CH4,PJ,y}} - \mathrm{F_{CH4,BL,y}}) \times \mathrm{GWP_{CH4}} \quad \text{(Equation 1)}$$

Where:

$BE_{CH4,y}$	=	Baseline emissions of methane from the SWDS in year y (t CO_2e/yr)
OX_{top_layer}	=	Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless)
$F_{CH4,PJ,y}$	=	Amount of methane in the LFG which is flared and/or used in the project activity in year y (t CH_4/yr)
$F_{CH4,BL,y}$	=	Amount of methane in the LFG that would be flared in the baseline in year y (t CH_4/yr)
GWP_{CH4}	=	Global warming potential of CH_4 (t CO_2e/t CH_4)

Ex ante

$$F_{CH4,PJ,y} = \eta_{PJ} \times BE_{CH4,SWDS,y}/GWP_{CH4} \quad \text{(Equation 2)}$$

Where

$F_{CH4,PJ,y}$	=	Amount of methane in the LFG which is flared and/or used in the project activity in year y (t CH_4/yr)
$BE_{CH4,SWDS,y}$	=	Amount of methane in the LFG that is generated from the SWDS in the baseline scenario in year y (t CO_2e/yr)
η_{PJ}	=	Efficiency of the LFG capture system that will be installed in the project activity
GWP_{CH4}	=	Global warming potential of CH_4 (t CO_2e/t CH_4)

$BE_{CH4,SWDS,y}$ is determined using the methodological TOOL04 "Emissions from solid waste disposal sites" (Version 08.1)/B03/. The following guidance should be taken into account when applying the tool:

(a) f_y in the tool shall be assigned a value of 0 because the amount of LFG that would have been captured and destroyed is already accounted for in equation (2) of methodology ACM0001;

(b) In the tool, x begins with the year that the SWDS started receiving wastes (e.g. the first year of SWDS operation); and

(c) Sampling to determine the fractions of different waste types is not necessary because the waste composition can be obtained from previous studies.

For the project, the amount of methane generated from disposal of waste at the SWDS for year y ($BE_{CH4,SWDS,y}$) is calculated using first order decay (FOD) model as follows:

$$BE_{CH4,SWDS,y} = \varphi_y \times (1 - f_y) \times GWP_{CH4} \times (1 - OX) \times \frac{16}{12} \times F \times DOC_{f,y} \times MCF_y \times \sum_{x=1}^{y} \sum_{j} (W_{j,x} \times DOC_j \times e^{-k_j \times (y-x)} \times (1 - e^{-k_j})) \quad \text{(Equation 3)}$$

Where,

$BE_{CH4,SWDS,y}$	=	Baseline, project or leakage methane emissions occurring in year y generated from waste disposal at a SWDS during a time period ending in year y (t CO_2e/yr)
x	=	Years in the time period in which waste is disposed at the SWDS, extending from the first year in the time period (x = 1) to year y (x = y)
y	=	Year of the crediting period for which methane emissions are calculated (y is a consecutive period of 12 months)
$DOC_{f,y}$	=	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year y (weight fraction)
$W_{j,x}$	=	Amount of solid waste type j disposed or prevented from disposal in the SWDS in the year x (t)
φ_y	=	Model correction factor to account for model uncertainties for year y
f_y	=	Fraction of methane captured at the SWDS and flared, combusted or used in another

		manner that prevents the emissions of methane to the atmosphere in year y
GWP_{CH4}	=	Global Warming Potential of methane
OX	=	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
F	=	Fraction of methane in the SWDS gas (volume fraction)
MCF_y	=	Methane correction factor for year y
DOC_j	=	Fraction of degradable organic carbon in the waste type j (weight fraction)
k_j	=	Decay rate for the waste type j (1 / yr)
j	=	Type of residual waste or types of waste in the MSW

The parameters required to apply the FOD model is determined as:

Parameter	Application A	Justification
φ_y	0.75	Baseline emissions: default values
OX	0.1	Default value
F	50%	Default value
$DOC_{f,y}$	0.5	Default value
MCF_y	1.0	Default values (based on SWDS type)
k_j	Refer to Section 3.3.8	Default values (based on waste type)
$W_{j,x}$	Refer to Section 3.3.8	Estimated once, with the waste composition obtained from EIA.

DOC_j	Refer to Section 3.3.8	Default values (based on waste type)
f_y	0	Requirement from ACM0001

Determination of $F_{CH4,BL,y}$

This section provides a procedure to determine the amount of methane that would have been captured and destroyed (by flaring) in the baseline due to regulatory or contractual requirements, to address safety and odour concerns, or for other reasons (collectively referred to as requirement in this section). The four cases in the following table are distinguished. The appropriate case should be identified, and the corresponding instructions followed.

Situation at the start of the project activity	Requirement to destroy methane	Existing LFG capture and destruction system
Case 1	No	No
Case 2	**Yes**	**No**
Case 3	No	Yes
Case 4	Yes	Yes

Currently China has regulations in place to deal with the management of landfills and to encourage utilization of LFG. Those regulations are:

As described in the "the 14th Five-Year Plan for Renewable Energy Development[22]" published by the National Development and Reform Commission and National Energy Administration, and "the 14th Five-Year Plan for Urban Domestic Waste Classification and Treatment Facilities Development[23]"published by the National Development and Reform Commission and Ministry of Housing and Urban-Rural Development, the government encourages the construction of domestic waste treatment facilities to improve the ability of domestic waste treatment, and promotes the development of biomass power generation.

"Standard for Pollution Control on the Landfill Site of Municipal Solid Waste" (GB 16889-2008) which became effective in 2008, issued by the Environment Protection Administration.

"Technical Code for Municipal Solid Waste Sanitary Landfill" (GB 50869-2013) issued by the Ministry of Construction in 2013.

[22] https://www.ndrc.gov.cn/xwdt/tzgg/202206/P020220602315650388122.pdf

[23] https://www.gov.cn/zhengce/zhengceku/2021-05/14/5606349/files/bd8ca92c767f4b8786b9374a76e0d1fd.pdf

According to item 5.15 of GB16889-2008, if the designed landfill capacity is more than 2.5 million tons and the landfill thickness is more than 20m, methane utilization facilities or flare burning facilities shall be built to treat the landfill gas containing methane. For municipal solid waste landfills smaller than the above scale, technologies that can effectively reduce methane generation and emission shall be adopted or flare combustion facilities shall be used to treat methane containing landfill gas.

Item 11.1.1 of GB 50869-2013 stipulates that the landfill site must be equipped with effective landfill gas drainage facilities to prevent the natural accumulation and migration of landfill gas, causing fire and explosion. Item 11.1.3 stipulates that if the landfill does not have the conditions for landfill gas utilization, the flare method shall be adopted for combustion treatment, and the process that can effectively reduce the generation and emission of methane shall be adopted. The old landfills that are not safe and stable should be equipped with effective landfill gas drainage facilities. Among them, item 11.1.1 is mandatory and must be strictly implemented.

In fact, the LFG of Laohutuo landfill site is emitted to atmosphere without LFG capture system prior the implementation of the project.

Therefore, Case 2 listed in the table above is applicable for the project.

However, the requirements above doesn't specify amount or percentage of LFG that should be destroyed. In this situation:

$$F_{CH4,BL,y} = F_{CH4,BL,R,y} \quad \text{(Equation 4)}$$

Where:

$F_{CH4,BL,R,y}$	=	Amount of methane in the LFG which is flared in the baseline due to a requirement in year *y* (t CH_4/yr)

$$F_{CH4,BL,R,y} = \rho_{reg,y} \times F_{CH4,PJ,capt,y} \quad \text{(Equation 5)}$$

Where,

$\rho_{reg,y}$	=	Fraction of LFG that is required to be flared due to a requirement in year y
$F_{CH4,PJ,capt,y}$	=	Amount of methane in the LFG which is captured in the project activity in year y (t CH_4/yr)

If the requirement does not specify any amount or percentage of LFG that should be destroyed, but requires the installation of a system to capture and flare the LFG, then a typical destruction

rate of 20 per cent/B08/ is assumed[24]. There is no requirement specifying the amount or percentage of LFG that should be destroyed, and no requirement on the installation of a system to capture and flare the LFG. As a result, $F_{CH4,BL,R,y}$ is assumed as zero. However, in order to follow the conservative principle, a typical destruction rate of 20 per cent by Option 2 (ii) is applied to calculate the LFG destruction.

$$F_{CH4,BL,R,y} = 0.2 \times F_{CH4,PJ,capt,y} \quad \text{(Equation 6)}$$

Ex-post determination

During the crediting period, $F_{CH4,PJ,y}$ is determined as the sum of the quantities of methane flared and used in power plant(s), boiler(s), air heater(s), glass melting furnace(s), kiln(s) and natural gas distribution, as follows:

$$F_{CH4,PJ,y} = F_{CH4,flared,y} + F_{CH4,EL,y} + F_{CH4,HG,y} + F_{CH4,NG,y} \quad \text{(Equation 7)}$$

Where:

$F_{CH4,PJ,y}$	=	Amount of methane in the LFG which is flared and/or used in the project activity in year y (t CH_4/yr)
$F_{CH4,flared,y}$	=	Amount of methane in the LFG which is destroyed by flaring in year y (t CH_4/yr)
$F_{CH4,EL,y}$	=	Amount of methane in the LFG which is used for electricity generation in year y (t CH_4/yr)
$F_{CH4,HG,y}$	=	Amount of methane in the LFG which is used for heat generation in year y (t CH_4/yr)
$F_{CH4,NG,y}$	=	Amount of methane in the LFG which is sent to the natural gas distribution network and/or dedicated pipeline and/or to the trucks in year y (t CH_4/yr)

Project utilizes the LFG only for power generation, $F_{CH4,HG,y}$ = 0, and $F_{CH4,NG,y}$ =0.

In the event of a short-term shutdown for maintenance or emergencies, the landfill gas (LFG) extraction blowers automatically cease operation, preventing any unflared release into the atmosphere. For extended outages of the generators, combustion is handled by the flare system. However, such prolonged stoppages are rare under typical conditions. Throughout the initial

[24] This default value of 20 per cent is based on assuming a situation in which: the efficiency of the LFG capture system in the project is 50 per cent; the efficiency of the LFG capture system in the baseline is 20 per cent; and, the amount captured in the baseline is flared using an open flare with a destruction efficiency of 50 per cent (consistent with the default value provided in the tool "Project emissions from flaring"). Project participants may propose and justify an alternative default value as a request for revision to this methodology.

monitoring phase, the generators remained active, and the flare remained unused/15/. The same has also been confirmed from the declaration provided by the PP/31/.

And hence, $F_{CH4,flared,y}$ = 0

As per the same,

$$F_{CH4,PJ,y} = F_{CH4,EL,y} \quad \text{(Equation 8)}$$

$F_{CH4,EL,y}$ is determined using the Tool 08, /B06/"Tool to determine the mass flow of a greenhouse gas in a gaseous stream" and monitoring the working hours of the power plant(s), boiler(s), air heater(s), glass melting furnace(s) and kiln(s), so that no emission reduction are claimed for methane destruction during non-working hours. This is taken into account by monitoring the hours that the equipment utilizing the LFG is operating in year y ($Op_{j,h,y}$).

The following requirements apply:

(a) As per the gaseous stream tool, if the LFG is used for multiple purposes (e.g. flaring or energy generation), and all methane destruction devices are verified to be operational (e.g. by means of flame detectors records, energy generated), a single flow meter may be used to record the flow into multiple destruction devices. The destruction efficiency of the least efficient among the destruction devices shall be used as the destruction efficiency for all destruction devices monitored by this flow meter. If there are any periods

for which one or more destruction devices are not operational, paragraph (a) and (b) of the Appendix of the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" tool shall be followed;

(b) CH_4 is the greenhouse gas for which the mass flow should be determined;

(c) The simplification offered for calculating the molecular mass of the gaseous stream is valid (equations (3) or (17) in the tool);

(d) The mass flow should be calculated on an hourly basis for each hour h in year y;

(e) The mass flow calculated for hour h is 0 if the equipment is not working in hour h ($Op_{j,h}$=not working), the hourly values are then summed to a yearly unit basis

Among the 6 different ways to measure and calculate the mass flow of a greenhouse gas i in a gaseous stream ($F_{i,t}$), Option c has been chosen; Flow of gaseous stream and volumetric fraction on wet basis.

The mass flow of greenhouse gas i, i.e., CH_4, shall be determined as follows:

$$F_{i,t} = V_{t,wb,n} \times v_{i,t,wb} \times \rho_{i,n} \quad \text{(Equation 9)}$$

With:

$$\rho_{i,n} = \frac{P_n \times MM_i}{R_u \times T_n} \quad \text{(Equation 10)}$$

Where:

$F_{i,t}$	=	Mass flow of greenhouse gas i in the gaseous stream in the interval t (kg gas/h)
$V_{t,wb,n}$	=	Volumetric flow of the gaseous stream in time interval t on a wet basis at normal conditions (m^3 wet gas/h)
$v_{i,t,wb}$	=	Volumetric fraction of greenhouse gas i in the gaseous stream in a time interval t on a wet basis (m^3 gas i /m^3 wet gas)
$\rho_{i,n}$	=	Density of greenhouse gas i in the gaseous stream at normal conditions (kg gas i /m^3 wet gas i)
P_n	=	Absolute pressure at normal conditions (Pa)
MM_n	=	Molecular mass of greenhouse gas i (kg/kmol)
R_u	=	Universal ideal gases constant (Pa.m^3/kmol.K)
T_n	=	Temperature at normal conditions (K)

The following equation has been used to convert the volumetric flow of the gaseous stream from actual conditions to normal conditions of temperature and pressure:

$$V_{t,wb,n} = V_{t,wb} \times \frac{T_n}{T_t} \times \frac{P_t}{P_n} \quad \text{(Equation 11)}$$

Where;

$V_{t,wb,n}$	=	Volumetric flow of the gaseous stream in time interval t on a wet basis at normal conditions (m^3 wet gas/h)
$V_{t,wb}$	=	Volumetric flow of the gaseous stream in time interval t on a wet basis (m^3 wet gas/h)
P_t	=	Pressure of the gaseous stream in time interval t (Pa)
T_t	=	Temperature of the gaseous stream in time interval t (K)
P_n	=	Absolute pressure at normal conditions (Pa)
T_n	=	Temperature at normal conditions (K)

A flow meter, a temperature transmitter, a pressure transmitter have been installed by the project proponent to monitor the volumetric flow, the temperature and the pressure of the LFG, respectively, and send data to the computer, which then automatically converts the flow into values at normal conditions ($V_{t,wb}$). In addition, a gas analyzer has been installed to measure the volumetric fraction of CH_4 in the LFG ($v_{i,t,wb}$).

Period	η_{PJ}	$BE_{CH4,SWDS,y}$ (tCO_2e)	OX_{top_layer}	GWP_{CH4} (tCO_2e/tCH_4)	$F_{CH4,PJ,y}$ (tCH_4)	$F_{CH4,BL,y}$ (tCH_4)	$BE_{CH4,y}$ (tCO_2e)
01-July-2023-31-December-2023	0.5	39.971.02	0.1	28	714	143	13,989
01/01/2024-31/12/2024	0.5	83,951.87	0.1	28	1,499	300	29,383
01/01/2025-31/12/2025	0.5	86,597.05	0.1	28	1,546	309	30,308
01/01/2026-31/12/2026	0.5	88,951.48	0.1	28	1,588	318	31,133
01/01/2027-31/12/2027	0.5	91,057.39	0.1	28	1,626	325	31,870
01/01/2028-31/12/2028	0.5	92,950.20	0.1	28	1,660	332	32,532
01/01/2029-31/12/2029	0.5	94,659.69	0.1	28	1,690	338	33,130
01/01/2030-31/12/2030	0.5	96,210.88	0.1	28	1,718	344	33,673
01/01/2031-31/12/2031	0.5	97,624.89	0.1	28	1,743	349	34,168
01/01/2032-31/12/2032	0.5	98,919.50	0.1	28	1,766	353	34,621
01/01/2033-30/06/2033	0.5	49,643.47	0.1	28	886	177	17,375
Total							322,182

Baseline emissions from electricity consumption in year y - Calculation of $BE_{EC,y}$:

The baseline emissions associated with electricity generation in year *y* ($BE_{EC,y}$) shall be calculated using the TOOL05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Version 03.0):

$$BE_{EC,y} = EC_{BL,k,y} \times EF_{EF,k,y} \times (1 + TDL_{k,y}) \quad \text{(Equation 12)}$$

Where:

$BE_{EC,y}$	=	Baseline emission from electricity consumption in year y (tCO_2e/yr)
$EC_{BL,k,y}$	=	Quantity of electricity that would be consumed by the baseline electricity consumer k in year y (MWh/y)
$EF_{EF,k,y}$	=	Emission factor for electricity generation for source k in year y (tCO_2/MWh)
$TDL_{k,y}$	=	Average technical transmission and distribution losses for providing electricity to source k in year y
k	=	Sources of electricity consumption in the baseline

Determination of the emission factor for electricity generation ($EF_{EF,k,y}$)

The baseline scenario of the project is that the LFG from Laohutuo landfill site was released directly into atmosphere and equivalent electricity generation by the project was supplied by CCPG, Scenario A of the "Methodological tool, tool 05/B04/: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" applies. $EF_{EF,k,y}$ shall therefore be determined in accordance with Option A1 of the tool, i.e. the applied emission factor shall be the combined margin emission factor of the CCPG, calculated in accordance with the “Tool to calculate the emission factor of an electricity system” ($EF_{EF,k,y} = EF_{grid,CM,y}$).

The grid emission factor is calculated as the weighted average of the operating margin (0.5) & build margin (0.5) values. The value of combined margin is sourced from 2023 Baseline Emission Factors for Regional Power Grids in China dated 09/07/2024 published by China DNA. This was the latest available data at the time of submission of JPD&MR to Verra for the listing process and hence, the use of the value has been found to be appropriate.

/16/. China DNA calculates the data based on Tool to Calculate the Emission Factor for an Electricity System", Version 07.0. No further assessment is required for grid emission calculation as the ex-ante value is sourced directly from the Chinese DNA.

$$\mathrm{EF_{grid,CM,y}} = 0.8771\,\mathrm{tCO_2/MWh} \times 0.5 + 0.2696\,\mathrm{tCO_2/MWh} \times 0.5 = 0.57335\,\mathrm{tCO_2/MWh}$$

This value is fixed ex-ante for the crediting period.

$TDL_{k,y}$ has been determined with Option 3, according to TOOL05, Version 03.0(section 7.2, parameter table 2):

The electricity consumption by all project and leakage electricity consumption sources is smaller than the electricity consumption of all baseline electricity consumption sources. The default value of 3% /B04/is applied for $TDL_{k,y}$.

The ex-ante estimation of baseline emissions resulted from electricity

Period	$EG_{PJ,y}$ (MWh/y)	$EF_{grid,CM,y}$ (tCO_2e/MWh)	$TDL_{k,y}$	$BE_{EC,y}$ (tCO_2e)
01/07/2023-31/12/2023	3,777.63	0.57335	3%	2,230
01/01/2024-31/12/2024	7,934.23	0.57335	3%	4,685
01/01/2025-31/12/2025	8,184.23	0.57335	3%	4,833
01/01/2026-31/12/2026	8,406.74	0.57335	3%	4,964
01/01/2027-31/12/2027	8,605.77	0.57335	3%	5,082
01/01/2028-31/12/2028	8,784.66	0.57335	3%	5,187
01/01/2029-31/12/2029	8,946.22	0.57335	3%	5,283
01/01/2030-31/12/2030	9,092.82	0.57335	3%	5,369
01/01/2031-31/12/2031	9,226.46	0.57335	3%	5,448
01/01/2032-31/12/2032	9,348.81	0.57335	3%	5,520
01/01/2033-30/06/2033	4,691.77	0.57335	3%	2,770
Total				**51,371**

PROJECT EMISSIONS

As per ACM0001,V19.0/B02/ Project emissions are calculated as follows:

$$PE_y = PE_{EC,y} + PE_{FC,y} + PE_{DT,y} + PE_{SP,y} \quad \text{(Equation 13)}$$

Where;

PE_y	=	Project emissions in year y (t CO_2e)
$PE_{EC,y}$	=	Emissions from consumption of electricity due to the project activity in year y (t CO_2/yr)
$PE_{FC,y}$	=	Emissions from consumption of fossil fuels due to the project activity, for purpose other than electricity generation, in year y (t CO_2/yr)
$PE_{DT,y}$	=	Emissions from the distribution of compressed/liquefied LFG using trucks, in year y (t CO_2/yr)
$PE_{SP,y}$	=	Emissions from the supply of LFG to consumers through a dedicated pipeline, in year y (t CO_2/yr)

By checking EIA Report/17/, it is confirmed that there is no fossil fuel consumption in the project activity, and there is no distribution of compressed/liquefied LFG using trucks and no supply of LFG to consumers through a dedicated pipeline involved in the project activity/15/, therefore, $PE_{FC,y}$ = 0, $PE_{DT,y}$ = 0 and $PE_{SP,y}$ = 0. Hence,

$$PE_y = PE_{EC,y} \quad \text{(Equation 14)}$$

Project emissions from consumption of electricity due to the project activity ($PE_{EC,y}$) shall be calculated using TOOL05 (version 03.0)/B04/.

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y}) \quad \text{(Equation 15)}$$

Where:

$PE_{EC,y}$	=	Project emission from electricity consumption in year y (tCO_2e/yr)
$EC_{PJ,j,y}$	=	Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/y)
$EF_{EL,j,y}$	=	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*

For the estimation of emission reductions of the Project, $PE_{EC,y}$ is considered as 0 since it is insignificant. Further on the review of JPD&MR V2.5/01/ and ER sheet/02/, it has been confirmed by the VVB that the value of is approximately 3 - 4 tCO_2e, which is minor.

However, during the actual calculations for the monitoring period, the values have been taken.

LEAKAGE EMISSIONS

The project does not need to consider leakage. The assessment team deems this consideration correct and in line with paragraph 71 of the methodology ACM0001, version 19.0/B02/.

EMISSION REDUCTIONS

According to paragraph 72 of the methodology, ACM0001, Version 19.0/B02/, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad \text{(Equation 16)}$$

ER_y = Emission reductions in year y (tCO_2e)

BE_y = Baseline emissions in year y (tCO_2e)

PE_y = Project emissions in year y (tCO_2e)

Considering the project emissions and leakage emissions are 0 as described above, the estimated emission reductions are calculated as follows:

Period	$BE_{CH4,y}$ (tCO_2e)	$BE_{EC,y}$ (tCO_2e)	BE_y (tCO_2e)	PE_y (tCO_2e)	LE_y (tCO_2e)	ER_y (tCO_2e)
01/07/2023-31/12/2023	13,989	2,230	16,219	0	0	16,219
01/01/2024-31/12/2024	29,383	4,685	34,068	0	0	34,068

01/01/2025-31/12/2025	30,308	4,833	35,141	0	0	35,141
01/01/2026-31/12/2026	31,133	4,964	36,097	0	0	36,097
01/01/2027-31/12/2027	31,870	5,082	36,952	0	0	36,952
01/01/2028-31/12/2028	32,532	5,187	37,719	0	0	37,719
01/01/2029-31/12/2029	33,130	5,283	38,413	0	0	38,413
01/01/2030-31/12/2030	33,673	5,369	39,042	0	0	39,042
01/01/2031-31/12/2031	34,168	5,448	39,616	0	0	39,616
01/01/2032-31/12/2032	34,621	5,520	40,141	0	0	40,141
01/01/2033-30/06/2033	17,375	2,770	20,145	0	0	20,145
Total	**322,182**	**51,371**	**373,553**	**0**	**0**	**373,553**

Hence for the project activity, the estimated amount of GHG emission reductions (ER_y) is **373,553**tCO_2e during the crediting period from 01-July-2023 to 30-June-2033, resulting in estimated average annual emission reductions of 37,355 tCO_2e.

The assessment team confirmed that the project correctly applied the methodology and tools, and has correctly calculated baseline, project, leakage and net GHG ERRs during the project crediting period.

3.4.7 Methodology Deviations

Not applicable.

3.4.8 Monitoring Plan

The project applies the approved monitoring methodology ACM0001, "Flaring or use of landfill gas" V19.0/B02/. The monitoring plan is in accordance with the monitoring methodology. The monitoring plan will give opportunity for real measurements of achieved emission reductions and contain principles and concepts on which it is based, operational and monitoring obligations of the project owner like resources involved in the monitoring process, training, support activities,

calibration and data collection, quality assurance procedures, data management, electronic support tools.

The project employs baseline and monitoring methodology namely ACM0001, "Flaring or use of landfill gas" V19.0/B02/. According to section 6.1 and 6.2 of Joint PD & MR V2.5 /01/ the parameters determined ex-ante as per the requirements of the methodology are given below.

The following data and parameters are available at validation, it is confirmed by VVB that all parameters and values applied in the joint PD&MR V2.5 and calculation spreadsheet are complete, transparent and correct.

Parameters fixed ex-ante

GWP_{CH4}	Global Warming Potential of CH_4
Data/ unit	tCO_{2e}/tCH_4
Source referenced	IPCC AR5[25]
The value provided **Value applied Value applied**	28 t CO_2e/t CH_4
Justification of choice of data	-
VVB verification	Confirmed as correct for ex ante determination. Via checking the applied methodology /B02/, IPCC fifth assessment report, and VCS Standard Version 4.7/B01/, it is verified that the value is correct.

$DOC_{f,y}$	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year *y* (weight fraction)
Data/ unit	%
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)/B03/
The value provided **Value applied Value applied**	50%
Justification of choice of data	For methane calculation from MSW, the national value of $DOC_{f,y}$ is equal to 0.5.

[25] Microsoft Word - Global-Warming-Potential-Values.docx (ghgprotocol.org)

VVB verification	Confirmed as correct for ex ante determination. Via checking the applied methodology /B02/, Tool 04/B03/and VCS Standard Version 4.7/B01/, it is verified that the value is correct.

DOC_j	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year *y* (weight fraction)
Data/ unit	%
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)/B03/ TABLE 2A.2 (NEW) of chapter 2 : 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories/B10/
The value provided **Value applied Value applied**	j / DOC_j: a Wood 43%; b Paper 40%; c Food 15%; d Textile 24%; e Others (rubber, plastic, glass, metal, etc.) 0%
Justification of choice of data	Using default value provided by Tool04 (Version 08.1) The values of this parameter are the same in 2019 Refinement and the 2006 IPCC/B10/.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 04/B03/, IPCC report/B10/ it is verified that the value is correct.

$EF_{grid,CM,y}$	Combined margin CO_2 emission factor in year *y*
Data/ unit	tCO_2/MWh
Source referenced	Calculated based on TOOL07: "Tool to calculate the emission factor for an electricity system" (Version 07.0)
The value provided **Value applied Value applied**	0.57335 tCO_2/MWh

Justification of choice of data	$EF_{grid,CM,y}$ is calculated based on $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ as per the latest version of TOOL 07/B05/
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 07/B05/ it is verified that the value is correct.

$EF_{grid,OM,y}$	Operating margin CO_2 emission factor r in year *y*
Data/ unit	tCO_2/MWh
Source referenced	2023 Operating Margin Emission Factors for Regional Power Grids in China" [26] by the Ministry of Ecology and Environment of China
The value provided **Value applied Value applied**	0.8771 tCO_2/MWh
Justification of choice of data	Official and authoritative statistic data.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. It is verified that the value is correct[27].

$EF_{grid,BM,y}$	Build margin CO_2 emission factor
Data/ unit	tCO_2/MWh
Source referenced	"2023 Build Margin Emission Factors for Regional Power Grids in China"[28] by the Ministry of Ecology and Environment of China
The value provided **Value applied Value applied**	0.2696 tCO_2/MWh
Justification of choice of data	Official and authoritative statistic data.

[26] W020240709709437370462.pdf (ncsc.org.cn)

[27] W020240709709437370462.pdf (ncsc.org.cn)

[28] W020240709709439048191.pdf (ncsc.org.cn)

VVB verification	Confirmed as correct for ex ante determination of baseline emissions. It is verified that the value is correct.

F	Fraction of methane in the SWDS gas (volume fraction)
Data/ unit	%
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)
The value provided **Value applied Value applied**	50%
Justification of choice of data	The default value from the latest version of Tool04 is 0.5
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 04/B03/ it is verified that the value is correct.

k_j	Decay rate for the waste type j
Data/ unit	1 / yr
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)/B03/ TABLE 3.3 of chapter 3, 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories/B10/
The value provided	
Justification of choice of data	

j	a	b	c	d	e
	Wood	Paper	Kitchen	Textile	Others (rubber, plastic, glass, metal, etc.)
k_j	0.03	0.06	0.185	0.06	0

Waste type j	Boreal and Temperate (MAT ≤20°C)		Tropical (MAT >20°C)	
	Dry (MAP/PET <1)	Wet (MAP/PET >1)	Dry (MAP <1000 mm)	Dry (MAP >1000 mm)

	Slowly degrading	Pulp, paper, cardboard (other than sludge), textiles	0.04	0.06	0.045	0.07
		Wood, wood product and straw	0.02	0.03	0.025	0.035
	Moderately degrading	Other (non-food) organic putrescible garden and park waste	0.05	0.10	0.065	0.17
	Rapidly degrading	Food, food waste, sewage sludge, beverages and tobacco	0.06	0.185	0.085	0.40

Note: MAT – mean annual temperature, MAP – Mean annual precipitation, PET – potential evapotranspiration. MAP/PET is the ratio between the mean annual precipitation and the potential evapotranspiration.

For the project site in Shaoyang, Hu'nan, the climate zone is subtropical monsoon humid climate with an annual average temperature from 16.1 to 17.1 ℃[29], below 20 ℃. The average annual PET in Hu'nan province is about 819.22 mm/yr[30]. The annual average precipitation is about 1953 mm/yr[31], thus MAP/PET >1. Therefore, the values for Boreal and Temperate (MAT≤20 ℃) and Wet (MAP/PET >1) are applicable.

VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 04/B03/ it is verified that the value is correct.

MCF_y	Methane correction factor for year *y*

[29] https://www.shaoyang.gov.cn/shaoyang/szrdl/202207/7423a1198a4f4dd5b917e1330379ed92.shtml

[30] Liu N, Jiang W, Huang L, Li Y, Zhang C, Xiao X, Huang Y. Evolution of Sustainable Water Resource Utilization in Hunan Province, China. *Water*. 2022; 14(16):2477. https://doi.org/10.3390/w14162477

[31] Liu N, Jiang W, Huang L, Li Y, Zhang C, Xiao X, Huang Y. Evolution of Sustainable Water Resource Utilization in Hunan Province, China. *Water*. 2022; 14(16):2477. https://doi.org/10.3390/w14162477

Data/ unit	-
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)
The value provided **Value applied Value applied**	1.0
Justification of choice of data	In case of Application A, MCF_y = 1.0 for anaerobic managed solid waste disposal sites. These must have controlled placement of waste (i.e. waste directed to specific deposition areas, a degree of control of scavenging and a degree of control of fires) and will include at least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) levelling of the waste
VVB verification	Through the review of the FSR /09/ and interviews with staff and on-site observations at the Landfill Site/15/, it was confirmed that the site operates as an anaerobic managed solid waste disposal site (SWDS), with no groundwater table above the base of the landfill. Further verification of the Landfill Operation and Management Manual /40/ confirmed that the SWDS features controlled waste placement, including mechanical compaction and levelling of the waste, consistent with the definition of a managed landfill. Verification confirmed that the landfill comprises a flat-bottom cell with no surface water accumulation at the lowest point, and groundwater located 5.2 m below the base as evidenced by exploratory drilling, As per the Landfill Operation and Management Manual/40/, effective fire-prevention measures are implemented at the site, including LFG extraction and monitoring, strict control of ignition sources, and prominent fire-safety signage(section 2, chapter 3 of manual/40/). The VVB also confirms that covering, mechanical compaction, and leveling of waste are consistently applied by the landfill operator on review of the manual and based on on-site visit/15/

	Based on this verification and the justification provided above, the project activity falls under Application A as defined in Tool 04: Emissions from Solid Waste Disposal Sites, Version 08.1/B01/. Therefore, in accordance with paragraph 32 and "Data/Parameter Table 5" of the tool, the value of the methane correction factor is applied as MCF=1. Application A has been chosen complying to the requirements mentioned. Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 04/B03/ it is verified that the value is correct.

OX_{top_layer}	Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline
Data/ unit	Dimensionless
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)
The value provided **Value applied Value applied**	0.1
Justification of choice of data	A default value of 0.1 may be used.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 04/B03/ it is verified that the value is correct

$\rho_{CH4,n}$	Density of methane at the temperature and pressure of the landfill gas
Data/ unit	tonnes/Nm^3
Source referenced	TOOL 06: "Project emissions from Flaring" (Version 04.0)
The value provided **Value applied Value applied**	0.000716 tCH_4/Nm^3 CH_4

Justification of choice of data	As shown in the Table 1. Constants used in equations in the Tool 06 (Version 04.0), the value of $\rho_{CH4,n}$ is equal to 0.716 kg/m³, which is equal to 0.000716 tonnes/Nm³. $LFG_{i,y}$ is reported at normal conditions of temperature and pressure, so the density of methane is also determined as 0.000716 tCH_4/Nm^3 CH_4 at normal conditions
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the Tool 06 /B08/ it is verified that the value is correct.

$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year *y*
Data/ unit	-
Source referenced	TOOL05: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Version 03.0)
The value provided **Value applied Value applied**	20%
Justification of choice of data	In case of scenario A, a default values of 20% is used for project electricity consumption sources.
VVB verification	Confirmed as correct for ex ante determination of project emissions. Via checking the Tool 05 /B04/ it is verified that the value is correct.

$TDL_{k,y}$	Average technical transmission and distribution losses for providing electricity to source *k* in year *y*
Data/ unit	-

Source referenced	TOOL05: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Version 03.0)
The value provided **Value applied Value applied**	3%
Justification of choice of data	In case of scenario A, a default values of 3% is used for baseline electricity consumption sources.
VVB verification	Confirmed as correct for ex ante determination of project emissions. Via checking the Tool 05 /B04/ it is verified that the value is correct.

$W_{j,x}$	Amount of solid waste type *j* disposed or prevented from disposal in the SWDS in the year *x*
Data/ unit	t
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)
The value provided **Value applied Value applied**	Values has been mentioned in ER sheet
Justification of choice of data	It is calculated as total waste amount dumped in the landfill site in the year *x* multiplied by organic waste type *j* fraction on wet basis. Both total waste amount and waste type *j* fraction are referred to FSR/09/
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the ER sheet /02/, FSR/09/, it is verified that the value is correct.

w_{OM}	Weighting of operating margin emissions factor
Data/ unit	%

Source referenced	TOOL07: "Tool to calculate the emission factor for an electricity system" (version 07.0)
The value provided **Value applied Value applied**	50%
Justification of choice of data	For projects other than wind and solar power generation project activities, w_{OM} = 0.5 for the first crediting period.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the tool 07/B07/ , it is verified that the value is correct.

w_{BM}	Weighting of build margin emissions factor in year *y*
Data/ unit	%
Source referenced	TOOL07: "Tool to calculate the emission factor for an electricity system" (version 07.0)
The value provided **Value applied Value applied**	50%
Justification of choice of data	For projects other than wind and solar power generation project activities, w_{OM} = 0.5 for the first crediting period.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the tool 07/B07/, it is verified that the value is correct.

η_{PJ}	Efficiency of the LFG capture system that will be installed in the project activity.
Data/ unit	Dimensionless
Source referenced	ACM0001 V19.0/B01/
The value provided **Value applied Value applied**	50%

Justification of choice of data	A default value of 50 per cent is applied.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the methodology, ACM0001 V19.0/B07/, the choice of default value of 50% is found to be appropriate.

φ_y	Model correction factor to account for model uncertainties for year *y*
Data/ unit	-
Source referenced	TOOL04: "Emissions from solid waste disposal sites" (Version 08.1)
The value provided **Value applied Value applied**	0.75
Justification of choice of data	Option 1: use a default value is chosen to calculate φ_y. For the Project under Application A: The CDM project activity mitigates methane emissions from a specific existing SWDS, φ_y = 0.75.
VVB verification	Confirmed as correct for ex ante determination of baseline emissions. Via checking the tool 07/B03/, it is verified that the value is correct.

	Humid/wet conditions	Dry conditions
Application A	0.75	0.75
Application B	0.85	0.80

$SPEC_{flare}$	Manufacturer's flare operating specifications for temperature, flow rate and maintenance schedule
Data/ unit	Temperature - °C Flow rate or heat flux - kg/h or m³/h Maintenance schedule - number of days
Source referenced	Flare manufacturer specification and nameplate

The value provided **Value applied Value applied**	a) Inlet flow rate: 0~1500 m^3/h. (b) Operating temperature in the exhaust gas: 500~1000°C. (c) Maximum duration in days between maintenance: 183 days (6 months)
Justification of choice of data	Data provided by flare manufacturer
VVB verification	Confirmed as correct for ex ante determination. Via checking the tool 06/B08/. manufacturer's flare operating specifications (temperature, flow rate/heat flux, and maintenance schedule has been documented by the PP and the same has been confirmed on the review of manufacturer specifications of the flare system/38/.VVB confirms that the specified flow rate and temperature ranges are within the manufacturer's operational limits and the maintenance schedule aligns with the manufacturer's recommendation.

Data and Parameters Monitored

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

Management of SWDS	Management of SWDS
Data/ unit	-
Source referenced	Original design of the landfill
Description of measurement methods and procedures to be applied	Project participants should refer to the original design of the landfill to ensure that any practice to increase methane generation have been occurring prior to the implementation of the project activity. Any change in the management of the SWDS after the implementation of the project activity should be justified by referring to technical or regulatory specifications.
Frequency of monitoring	Annually

The value provided **Value applied Value applied**	-
Monitoring equipment	-
Calculation method	-
VVB verification	Confirmed by Onsite interviews/15/

$EG_{PJ,y}$	Amount of electricity generated using LFG by the project activity in year *y*
Data/ unit	MWh
Source referenced	Electricity meter
Description of measurement methods and procedures to be applied	Measured by a bi-directional electricity meter and daily recorded. All electronic data and paper documents will be archived for two years following the end of the crediting period. The accuracy of the installed meter is ±1%.
Frequency of monitoring	Continuously measured and recorded every day in the daily operation records
The value provided **Value applied Value applied**	-
Monitoring equipment	Electricity meter
Calculation method	-
VVB verification	This parameter is required for calculating baseline emissions associated with electricity generation ($BE_{EC,y}$) using the methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation. The electricity meter is to be calibrated

	every two years in compliance with the latest version of "Technical administrative code of electric energy metering"[32]. The data will be cross checked with sales receipts/18/ of electricity. Calibration certificates/19/ has been crosschecked to check compliance with regulations specific to calibration frequency. It is confirmed that the calibration period of the monitoring equipment presented in the JPD&MR is accurate and in line with the requirements in related regulation standards or other relevant requirements and the calibration has been done within the frequency period. Electricity meters have been calibrated and maintained periodically to ensure the accuracy of measurement.

$EG_{EC,y}$	Amount of electricity consumed by the project activity in year y
Data/ unit	MWh
Source referenced	Electricity meter
Description of measurement methods and procedures to be applied	Sources of consumption shall include, where applicable, electricity consumed for the operation of the LFG capture system, for any processing and upgrading of the LFG, for transportation of the LFG to the flare or other applications (boilers, power generators), for the compression of the LFG into the natural gas network, etc. Measured by bi-directional electricity meter with accuracy of no lower than 0.5S.
Frequency of monitoring	Continuously measured and monthly recorded
The value provided **Value applied Value applied**	0 (estimated ex-ante)
Monitoring equipment	Electricity meter
Calculation method	-
VVB verification	The data will be cross checked with sales receipts/18/ of electricity Calibration certificates/19/ has been cross-checked to check compliance with regulations specific to calibration frequency.

[32] https://www.doc88.com/p-2377330908298.html

$OP_{j,h}$	Operation of the equipment that consumes the LFG
Data/ unit	-
Source referenced	Project participants
Description of measurement methods and procedures to be applied	For each equipment unit *j* using the LFG monitor that the plant is operating in hour *h* by the monitoring any one or more of the following three parameters: (a) Temperature. Determine the location for temperature measurements and minimum operational temperature based on manufacturer's specifications of the burning equipment. Document and justify the location and minimum threshold in the PD; (b) Flame. Flame detection system is used to ensure that the equipment is in operation; (c) Products generated. Monitor the generation of steam for the case of boilers and air-heaters and glass for the case of glass melting furnaces. This option is not applicable to brick kilns. $OP_{j,h} = 0$ when: (a) One of more temperature measurements are missing or below the minimum threshold in hour *h* (instantaneous measurements are made at least every minute); (b) Flame is not detected continuously in hour *h* (instantaneous measurements are made at least every minute); (c) No products are generated in the hour *h*. Otherwise, $OP_{j,h} = 1$.
Frequency of monitoring	Hourly
The value provided **Value applied Value applied**	Monitored ex-post
Monitoring equipment	On-line operation system
Calculation method	-
VVB verification	Data of the parameter was verified by checking on-line operator system. The flow meter, the temperature transmitter and the pressure transmitter continuously measure the volumetric flow, the temperature and the pressure of the LFG, respectively, and send data to the computer, which then automatically converts the flow into values at normal conditions. The same has been verified from Onsite visit/15/ and Daily operation records/20/

$V_{t,wb,n}$	Volumetric flow of the gaseous stream in time interval *t* on a wet basis at normal conditions
Data/ unit	m³ wet gas/d
Source referenced	Measured by a flow meter on an hourly basis and converted automatically by the recovery monitoring system into standard value.
Description of measurement methods and procedures to be applied	This parameter ($V_{t,wb,n}$) is monitored by a flow meter, and is automatically recorded, accumulated and converted into standard value (at the normal condition of 0°C and 101,325 Pa) by the recovery monitoring system. The staff of the project will record the data every day.
Frequency of monitoring	Measured by a flow meter continuously, and meter readings were recorded every day in the daily operation records
The value provided **Value applied Value applied**	Monitored ex-post
Monitoring equipment	Flow meter
Calculation method	-
VVB verification	The parameter will be monitored ex-post and the values will be confirmed from flow meter readings recorded in the Operation records/20/. The metering instruments will be calibrated every year in accordance with the national standard "Differential Pressure Flowmeters"[33].Calibration certificates of flow meter has been crosschecked for the conformance of calibration frequency/21/

$v_{i,t,wb}$	Volumetric fraction of greenhouse gas *i* in the gaseous stream in a time interval *t* on a wet basis
Data/ unit	m³ gas CH_4/m³ wet gas
Source referenced	Measured by continuous gas analyzer

[33] https://www.doc88.com/p-87316994994493.html

Description of measurement methods and procedures to be applied	Continuous gas analyzer operating on wet basis.
Frequency of monitoring	This parameter is continuously monitored, and readings were recorded every day in the daily operation records.
The value provided **Value applied Value applied**	Monitored ex-post
Monitoring equipment	Gas analyzer
Calculation method	- -
VVB verification	The parameter will be monitored ex-post and the values will be confirmed from gas analyzer readings recorded in the Daily Operation records/20/. Gas analyzer is to be calibrated annually in accordance with the national standard. As demonstrated in the national standard "Specification of on-line gas analyzers" [34], a periodically calibration every 1 – 3 year is required during the normal operation period. Calibration has been done annually for the gas analyzer. Calibration certificates of flow meter have been crosschecked for the conformance of calibration frequency/22/. It is confirmed that the calibration period of the monitoring equipment presented in the JPD&MR is accurate and in line with the requirements in related regulation standards and the calibration has been done within the frequency period. Gas analyzer has been calibrated and maintained periodically to ensure the accuracy of measurement/22/.

CAPEX and OPEX	Total investment to implement the project and total cost to operate the project
Data/ unit	Currency (CNY)
Source referenced	Engineering, procurement and construction contracts; and maintenance contracts

[34] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=6E51118C99155530C20F46FF8AED49B5

Description of measurement methods and procedures to be applied	-
Frequency of monitoring	At the first issuance request after each phase of the project is fully implemented
The value provided **Value applied Value applied**	-
Monitoring equipment	-
Calculation method	- -
VVB verification	The information provided for CAPEX shall indicate the investment made: (i) in the collection and flaring system; (ii) in the power plant and connection to the grid (if applicable); and (iii) in the purchase of the new boiler or refurbishment of the existing one and in the steam/hot air pipeline if steam/hot air is exported out of the project boundary (if applicable). The information supplied for OPEX shows the costs for: (i) staff and maintenance involved in the operation of the collection and flaring system; and (ii) staff and maintenance involved in the operation of the collection and power generation system. Financial statement audit report of 2024 has been verified by the VVB/37/.

Tariff of electricity exported.	Tariff of the electricity exported
Data/ unit	Currency (CNY/KWh)
Source referenced	Electricity Transaction Note
Description of measurement methods and procedures to be applied	-

Frequency of monitoring	At the first issuance request after each phase of the project is fully implemented
The value provided **Value applied Value applied**	-
Monitoring equipment	Not applicable as this parameter is confirmed in ways of paper documents
Calculation method	- -
VVB verification	The parameter can be confirmed from PPA/06/ from invoices of electricity sale/18/ and crosschecked from financial 8statement audit report of 2024/37/.

f_y	Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y
Data/ unit	%
Source referenced	TOOL04 Version 08.1 ACM0001 version 19
Description of measurement methods and procedures to be applied	As per para. 38 of section 5.4.1.2 of the applied methodology ACM0001 version 19, the parameter f_y is only used for ex-ante estimation of $BE_{CH4,SWDS,y}$, and f_y shall be assigned a value of 0 because the amount of LFG that would have been captured and destroyed is already accounted for in Equation 3 of this joint PDMR, i.e. for the Project, the amount of LFG that would have been captured and destroyed is already counted in the parameter $F_{CH4,BL,y}$ in the equation. Hence f_y = 0.
Frequency of monitoring	Once for the crediting period
The value provided	0
Monitoring equipment	N/A
Calculation method	- -

VVB verification	The project falls under Application A as defined in Tool 04: Emissions from Solid Waste Disposal Sites, Version 08.1/B03/. In accordance with the tool, for Application A, the parameter is required to be monitored once per crediting period. The VVB confirms that the monitoring frequency specified for this parameter in the Joint PD & MR/01/ is consistent with the requirements of the referenced tool.

$\rho_{reg,y}$	Fraction of LFG that is required to be flared due to a requirement in year y
Data/ unit	Dimensionless
Source referenced	The host country's regulatory requirements relating to LFG, contractual requirements, or requirements to address safety and odour concerns
Description of measurement methods and procedures to be applied	There is no requirement specifying the amount or percentage of LFG that should be destroyed, and no requirement on the installation of a system to capture and flare the LFG. As a result, $\rho_{reg,y}$ is zero. However, in order to follow the conservative principle, a typical destruction rate of 20 per cent is applied to calculate the LFG destruction.
Frequency of monitoring	Annually
The value provided	20%
Monitoring equipment	N/A
Calculation method	- -
VVB verification	Data of the parameter was verified by checking ACM0001/B02/. All data is in line with ACM0001. The VVB confirms that the monitoring frequency specified for this parameter in the Joint PD & MR/01/ is consistent with the requirements of the referenced methodology. There is no requirement in the country specifying the amount or percentage of LFG that should be destroyed which has been confirmed by the VVB and details has been mentioned in section 3.4.6 of this report and hence, the value taken has been found to be conservative.

Monitoring plan

The VVB has checked the monitoring plan of the joint PD & MR V2.5 against the applied methodology/B02/. The monitoring plan in the joint PD & MR V2.5 /01/ has been designed to comply with the latest applicable version of the methodology and all the applied tools. The VVB team evaluated the feasibility and sufficiency of the monitoring plan. The key components of the monitoring plan are as follows:

Parameters to be monitored

Listed as above tables and assessed by VVB accordingly.

Management Structure

The joint PD & MR V2.5 /01/contains a diagram illustrating the Organization Structure of the Monitoring Team to be implemented by the project owner in order to implement the project activity. The VCS monitoring team will be responsible for the monitoring of all the parameters to be monitored. And all the data will be reviewed by the project developer and VVB. The organizational structure is considered sufficient to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.

Data collection

Monitoring officers are responsible for data collection. Designated teams read and collect the monitored data regularly. The data are recorded regularly and serve as the main data source for emission reductions calculation. All data files, relevant purchase invoices and sales receipts is collected by a designated monitoring officer, who prepares backup in time and archive all documents properly/15/.

Quality assurance

All metering equipment for monitoring is chosen in accordance with VCS requirements and is calibrated regularly for accuracy by qualified party according to the national regulations. To assist in future verifications, the Project owner preserves the calibration records, along with the data files of project monitoring.

Measurement instruments are described in the monitoring plan as subject to appropriate national standards with respect to installation, accuracy and calibration interval. During this monitoring period (01-July-2023 to 28-February-2025), all measuring equipments has been calibrated in time/19/,21//22//34//35/, the calibration result is passed, and all equipment is within the validity period. This equipment setup is considered sufficient to carry out the monitoring requirements of the methodology, and the appropriate national standards will be followed

Data file management

All monitoring data is electronically filed by the end of each month and the electronic data files are archived in both disk copy and printed hard copy. All data collected as part of monitoring is archived electronically and PP will keep the same, least for two years after the end of the crediting period/15/.

Emergency

The monitoring team members are in charge of identifying any emergency, such as failure or malfunction of a monitoring instrument, and then reporting it to the VCS Manager. Professional qualified maintenance personnel will be invited to the project site as soon as possible to repair the equipment out of order. During this monitoring period, no equipment emergency happened/15/.

3.5 Non-Permanence Risk Analysis

This is not applicable to the project activity as the Project is not an AFOLU (Agriculture, Forestry and Other Land Use) project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The selected monitoring period (01-July-2023 to 28-February-2025) is the 1st monitoring period of the project, which is within the crediting period 01-July-2023 to 30-June-2033. The monitoring has been carried out in accordance with the monitoring plan contained in the joint PD&MR V2.5 /01/.

Through visual inspection /15/ and document review through site visit, the assessment team was able to confirm that:

- The project implementation is in accordance with the project description contained in the Joint PD & MR (version 2.5 dated 15-October-2025) and monitoring plan.
- All physical features of the proposed project activity including data collection systems and storage systems have been implemented in accordance with the Joint PD & MR (version 02.5 dated 15-October-2025) and monitoring plan.
- The monitoring plan in the joint PD & MR (version 2.5 dated 15-October-2025) is in accordance with the approved methodology applied by the project activity, i.e. ACM0001, version 19.0.

The monitoring has been carried out in accordance with the monitoring plan contained in the joint PD & MR (version 2.5 dated 15-October-2025).

- All parameters stated in the monitoring plan are monitored and reported appropriately.

All parameters required to be monitored by the monitoring plan as per the monitoring methodology ACM0001, version 19.0 and the management system were assessed during the site visit/15/. The joint PD & MR v2.5 lists each parameter required by the monitoring plan and the information flow (i.e. from data generation, aggregation, recording, calculation and reporting) for these parameters. The information flow for each parameter in further verified in the following sections:

Implementation Status	Assessment steps, evidence checked, & conclusion:
Project implementation	The Project started construction on 30-December-2022 and operated on 01-July-2023. The crediting period covers from 01-July-2023 to 30-June-2033, and the first monitoring period is from 01-July-2023 to 28-February-2025. The control system of project to processing / manufacturing facility is automated and assures continuous operation, including monitoring on malfunction of equipment. By checking the operation records /20/ and interview with staff and project owner/15/, Carbon Check can confirm that no serious malfunction happened and project to processing/ manufacturing facility was under a normal operation as expected in this monitoring period. On-site training for the related procedures including monitoring, recording and reporting was verified to be in place and their implementation was confirmed by interview with the key operators and observing the operations/15//32
Monitoring plan	The monitoring plan was assessed to be effective and fully implemented at the time of the verification exercise. Monitoring activities were also observed to be carried out in accordance with the documented monitoring plan. The monitoring system was deemed appropriate and suitable for the project activity. The project is implemented in accordance with the monitoring plan/01/ and the monitoring plan complies with the applied methodology ACM0001, version 19.0/B02/. The monitoring system is in place /01/and the emission reductions are calculated without material misstatements.
AFOLU-specific project implementation	Not applicable as the project activity do not fall under For AFOLU Projects

4.2 Accuracy of Reduction and Removal Calculations

Assessment of Data and parameters available at validation

By checking the joint PD & MR v2.5/01/, it is confirmed that all the ex-ante data and parameters are same to the joint PD & MR which is verified as correct. Refer to section 3.4.8 of this report for the detailed assessment of ex-ante parameters.

Assessment of Data and parameters monitored

During the verification all relevant monitoring parameters (as listed in chapter 3.4.8 of this report) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, (iii) the accuracy and applied QA/QC measures.

The monitoring results as well as the verification procedure are described parameter-wise in the below tables:

Management of SWDS	Management of SWDS
Data/ unit	-
The value provided	Since the implementation of the project activity, no changes have taken place in the management of the landfill. Meanwhile, according to the "Statement of Management Technical" of the landfill site, it is confirmed that after the implementation of the project activity, the management of the landfill site has not undergone any changes, and there has been no increase in methane production.
Monitoring equipment	-
Frequency of monitoring	Annually
VVB verification	Monitoring method was verified by site visit, checking Statement of status of landfill, all monitoring method meets the description in the JPD&MRV V2.5/01/.

$EG_{PJ,y}$	Amount of electricity generated using LFG by the project activity in year *y*
Data/ unit	MWh

The value provided	Period	$EG_{PJ,y}$ (MWh/y)
	01/07/2023-31/12/2023	3,437.820
	01/01/2024-31/12/2024	6,956.130
	01/01/2025-28/02/2025	863.820
	Total	**11,257.770**
Monitoring equipment	Electricity meter	
Frequency of monitoring	Continuously measured and recorded every day in the daily operation records	
VVB verification	The electricity meter M is at the project site between the project and CCPG. This parameter is monitored continuously and recorded monthly. The cut-off time of the electricity meter M is at 24:00 of the last day of each month/15/. The data has been cross checked with sales receipts/18/ of electricity. Calibration certificates/19/ has been crosschecked to check compliance with regulations specific to calibration frequency[35]. It is confirmed that the calibration period of the monitoring equipment presented in the JPD&MR is accurate and in line with the requirements in related regulation standards and the calibration has been done within the frequency period. Electricity meter has been calibrated and maintained periodically to ensure the accuracy of measurement.	

$EG_{EC,y}$	Amount of electricity consumed by the project activity in year y	
Data/ unit	MWh	
The value provided	Period	$EG_{EC,y}$ (MWh/y)
	01/07/2023-31/12/2023	3.150
	01/01/2024-31/12/2024	4.650
	01/01/2025-28/02/2025	0.660
	Total	8.460
Monitoring equipment	Electricity meter	
Frequency of monitoring	Continuously measured and monthly recorded	

[35] https://www.doc88.com/p-2377330908298.html

VVB verification	The electricity meter M is at the project site between the project and CCPG. This parameter is monitored continuously and recorded monthly. The cut-off time of the electricity meter M is at 24:00 of the last day of each month/15/ The data will be cross checked with sales receipts/18/ of electricity. Calibration certificates/19/ has been crosschecked to check compliance with regulations specific to calibration frequency and calibration. It is confirmed that the calibration period of the monitoring equipment presented in the JPD&MR is accurate and in line with the requirements in related regulation standards and the calibration has been done within the frequency period of two years. Electricity meter has been calibrated and maintained periodically to ensure accuracy of measurement.

$OP_{j,h}$	Operation of the equipment that consumes the LFG		
Data/ unit	-		
The value provided	Period		$OP_{j,h}$
	From	To	
	01/07/2023	31/07/2023	737
	01/08/2023	31/08/2023	730
	01/09/2023	30/09/2023	719
	01/10/2023	31/10/2023	719
	01/11/2023	30/11/2023	693
	01/12/2023	31/12/2023	738
	Subtotal		4,336
	01/01/2024	31/01/2024	721
	01/02/2024	29/02/2024	693
	01/03/2024	31/03/2024	738
	01/04/2024	30/04/2024	700
	01/05/2024	31/05/2024	716
	01/06/2024	30/06/2024	703
	01/07/2024	31/07/2024	726
	01/08/2024	31/08/2024	732
	01/09/2024	30/09/2024	696
	01/10/2024	31/10/2024	741
	01/11/2024	30/11/2024	717
	01/12/2024	31/12/2024	737
	Subtotal		8,620
	01/01/2025	31/01/2025	723
	01/02/2025	28/02/2025	670
	Subtotal		1,393
	Total		14,349

Monitoring equipment	On-line operation system
Frequency of monitoring	Hourly
VVB Verification	Data of the parameter was verified by checking on-line operator system. The flow meter, the temperature transmitter and the pressure transmitter continuously measure the volumetric flow, the temperature and the pressure of the LFG, respectively, and send data to the computer, which then automatically converts the flow into values at normal conditions. The same has been verified from Onsite visit/15/ and Daily operation records/20/

$V_{t,wb,n}$	Volumetric flow of the gaseous stream in time interval *t* on a wet basis at normal conditions		
Data/ unit	m³ wet gas/d		
The value provided	Period		$V_{t,wb,n}$
	From	To	
	01/07/2023	31/07/2023	544.022
	01/08/2023	31/08/2023	523.573
	01/09/2023	30/09/2023	490.096
	01/10/2023	31/10/2023	532.968
	01/11/2023	30/11/2023	535.654
	01/12/2023	31/12/2023	539.569
	01/01/2024	31/01/2024	539.603
	01/02/2024	29/02/2024	498.186
	01/03/2024	31/03/2024	516.493
	01/04/2024	30/04/2024	559.790
	01/05/2024	31/05/2024	594.878
	01/06/2024	30/06/2024	540.097
	01/07/2024	31/07/2024	561.860
	01/08/2024	31/08/2024	578.832
	01/09/2024	30/09/2024	550.756
	01/10/2024	31/10/2024	593.443
	01/11/2024	30/11/2024	618.618
	01/12/2024	31/12/2024	600.560
	01/01/2025	31/01/2025	532.473
	01/02/2025	28/02/2025	452.528
Monitoring equipment	Flow meter		
Frequency of monitoring	Measured by a flow meter continuously, and meter readings were recorded every day in the daily operation records		

VVB Verification	The parameter will be monitored ex-post and the values has been confirmed from flow meter readings recorded in the Operation records/20/. The metering instruments will be calibrated every year in accordance with the national standard "Differential Pressure Flowmeters"[36].Calibration certificates of flow meter has been crosschecked for the conformance of calibration frequency and found to be met/21/. It is confirmed that the calibration period of the monitoring equipment presented in the JPD&MR is accurate and in line with the requirements in related regulation standards and the calibration has been done within the frequency period. Flowmeter has been calibrated and maintained periodically to ensure accuracy of measurement.

$v_{i,t,wb}$	Volumetric fraction of greenhouse gas *i* in the gaseous stream in a time interval *t* on a wet basis		
Data/ unit	m^3 gas CH_4/m^3 wet gas		
Value provided	Period		$v_{CH4,t,wb}$
	From	To	
	01/07/2023	31/07/2023	47.27%
	01/08/2023	31/08/2023	45.38%
	01/09/2023	30/09/2023	43.81%
	01/10/2023	31/10/2023	44.29%
	01/11/2023	30/11/2023	44.44%
	01/12/2023	31/12/2023	44.51%
	01/01/2024	31/01/2024	44.39%
	01/02/2024	29/02/2024	39.85%
	01/03/2024	31/03/2024	40.62%
	01/04/2024	30/04/2024	44.23%
	01/05/2024	31/05/2024	43.39%
	01/06/2024	30/06/2024	43.81%
	01/07/2024	31/07/2024	43.49%
	01/08/2024	31/08/2024	43.31%
	01/09/2024	30/09/2024	43.76%
	01/10/2024	31/10/2024	43.34%
	01/11/2024	30/11/2024	43.26%
	01/12/2024	31/12/2024	42.38%
	01/01/2025	31/01/2025	40.07%

[36] https://www.doc88.com/p-87316994994493.html

	01/02/2025	28/02/2025	38.56%
Monitoring equipment	Gas analyzer		
Frequency of monitoring	Th parameter is continuously monitored, and readings were recorded every day in the daily operation records.		
VVB Verification	The parameter will be monitored ex-post and the values will be confirmed from gas analyzer readings recorded in the Daily Operation records/20/. Gas analyzer is to be calibrated annually in accordance with the national standard. As demonstrated in the national standard "Specification of on-line gas analyzers" [37], a periodically calibration every 1 – 3 year is required during the normal operation period. Calibration certificates of gas analyzer has been crosschecked for the conformance of calibration frequency/22/ It is confirmed that the calibration period of the monitoring equipment presented in the JPD&MR is accurate and in line with the requirements in related regulation standards and the calibration has been done within the frequency period. Gas analyzer has been calibrated and maintained periodically to ensure accuracy of measurement/22/.		

CAPEX and OPEX	Total investment to implement the project and total cost to operate the project
Data/ unit	Currency (CNY)
The value provided	CAPEX: 15,710,096.85 CNY OPEX: 2,473,811.55 CNY annually OPEX calculation:

Period	Jan/2024-Dec/2024	Jul/2023-Dec/2023
Tax and surcharge (CNY)	2,085,703.00	1,225,222.29
Sales cost (CNY)	36,011.82	17,797.56
Management cost (CNY)	153,173.33	120,154.26
Financial cost (CNY)	33,201.51	56,397.46

[37] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=6E51118C99155530C20F46FF8AED49B5

	Total OPEX (CNY)	2,308,089.66	1,419,571.57	
	Days	550		
	Annual OPEX (CNY)	2,473,811.55		
Monitoring equipment	-			
Frequency of monitoring	At the first issuance request after each phase of the project is fully implemented			
VVB Verification	The information provided for CAPEX shall indicate the investment made: (i) in the collection and flaring system; (ii) in the power plant and connection to the grid (if applicable); and (iii) in the purchase of the new boiler or refurbishment of the existing one and in the steam/hot air pipeline if steam/hot air is exported out of the project boundary (if applicable). The information supplied for OPEX shows the costs for: (i) staff and maintenance involved in the operation of the collection and flaring system; and (ii) staff and maintenance involved in the operation of the collection and power generation system. Annualized OPEX is calculated by adding the OPEX from Jul/2023 to Dec/2023 and from Jan/2024 to Dec/2024, and then dividing the total by the number of days in one year. Financial statement audit report of 2024 has been verified by the VVB/37/			

Tariff of electricity exported.	Tariff of the electricity exported
Data/ unit	Currency (CNY/KWh)
The value provided	0.45 (with VAT), 0.3982 (without VAT)
Monitoring equipment	-
Frequency of monitoring	At the first issuance request after each phase of the project is fully implemented
VVB Verification	The parameter can be confirmed from PPA/06/ from invoices of electricity sale/18/ and crosschecked from Financial statement audit report of 2024/37/.

fy	Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y
Data/ unit	%
The value provided	0
Monitoring equipment	-
Frequency of monitoring	Once for the crediting period
VVB Verification	The project falls under Application A as defined in Tool 04: Emissions from Solid Waste Disposal Sites, Version 08.1/B03/. In accordance with the tool, for Application A, the parameter is required to be monitored once per crediting period and application A has been chosen by the PP. The VVB confirms that the monitoring frequency specified and the value mentioned for this parameter in the Joint PD & MR/01/ is consistent with the requirements of the referenced tool.

$\rho_{reg,y}$	Fraction of LFG that is required to be flared due to a requirement in year y
Data/ unit	Dimensionless
The value provided	20%
Monitoring equipment	N/A
Frequency of monitoring	Annually
VVB Verification	The data for this parameter has been verified against the provisions of ACM0001/B01/. All information provided is consistent with the requirements of the referenced methodology. The VVB confirms that the monitoring frequency specified for this parameter in Joint PD & MR/01/

	is in full compliance with ACM0001. There is no requirement in the country specifying the amount or percentage of LFG that should be destroyed which has been confirmed by the VVB and details has been mentioned in section 3.4.6 of this report. Hence, the value taken has been found to be conservative.

Assessment of GHG emission reductions Quantity

The assessment team confirms that appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

Baseline emissions

Based on parameters determined ex-ante, equations justified in section 3.4.6 and 3.4.8, the baseline emissions of this monitoring period is calculated to be:

Parameter	Description	01/07/2023 to 31/12/2023 (tCO_2e)	01/01/2024 to 31/12/2024 (tCO_2e)	01/01/2025 to 28/02/2025 (tCO_2e)	Total (tCO_2e)
$BE_{CH4,y}$	Baseline emissions of methane from the SWDS	14,444	29,306	3,805	**47,555**
$BE_{EC,y}$	Baseline emissions associated with electricity generation	2,030	4,107	510	**6,647**

BE_y	Baseline emissions	16,474	33,413	4,315	**54,202**

Project emissions

The Project does not involve consumption of fossil fuels, distribution of compressed/liquefied LFG using trucks or supply of LFG to consumers through a dedicated pipeline, which means that $PE_{FC,y}$ = 0, $PE_{DT,y}$ = 0 and $PE_{SP,y}$ = 0. Thus,

$$PE_y = PE_{EC,y} \quad \text{(Equation 20)}$$

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y}) \quad \text{(Equation 21)}$$

Where:

$PE_{EC,y}$	=	Project emission from electricity consumption in year *y* (tCO_2e/yr)
$EC_{PJ,j,y}$	=	Quantity of electricity consumed by the project electricity consumption source *j* in year *y* (MWh/y)
$EF_{EL,j,y}$	=	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*

Based on equations justified in section 3.4.6 and 3.4.8 of this report, the project emissions of this monitoring period is calculated to be:

Parameter	Description	01/07/2023 to 31/12/2023 (tCO_2e)	01/01/2024 to 31/12/2024 (tCO_2e)	01/01/2025 to 28/02/2025 (tCO_2e)	Total (tCO_2e)

$PE_{EC,y}$	Emissions from consumption of electricity due to the project activity in year y	3	4	1	8
PE_y	Project emissions in the year y	3	4	1	8

Leakage

The project does not need to consider leakage. The assessment team deems this consideration is correct and in line with methodology ACM0001, version 19.0/B02/.

Emission reductions

The emission reductions achieved by the project activity during this monitoring period is calculated as:

$ER_y = BE_y - PE_y$ (Equation 22)

54,202 tCO_2e – 8 tCO_2e = 54,194 tCO_2e

VVB is able to confirm that the actual emission reductions reported in this monitoring period are reasonable and appropriate. The assessment team verified the input data for calculating emission reductions and the calculating process, and confirmed the result were complete and transparent. And the assessment team is able to confirm that GHG emission reductions have been quantified correctly in accordance with the monitoring plan and applied methodology /B02/for this verification period.

4.3 Quality of Evidence to Determine Reductions and Removals

The assessment of each parameter related to calculate the GHG emission reductions is justified in Sections 3.4.8 and 4.1.1 above. Via the on-site inspection/15/ and desk review, the verification team verified the supporting evidence provided by the project proponent as listed in Appendix 3 used to determine the GHG emission reduction.

For each reported data, the evidence is provided and verified as sufficient and quality is appropriate. Also, the cross-checks have been performed on the reported data with different source of evidence. The information flow from data generation and aggregation, to recording, calculation and final transposition into the monitoring report has been assessed by the VVB in Section 4.1.1. Moreover, the calibration is verified as stated in Section 4.1.1 via on-site inspection with evidences/15/ to confirm the meters' location, accuracy and calibration frequency are in line with requirement of the monitoring plan. Therefore, it is concluded that the evidence provided are verified as sufficient and quality is appropriate and thus the evidence can be used to determine the GHG emission reductions and removals for this monitoring period.
Competent employees are recruited for the management and operation of the project. The quality of supporting evidence submitted to VVB for verification is adequate and found to be verifiable.

Based on the above, the VVB confirms the sufficiency and appropriateness of the quality of evidence provided by the PP to determine the GHG reductions and further deems them to be acceptable.

5 VALIDATION AND VERIFICATION OPINION

5.1 Validation and Verification Summary

Climate Bridge (Shanghai) Ltd. has commissioned the VVB, Carbon Check (India) Private Ltd. to perform a Joint validation and verification of the VCS Project Activity "Shaoyang Xinning LFG Power Generation Project". This report summarizes the findings of the validation and verification of the project, performed on the basis of VCS criteria, as well as criteria given to provide for consistent project operations, monitoring, and reporting.

The validation and verification process were performed on the basis of all guidance and criteria as provided in VCS Standard version 4.7 /B01/, VCS Program Guide version 4.4 /B01/, VCS Validation and Verification Manual version 3.2/B01/ and Registration & Issuance Process version 4.6/B01/.

The project activity provides the information in Joint PD & MR v2.5/01/ as required by the VCS Standard/B01/ and Validation and Verification Manual /B01/ and in Carbon Check's opinion meets the requirements of the applied baseline and monitoring methodology, ACM0001, "Flaring or use of landfill gas" V19.0/B02/and is likely to achieve the estimated emission reductions. The joint validation and verification have been performed using a risk-based approach, as described above. The average annual and total GHG emission reduction expected from the project is expected to be 353,553 tCO_2 and 35,355 tCO_2e, respectively, over the 10 years fixed crediting period.

5.2 Validation Conclusion

Carbon Check (India) Private Ltd concludes the validation with a positive opinion that the VCS Project Activity "Shaoyang Xinning LFG Power Generation Project", as described in the VCS Joint PD & MR (version 2.5 dated 15-October-2025) /01/, meets all the applicable VCS requirements/B01/, including those specified in the Project Standard, relevant methodology, tools and guidelines.

Carbon Check's validation opinion is purely based on the information made available to us by the project proponent during validation and hence Carbon Check cannot guarantee the accuracy or correctness of the information. Keeping this in mind, no party can hold Carbon Check liable for any decisions made or not made in this report.

The selected baseline and monitoring methodology (ACM0001, "Flaring or use of landfill gas" V19.0) is applicable to the project and correctly applied.

Crediting Period: From 01-July-2023 to 30-June-2033

Validated estimated GHG emission reductions for the project crediting period:

Vintage period	Estimated baseline emissions (tCO_2e)	Estimated project emissions (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated reduction VCUs (tCO_2e)	Estimated removal VCUs (tCO_2e)	Estimated total VCUs (tCO_2e)
01-July-2023 to 31-December-2023	16,219	0	0	16,219	0	16,219
01-January-2024 to 31-December-2024	34,068	0	0	34,068	0	34,068
01-January-2025 to 31-December-2025	35,141	0	0	35,141	0	35,141
01-January-2026 to 31-December-2026	36,097	0	0	36,097	0	36,097
01-January-2027 to 31-December-2027	36,952	0	0	36,952	0	36,952
01-January-2028 to 31-December-2028	37,719	0	0	37,719	0	37,719
01-January-2029 to 31-December-2029	38,413	0	0	38,413	0	38,413

01-January-2030 to 31-December-2030	39,042	0	0	39,042	0	39,042
01-January-2031 to 31-December-2031	39,616	0	0	39,616	0	39,616
01-January-2032 to 31-December-2032	40,141	0	0	40,141	0	40,141
01-January-2033 to 30-December-2033	20,145	0	0	20,145	0	20,145
Total	**373,553**	**0**	**0**	**373,553**	**0**	**373,553**

5.3 Verification conclusion

Carbon Check (India) Private Ltd concludes the verification with a positive opinion that the VCS Project Activity "Shaoyang Xinning LFG Power Generation Project", as described in the VCS Joint PD & MR (version 2.5 dated 15-October-2025) /01/, meets all the applicable VCS requirements, including those specified in the Project Standard, relevant methodology, tools, and guidelines.

The selected baseline and monitoring methodology, ACM0001, "Flaring or use of landfill gas" V19.0/B02/ is applicable to the project and correctly applied. Carbon Check (India) Private Ltd therefore requests the registration of the project as a VCS project activity.

The VVB confirms that the project has been implemented in accordance with the Joint PD & MR/01/.

Verification Period: From 01-July-2023 to 28-February-2025

Verified GHG emission reductions in the above verification period:

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
01-Jul-2023 to 31-Dec-2023	16,474	3	0	16,471	/	16,471
01-Jan-2024 to 31-Dec-2024	33,413	4	0	33,409	/	33,409
01-Jan-2025 to	4,315	1	0	4,314	/	4,314

28-Feb-2025						
Total	**54,202**	**5**	0	**54,194**	/	**54,194**

The verification team is of the opinion that the project has been implemented in accordance with the joint PD & MR/01/. The monitoring complies with the MP and the monitored data and calculation of ERs are assessed and confirmed as correct.

Therefore, Carbon Check hereby certifies, and requests the issuance of, the reported ERs during the monitoring period of 01-July-2023 to 28-February-2025 amounting to **54,194** tCO_2e to the VCS Registry

5.4 Ex-ante vs Ex-post ERR Comparison

The emission reductions claimed are **54,194** tCO_2e in this monitoring period. Compared with expected emission reductions tCO_2e calculated ex-ante, the reported emission reductions in this monitoring period are less than that expected, which is considered to be in the reasonable variation range.

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01-Jul-2023 to 31-Dec-2023	16,219	16,471	1.55%	The actual emission reduction is 3.17% less than the estimated value. Considering the unstable performance of the methane supply and the difficulty in estimating precisely the LFG ex-ante, the deviation is reasonable.
01-Jan-2024 to 31-Dec-2024	34,068	33,409	-1.93%	
01-Jan-2025 to 28-Feb-2025	5,680	4,314	-24.05%	
Total	**55,967**	**54,194**	**-3.17%**	

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

N/A

APPENDIX 2: REFERENCE DOCUMENTS

Reference Number	Document	Date	Provider
/01/	VCS JPD&MR	Version 1.0, dated 11/11/2024 (Public commenting period 01) Version 1.0, dated 26/01/2025 (Public commenting period 02) Final Version 2.5, dated 15/10/2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd.
/02/	Xinning_VCS-ER-20230701ss-20250228-V2.4	Version 2.5, dated 15/10/2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd.
/03/	Project FSR approval	24/08/2022	Xinning Market Supervisoin and Administration Bureau
/04/	Environmental Impact Assessment (EIA) approval	27/12/2022	Shaoyang Environmental Protection Bureau.
/05/	Business License	20/05/2022	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd.
/06/	PPA Between Xinning Xinzhongshui Bio-energy Power Generation	July 2023 (Duration: 10-July-2023 to 09-July-2025)	Xinning Xinzhongshui Bio-energy

	Co., Ltd and State Grid Hunan Electric Power Co., Ltd. Xinning County Power Supply Branch No: 4350000057750		Power Generation Co., Ltd.
/07/	Completion receipt	01/07/2023	Guangdong Nanchao Electric Co., Ltd.
/08/	Construction Contract	30/12/2022	Guangdong Nanchao Electric Power Construction Co., Ltd. And Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/09/	FSR	July 2022	Hongcheng International Engineering Consulting Co., Ltd
/10/	Double counting declaration	14/03/2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/11/	Stakeholder Meeting Notice	12/09/2022	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd

/12/	a. Stakeholder meeting minutes b. Attendance sheet	27/09/2022	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/13/	Survey questionnaire	27/09/2022 14/09/2023 24/09/2024	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/14/	Grievance book	01-July-2023 to 28-February-2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/15/	OSV	11/03/2025	CARBON CHECK
/16/	Emission factor calculation	2023 Emission Reduction Project China Regional Grid Baseline Emission Factor W020240709709437370462.pdf (ncsc.org.cn)	Publically available
/17/	EIA Report	11/2022	Hunan Xinruizhi Environmental Technology Co., Ltd
/18/	Sales receipts of electricity Sales invoices	01-July-2023 to 28-February-2025	Hunan Electric Power Co., Ltd. Xinning County Power Supply Branch
/19/	Calibration certificates of electricity meters	Serial number of the meter: 430001000000376239694	

		Calibration date: 16/06/2023 Calibration validity: 15/06/2025	
/20/	Operation records	01-July-2023 to 28-February-2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/21/	Calibration of Flow meter	<table><tr><td>Serial number</td><td>16030301</td></tr><tr><td>Certificate number</td><td>20231X04310223 20241X02310272</td></tr><tr><td>Calibration date</td><td>09/Jun/2023 04/Jun/2024</td></tr><tr><td>Valid till</td><td>08/Jun/2024 03/Jun/2025</td></tr></table>	Hubei Institute of measurement and testing technology
/22/	Calibration of Gas analyzer	<table><tr><td>Serial number</td><td>62261/12</td></tr><tr><td>Certificate number</td><td>20231X04310214 20241X023102681</td></tr><tr><td>Calibration date</td><td>09/Jun/2023 04/Jun/2024</td></tr><tr><td>Valid till</td><td>08/Jun/2024 03/Jun/2025</td></tr></table>	Hubei Institute of measurement and testing technology
/23/	Employee roster	01-July-2023 to 28-February-2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/24/	HR policies	2024	Xinning Xinzhongshui Bio-energy Power

			Generation Co., Ltd
/25/	Letter of engagement signed between Carbon Check and Climate Bridge (Shanghai) Ltd.	Signed on 01/11/2024	Carbon Check
/26/	REC Mechanism database of China	https://www.greenenergy.org.cn/	Publically available
/27/	I-REC website:	https://www.irecstandard.org	Publically available
/28/	Notice on Key Work Related to the Management of Greenhouse Gas Emission Reports for Enterprises in 2022" issued by Ministry of Ecology and Environment of P. R. China		Publically available
/29/	Employment Contract	No.2023031801	Xinning Xinzhong Waterworks (2023) No. (002)
/30/	Payslip sample of employees	-	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/31/	Declaration regarding flare usage	14/03/2025	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/32/	Employee Training records (topics covered: emergency rescue activities, safety	12/10/2023	Xinning Xinzhongshui Bio-energy Power

	measures, emergency preparedness education and capacity-building activities, management of wastes, safety hazard inspection etc.)		Generation Co., Ltd
/33/	Board resolution on investment decision	15-August-2022	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/34/	Calibration of Pressure transmitter	Serial number: 6903949 Certificate number: D23-1572-JG-04 D24-1243-JG-06 Calibration date: 23/Jun/2023 17/Jun/2024 Valid till: 22/Jun/2024 16/Jun/2025	Shanghai Inspection and Testing Institute of Instruments and Automatic Systems
/35/	Calibration of temperature transmitter	Serial number: 34118100000192 Certificate number: D23-1238-JG-06 D24-1425-JG-09 Calibration date: 23/Jun/2023 17/Jun/2024 Valid till: 22/Jun/2024 16/Jun/2025	Shanghai Inspection and Testing Institute of Instruments and Automatic Systems
/36/	LFG Collection System Design	July 2022	Hongcheng International Engineering Consulting Co., Ltd.
/37/	Financial statement audit report of 2024	2025	Shenzhen Jiadaxin Certified Public Accountants (General Partnership)

/38/	Technology specifications of the equipments	1. Flare system 2. Roots fan specifications 3. Gas generator specifications	Xinning Xinzhongshui Bio-energy Power Generation Co., Ltd
/39/	Franchise Permission Agreement No. XZSXN2022001	April 2022	China Water industry Group Limited
/40/	Landfill Operation and Management Manual	April 2022	Xinning Urban Management and Comprehensive Law Enforcement Bureau
/41/	Business License of Shenzhen ODB Translation Co., Ltd		Market Supervision Administration Bureau of Shenzhen Municipality
/42/	ISO 17100 accreditation Certificate of Shenzhen ODB Translation Co., Ltd No：65625SC5768R0Z	26/08/2025	Orlis Certification Co.,Ltd
/43/	Pollution Discharge Permit no: 91430528MABLWUKC8Y001U	08/10/2025	Shaoyang Municipal Bureau of Ecology and Environment

BACKGROUND DOCUMENTS

Reference	Name
/B01/	1) VCS Standard V4.7 2) VCS Program Guide version 4.4

	3) VCS Validation and Verification Manual version 3.2 4) Registration & Issuance Process version 4.6 5) VCS Program Definitions v4.5
/B02/	ACM0001 "Flaring or use of landfill gas" V19.0[38]
/B03/	Tool 04 "Emissions from Solid Waste Disposal Sites[39]" V08.1
/B04/	Tool 05 Baseline, Project and/or Leakage Emissions from Electricity Consumption and Monitoring of Electricity Generation[40] V03.0
/B05/	Tool 07 Tool to Calculate the Emission Factor for an Electricity System[41] V07.0
/B06/	Tool 08 Tool to determine the mass flow of a greenhouse gas in a gaseous stream[42] V03.0
/B07/	Tool 32 Positive Lists of Technologies[43] V04.0
/B08/	Tool 06 Project emissions from flaring[44], V4.0
/B09/	Clarification to CDM tool 32 positive lists of technologies[45]

[38] HEJ2MD41GB0PUZISL9FNTAYQV3875O

[39] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-04-v6.0.1.pdf

[40] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf

[41] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

[42] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-08-v3.0.pdf

[43] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-32-v4.0.pdf

[44] EB113_repan10_TOOL06_ver04

[45] Clarification-to-CDM-TOOL32_final.pdf

B10/	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

APPENDIX 3: FINDINGS LOG

Table 1. CL from this Joint Validation & Verification

Finding	CL 01		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. In cover page, PP shall provide the Original date of issue and Most recent date of issue of the JPD&MR. 2. In section 1.1. of JPD&MR, PP shall provide details on the implementation status and relevant implementation dates which includes dates of construction, commissioning, and continued operation periods. The total electricity generated and supplied to the grid, total GHG emission reductions generated in the monitoring period also needs to be provided in this section. 3. In section 1.8 of JPD&MR, while demonstrating the ownership and the supportive documents, PP shall clearly state the type of evidence that has been provided according to the section 3.7.1 of the VCS standard V4.7.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The Original date (26-January-2025) of issue and Most recent date (04-June-2025) has been updated in the cover page. 2. The details on the implementation status and relevant dates has been added in section 1.1. The project has been implemented as designed and operated normally during the first monitoring period. The dates of construction and commissioning are 30-December-2022 and 01-July-2023, respectively. The total electricity generated and supplied to the grid is 11,257.770 MWh during the monitoring period as estimated. And the total GHG emission reductions generated in the monitoring period are 54,197 tCO_2e. 3. The type of supportive evidence has been clearly stated in tabular form in section 1.8 to demonstrate the ownership of the project following the requirements of VCS standard V4.7 section 3.7.1.		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Necessary changes has been made by the PP. 2. Changes are found to be appropriate 3. The type of supportive evidence has been clearly stated in tabular form in section 1.8 of JPD&MR. Finding is closed		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 02		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. In section 1.12 of the Joint PD&MR, PP shall Include in the description information about the age and average lifetime of the equipment based on manufacturer's specifications and industry standards, and existing and forecast installed capacities, load factors and efficiencies. PP shall provide a list of facilities, systems, and equipment in operation under the existing scenario prior to the implementation of the project. 2. PP shall provide the details of how the LFG gas is managed during the shut down and safety factors considered in the LFG pipeline system in section 1.12. 3. In the table 1.1, the equipments has been listed without mentioning the names and details of equipments. 4. PP shall fill the section 1.2 of the JPD&MR as per template filling guidelines.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The relevant parameters of the equipment have been complemented in section 1.12. Prior to the implementation of the Project, no gas collection system, gas pre-treatment system, power generation system or flare system existed; the LFG generated in the Landfill was emitted to the atmosphere directly. 2. During the temporary shut-down period for maintenance or emergency, the LFG extraction blowers will stop working automatically, so no LFG will be extracted and emitted to the atmosphere without being flared. For the long-time shut-down of the generators, the LFG will be combusted by the flare system. According to the situation of the landfill, the gas collection system based on vertical pipe is selected. HDPE pipes are used and the construction follows the national standard "Technical Code for Municipal Solid Waste Sanitary Landfill" to guarantee the safety and high-efficiency of the pipeline system. Pipelines undergo regular maintenance, with designated personnel assigned for responsibility during the monitoring period. 3. The names and details of the equipment have been complemented in table 1.1 in section 1.12. 4. Section 1.2 has been corrected as per template filling guidelines.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Description information about the age and average lifetime of the equipment based on manufacturer's specifications has been provided now. 2. The justification provided by PP is found to appropriate. Further, the same has been confirmed from desk review of the supportive documents provided by PP. 3. Section 1.1. has been updated after adding details on the equipments mentioning the names and details. 4. Section 1.2 has been corrected as per template filling guidelines. Hence, CL02 has been closed.		

Finding	CL 02
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CL 03		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. In section 3.2 of JPD&MR, for the justification of applicability criteria for tool 07, PP shall provide references to demonstrate that off-grid power generation is insignificant in the host country. 2. For all the applicability conditions, PP shall provide detailed justification on the applicability. 3. For the applicability condition #3 w.r.t applied methodology, mentioned in the JPD&MR, PP shall provide the detailed justification on applicability criteria to which the project activity is eligible. Further, applicability for the conditions, 3C and 3D has not been provided by the PP. 4. For the applicability condition #4 as per the JPD&MR, PP has chosen the option a and b. However, PP has not provided justification for the baseline scenario in the case of greenfield SWDS. 5. As justification to eligibility of Tool 08, PP has mentioned that "For the Project, the volumetric flow of the gaseous stream LFG and the volumetric fraction of CH_4 are measured for the determination of baseline emissions". PP shall clarify why the same has not been accounted for the project emissions. 6. PP has used tool 32 for the demonstration of additionality. However, as per the applicability condition, the positive lists as contained in section 5 of this tool are valid up to 10 March 2025. Notwithstanding the provisions on the validity of new, revised and previous versions of methodologies and methodological tools in the "Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools", there will be no grace period for the application of this tool and the validity of the positive list after this date, including in cases where further technologies are added to the positive list through revisions of this tool before this date. As a justification to the condition, PP has provided response as "The validation is expected to be finished before March 2025". *1)* *2)* PP shall justify the eligibility of using tool 32 since the validation is not expected to be completed by 10-March-2025.		

Finding	CL 03
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. For the EF calculation, the Project applies the report "Grid Power Baseline Emission Factors for Emission Reduction Projects in China in 2023"[46] published by the National Center for Climate Change Strategy and International Cooperation (NCSC). In the report, the EF for the project electricity system is calculated for grid power plants only, so the former option is chosen. 2. The detailed justification on the applicability has been complemented as required in the JPD&MR. 3. For the applicability condition #3, the Project involves the installation of a new LFG capture system in an existing SWDS, i.e., the Laohutuo Landfill, where no LFG capture system was installed prior to the project activity. The Project collects the LFG which was vented without the project activity and utilizes the captured LFG to generate electricity. The project activity does not change the landfill management, so the amount of organic waste will not be reduced. 4. For the Project in the case of LFG from a Greenfield SWDS, the LFG from the Laohutuo landfill would have been totally released into the atmosphere before the implementation of the Project. 5. The volumetric flow of the gaseous stream LFG and the volumetric fraction of CH_4 are measured for the determination of both baseline emissions and project emissions. 6. Verra issued a Clarification to TOOL32[47] on March 18, 2025, clarifying that the tool is active for use in the VCS Program until September 30, 2025. The Project is expected to be finished by 30 September 2025.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP has provided references to demonstrate that off-grid power generation is insignificant in the host country in section 3.2. 2. PP has provided detailed justification for all the applicability criteria in section 3.2 of the revised JPD&MR. 3. Justification to all the applicability conditions has been provided in revised JPD&MR. 4. PP has now provided justification for the baseline scenario in the case of greenfield SWDS in section 3.2 of JPD&MR 5. Necessary changes has been made by the PP. 6. The VVB has cross-verified and confirmed that Tool 32 can be used to demonstrate additionality until September 30, 2025. Therefore, the project is eligible to utilize this tool until the specified date. *3)* CL03 has been closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

[46] https://www.ncsc.org.cn/SY/zywj/202407/W020240709709436742308.pdf

[47] https://verra.org/wp-content/uploads/2025/03/Clarification-to-CDM-TOOL32_final.pdf

Finding	CL 04		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. In section 3.3 of the JPD&MR, Emissions from the flaring has not been accounted in the project boundary and ER calculation. However, PP shall clarify the use of LFG at the time when it is not used for electricity generation. 2. The diagram of project boundary in section 3.3 does not aligns with that of the diagram mentioned in the section 6.3 of JPD& MR. The diagram in the section 6.3 contains location of the monitoring equipments. Further in section 3.3, the project boundary contains power plant self use. PP shall provide consistent information in all the sections. 3. PP shall include details on procedures for handling non-conformances with the validated monitoring plan in section 6.3. 4. In Section 3.4 of baseline scenario, PP shall provide relevant references to demonstrate the baseline conditions that would be applicable to the methodologies.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. A flare system destroys LFG when the power generators are out of operation or under maintenance. The emission reductions achieved in the flare system will not be included in the Project, which is conservative. The flare system has never been used during this monitoring system, so there are no emissions from the flaring. The flare system has been added in the project boundary to ensure the integrity of project description. During the time when the electricity generation system is temporarily stopped, the LFG extraction blowers will stop working automatically, so no LFG will be extracted and emitted to the atmosphere without being flared. There was no long-time continuous shutdown of the power generators. 2. The diagrams in section 3.3 and section 6.3 has been replaced by that with the location of monitoring device, self-use power and flare system. 3. Detailed procedures for handling non-conformances with validated monitoring plan are complemented in (F) Emergency in section 6.3. 4. According to the FSR and the EIA, there was no LFG recovery and utilization in the landfill site before the Project construction. The two reports were compiled by independent third-party institutes with legal qualification and were approved by the local government. Considering there was no LFG capture system or flaring system installed in the landfill before the project construction, the LFG generated from the landfill was totally released into the atmosphere prior to the implementation of the project activity; therefore, the baseline scenario for the Project is assumed to be the continuous atmospheric release of the LFG.		

Finding	CL 04
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. The flare system serves as a backup mechanism to combust landfill gas (LFG) during periods when the power generation units are offline, whether due to scheduled maintenance or unexpected outages. In line with a conservative accounting approach, the emission reductions attributed to LFG destruction via flaring are excluded from the project's credited emission reductions. 2. Revisions have been made to the project boundary diagram to ensure consistency. The updated diagrams have been aligned with the descriptions provided in Sections 3.3 and 6.3 of the JPD&MR. 3. Detailed procedures for handling non-conformances with validated monitoring plan has been provided in revised JPD&MR. 4. Changes made in JPD&MR is found to be appropriate *4)* CL 03 has been closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CL 05		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	Section 5 of JPD&MR 1. For calculation of Global warming potential of CH4, IPCC AR5 has been referred, Since the sixth assessment report is in effect, PP shall clarify why the same has not been taken into account. 2. In the calculation of $F_{CH4,BL,y}$ for the calculation of baseline emissions, the approach taken by PP is not clear. For obtaining the results of $F_{CH4,PJ,capt,y}$ calculation as per the methodology, one among the options in the methodology, ACM0001 V19.0 can be used. Among which PP has chosen the option 02 and as per the same, If the requirement does not specify any amount or percentage of LFG that should be destroyed, but requires the installation of a system to capture and flare the LFG, then a typical destruction rate of 20 per cent is assumed. *5)* PP has mentioned that amount or percentage is not specified by law and there is no requirement for installation of LFG capture and flaring. In this aspect, how the value of $F_{CH4,BL,y}$ taken to be 20% is not clear. 3. In the calculation of $\mathbf{F_{CH4,PJ,y}}$, Amount of methane in the LFG which is flared and/or used in the project activity in year y, the Amount of methane in the LFG which is destroyed by flaring in year y has been taken as zero., PP shall clarify the method adopted during annual shut downs/emergency scenarios or non-operation of powerplants, instead of flaring.		

Finding	CL 05
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. According to the VCS standard V4.7 section 3.15.4, for reductions and removals occurring on or after 1 January 2021, all ex-ante estimates and ex-post calculations shall be converted to CO_2e using GWP values from the IPCC Fifth Assessment Report (AR5). So the IPCC AR6 has not been taken into account. 2. There is no requirement specifying the amount or percentage of LFG that should be destroyed, and no requirement on the installation of a system to capture and flare the LFG. As a result, $F_{CH4,BL,y}$ is assumed as zero. However, in order to follow the conservative principle, a typical destruction rate of 20 per cent by Option 2 (ii) is applied to calculate the LFG destruction. 3. During the temporary shut-down period for maintenance or emergency, the LFG extraction blowers will stop working automatically, so no LFG will be extracted and emitted to the atmosphere without being flared. For the long-time shut-down of the generators, the LFG will be combusted by the flare system. However, the long-time shut-down seldom happens during the normal operation period. During the first monitoring period, there were no long-time non-operation of the power generators and the flare system was never used.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. For reductions and removals occurring on or after 1 January 2021, all ex-ante estimates and ex-post calculations shall be converted to CO_2e using GWP values from the IPCC Fifth Assessment Report (AR5) as per the VCS standard V4.7. hence the choice of the value has been accepted. 2. The applied assumption is reasonable and methodologically acceptable, provided it is consistently applied and transparently justified in the JPD&MR. 3. The project has appropriate procedures during shutdowns. No LFG was extracted during short-term maintenance, and the flare system was in place for long-term shutdowns, though it was not needed during the first monitoring period. *6)* Hence, CL05 has been closed. The same has been confirmed by VVB on the basis of OSV interview as well. Hence, CL05 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CL 06		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	Section 5 of JPD&MR 1. For the calculation of Baseline emissions from electricity, the latest emission factor value which is mentioned to be sourced from the report dated, 2023. PP shall confirm that the value of OM, BM, CM has been taken from the source that was most relevant at time of Project description submission. 2. In section 5.2 of JPD&MR, the project emission calculations mentioned is incomplete. Further, in the section 5.4, the project emissions have been taken as zero while calculating ERy. PO shall provide clarification why the project emissions has not been accounted during the estimation of emission reductions.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. By checking the official website of the Ministry of Ecology and Environment of China, the calculation of BM and OM for 2023 was publish on July, 2024, which is the latest version. The calculation for 2024 has not been updated till the submission of the joint PD&MR. 2. For the estimation of emission reductions of the Project, $PE_{EC,y}$ is considered as 0 since it is insignificant for the project activity involves power generation. As calculated in Section 7.5 in the JPD&MR, the real value of annual $PE_{EC,y}$ is approximately 3 - 4 tCO_2e, which is minor and does not have an important influence on the calculation of emission reduction estimation.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. The use of the 2023 BM and OM values is appropriate, as the 2024 data had not been published by the time of the PD&MR submission. The approach follows the latest available official data and is acceptable. 2. The exclusion of PEEC,y is acceptable, as its estimated value (3–4 tCO_2e/year) is minor and does not significantly impact emission reduction calculations. In the actual calculations, the parameter has been calculated. *7)* Hence, the approach is found to be appropriate. Hence, CL06 has been closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 07		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	**Section 2.1.5 of JPD&MR** It has been noted that in the Draft JPD&MR (Version 1.0), dated 11 November 2024 and published on the Verra website, the methodologies applied were AMS-I. D (Version 18.0) for Grid-Connected Renewable Electricity Generation and AMS-III.G (Version 10.0) for Landfill Methane Recovery. However, in the revised version of the JPD&MR subsequently provided to the VVB, the applied methodology has been changed to ACM0001 (Version 19.0). As the version dated 11 November 2024 has already undergone the public commenting period, the Project Proponent is requested to clarify the rationale behind the change in methodology and demonstrate how the revised version complies with applicable VCS requirements.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The methodology applied has been changed from AMS-III.G: Landfill methane recovery (Version 10.0) and AMS-I.D: Grid connected renewable electricity generation (Version 18.0) to ACM 0001: Flaring or use of landfill gas (Version 19.0), which has been approved by VERRA. The project has redone the public comment period due to the methodology deviation as requested by VERRA. The first public comment period is from 25-Novemver-2024 to 25-Dec-2024, and the later public commenting period for the final applied methodology is from 03- February-2025 to 07-March-2025. No comments were received during the public comment period for the Project.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	VVB has reviewed the website and the change in methodology to ACM0001 (Version 19.0) has been approved by Verra. The Project Proponent conducted a second public comment period, in line with VCS requirements, due to the methodology change. No comments were received for the same. The process is compliant, and no issues are identified. Hence, CL07 has been closed		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Table 2. CAR from this Verification

Finding	CAR 01		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	**Section 2.1.1 of JPD&MR** *8)* 1. In section 2.1.1, for the Stakeholder diversity and changes over time, PP has not included diversity for all the groups that has been identified. PP shall Describe the social, economic and cultural diversity within stakeholder groups, the differences and interactions between the stakeholder groups, and any changes in the make-up of each group over time. 2. PP shall describe the expected changes in well-being and other stakeholder characteristics relative to the baseline scenario, including changes to ecosystem services identified as important to stakeholders. 3. In the row for "Location of stakeholders, PP shall describe the location of stakeholders, IPs, LCs, and customary right holders, and areas outside the project area that are predicted to be impacted by the project.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The social, economic and cultural diversity within stakeholder groups, the differences and interactions between the stakeholder groups, and any changes over time have been described in section 2.1.1. 2. The expected changes in well-being and other stakeholder characteristics have been described in section 2.1.1. 3. The location of stakeholders has been complemented in section 2.1.1. Since the Project was built in the reserved area of the Laohutuo landfill, which is state owned and managed by the local government, the project activities do not influence the existing legal or customary tenure/access rights of stakeholders, LPs, LCs, or customary rights holders. LPs, LCs and customary right holders are not applicable in the Project.		

Finding	CAR 01
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. The PP has revised Section 2.1.1 to include information on the social, economic, and cultural diversity of stakeholder groups, as well as their interactions and any observed changes over time. This satisfies the requirement. 2. Section 2.1.1 now includes a description of expected changes in stakeholder well-being and relevant characteristics compared to the baseline scenario, including ecosystem services. The response is consistent with the applicable requirements. 3. The PP has clarified the location of stakeholders and confirmed that the project is situated on state-owned land with no impact on IPs, LCs, or customary rights holders. The clarification aligns with the project context. Hence, CAR 01 has been closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 02		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	**Section 2.1.2 of JPD&MR** 1. As per the VCS standard v4.7, the stakeholder consultation has to be done in a way that includes a representative from each stakeholder group, the risks, costs and benefits the project may bring to stakeholders. Further, the meeting has to address the process of VCS validation and verification and the validation/verification body's site visit. The JPD&MR PP shared, lacks the information required as per section 3.18.2 of VCS standard v4.7 and PP shall adhere to the same while providing details on stakeholder consultation. 2. The number of questionnaires shared has been inconsistently mentioned in section 2.1.2 of the JPD&MR. PP shall correct the same. 3. PP needs to Summarize the discussion around consent to project design and implementation, risks, costs and benefits of the project, all relevant laws and regulations covering workers' rights in the host country, the discussion of FPIC, and the VCS validation and verification process. 4. Ongoing communication mechanism has not been properly described in the section 2.1.2. 5. In section 2.3.2, while providing the laws and policies, PO shall provide the link/references for the same. 6. PP shall provide all the supportive documents w.r.t Stakeholder consultation which involves Meeting minutes, invitation letter, photographs, feedback form etc to the VVB.		

Finding	CAR 02
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The detailed information of the stakeholder consultation have been complemented in section 2.1.2 and 2.1.3. 2. There were 26 questionnaires collected every year in the stakeholder consultation. All the questionnaires have been submitted to the VVB. 3. The detailed outcome of the FPIC have been described in section 2.1.3, including the discussion around consent to project design and implementation, risks, costs and benefits of the project, all relevant laws and regulations covering workers' rights in the host country, the discussion of FPIC, and the VCS validation and verification process. 4. Ongoing communication mechanism has been properly described in the section 2.1.2 as per VCS standard V4.7 section 3.18.2. 5. The link of the laws and policies referred in section 2.3.2 have been complemented in the JPD&MR. 6. All the supportive documents of the FPIC have been collected and submitted to the VVB.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. The PP has updated Sections 2.1.2 and 2.1.3 with detailed information on stakeholder consultation, including the risks, costs, benefits, and the VCS validation and verification process as required by VCS Standard v4.7. The update is adequate. 2. The PP clarified that 26 questionnaires are collected annually and has submitted all questionnaires to the VVB. The inconsistency is resolved. 3. Section 2.1.3 now comprehensively summarizes FPIC outcomes, including consent discussions, risks, costs, benefits, relevant laws, workers' rights, and the VCS process. This meets the requirement. 4. The ongoing communication mechanism is properly described in Section 2.1.2 in accordance with VCS Standard v4.7 Section 3.18.2. This finding is satisfactorily addressed. 5. The PP has supplemented Section 2.3.2 with appropriate links and references to the laws and policies cited. This clarifies the documentation. 6. All requested supportive documents related to stakeholder consultation, including meeting minutes, invitation letters, photographs, and feedback forms, have been provided to the VVB. This requirement is fulfilled. Hence, CAR 02 has been closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 03		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Section 3.5 of JPD&MR 1. In section 3.5.1, PP shall provide more detailed explanation on regulatory surplus. PP is requested to provide the references of rules, laws and regulations applicable to the project activity in order to prove the project is not enforced by law. 2. In section 3.5.2, Additionality has been demonstrated using, positive list of technologies (Tool 32, v4.0). However, as per paragraph 6 of the tool, the positive lists as contained in section 5 of this tool are valid up to 10 March 2025. In this scenario, PP shall provide justification on eligibility of additionality demonstration using the mentioned method. 3. PP is requested to discuss Prior consideration of carbon revenue.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. For Non-Annex 1 country, regulatory surplus means that project activities shall not be mandated by any systematically enforced law, statute, or other regulatory framework. For the project's host country – China, there are no rules, laws and regulations enforcing the construction of biogas treatment system. As described in the "the 14th Five-Year Plan for Renewable Energy Development" published by the National Development and Reform Commission and National Energy Administration, and "the 14th Five-Year Plan for Urban Domestic Waste Classification and Treatment Facilities Development" published by the National Development and Reform Commission and Ministry of Housing and Urban-Rural Development, the government encourages the construction of domestic waste treatment facilities to improve the ability of domestic waste treatment, and promotes the development of biomass power generation. No systematically enforced law, statute, or other regulatory framework can be founded. The treatment of biogas is motivated, instead of being enforced by the government. 2. Verra issued a Clarification to TOOL32[48] on March 18, 2025, clarifying that the tool is active for use in the VCS Program until September 30, 2025. The Project is expected to be finished by 30 September 2025. As a result, positive list can still be used for the Project to demonstrate additionality. 3. Prior to the project construction, given the project's relatively low expected returns and high investment risks, but as a clean energy initiative that meets the requirements of the VCS program, additional funding support can be obtained through VCS registration to improve its financial viability. After internal discussions, the project proponent has approved the development of this project as a VCS-certified program and will promptly assign relevant personnel to implement the necessary procedures for VCS project development.		

[48] https://verra.org/wp-content/uploads/2025/03/Clarification-to-CDM-TOOL32_final.pdf

Finding	CAR 03
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Relevant rules and requirements has been provided by PP in section 3.5.1 for the demonstration of regulatory surplus. No systematically enforced law, statute, or other regulatory framework can be founded. The treatment of biogas is motivated, instead of being enforced by the government. 2. The Verra clarification issued on March 18, 2025 confirms TOOL32 is valid for use until September 30, 2025. Since the project completion aligns with this date, the positive list can be applied to demonstrate additionality. The approach is compliant with current VCS guidance 3. Prior consideration of carbon revenue has been detailed in JPD&MR, section 3.5. with supportive evidences. Hence, CAR 03 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 04		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Section 5.4 of JPD&MR and ER sheet 1. In the Ex-ante ER sheet, the emission reductions have been estimated from 01/01/2023. The start date being 01/07/2023, PP shall clarify how the emission reductions was estimated from start of the January 2023. 2. The values of "$F_{CH4,BL,y}$" has been mentioned inconsistently in table 5-4 of JPD&MR and ER sheet. 3. The estimated baseline emission calculations mentioned in ER sheet and table 5-6 of JPD&MR in section is inconsistent with each other. The $BE_{CH4,y}$ mentioned in "Table 0-1 The ex-ante estimation of emissions reductions", is 354,036 tCO_2e. However, in ER sheet, the value of the same parameter is mentioned to be 322,353 tCO_2e. PO shall correct the values to unify the ER sheet and JPD&MR.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The estimated emission reductions in 2023 of the Project start with the calculation of the emission reductions for the full year firstly. Since the Project started operation on 01/07/2023, there were only 184 days of LFG power generation in this year. So the estimated emission reductions for the Project in 2023 are equal to the entire emission reduction divided by the number of days in 2023 (365 days) and then times the number of days the Project was operated (184 days). 2. The values of "$F_{CH4,BL,y}$" in the JPD&MR have been corrected to keep consistent with that in the ER sheet. 3. The values in Table 5-6 in JPD&MR have been corrected and unify the ER sheet.		

Finding	CAR 04
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Appropriate changes have been made in calculation. 2. Consistent value has been made in ER sheet and JPD&MR. 3. The values in Table 5-6 in JPD&MR have been corrected and unified in the ER sheet. CAR04 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 05		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Section 6 of JPD&MR 1. In section 6.1 of JPD&MR, $\rho_{CH4,n}$ has been mentioned to be as ex-ante parameter. However, the source of the parameter and the equation to which the parameter applies is not clear. PO shall clarify the same. 2. The parameter, $W_{j,x}$, which is the Amount of solid waste type j disposed or prevented from disposal in the SWDS in the year x has been mentioned as ex-ante parameter in section 6.1 of JPD&MR. However, as per the tool 04, V08.1, the parameter is to be monitored on ex-post basis. 3. In section 6.2 of the JPD&MR, while providing the details of the monitoring equipment, PP shall provide the details on laws/policies regarding the frequency of calibration including the appropriate links/references. 4. PP shall provide the supportive evidences for all the monitoring parameters to demonstrate the actual values. 5. In section 7.1 and 6.2, the monitoring details of the parameters, "CAPEX and OPEX", "Tariff of electricity exported", has been monitored and monitoring plan has been provided. However, the monitoring of the mentioned parameters is only required for projects applying the simplified procedures to identify the baseline scenario and demonstrate additionality. 6. In section 07, PP shall fill the values and details of all the monitoring parameters for the vintage period, from 01/01/2025 to 28/02/2025 and shall provide all the supporting documents for the monitoring of the parameters during this period. Further, In the monitoring part, many columns are left blank and PP shall fill all the sections in JPD&MR in alignment with the template requirements.		

Finding	CAR 05
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. As shown in the Table 1. Constants used in equations in the Tool 06 (Version 04.0), the value of $\rho_{CH4,n}$ is equal to 0.716 kg/m³, which is equal to 0.000716 tonnes/Nm³. 2. The values of the parameter, $W_{j,x}$, monitored on ex-post basis are used for application B according to Any comment row in Tool 04 (Version 08.1) Data/Parameter table 11. For this project belonging to application A, $W_{j,x}$ is only used as ex-ante parameter, which is supposed to be estimated once. The amount is referred to FSR. 3. The details and links of the relevant national standards about the frequency of calibration for the monitoring equipment have been added in section 6.2. For electricity meters, the national standard "Technical administrative code of electric energy metering"[49] asks for a calibration every two years; for flow meters, the national standard "Differential Pressure Flowmeters"[50] requires a periodic calibration at least once a year; for gas analyzers, the national standard "Specification of on-line gas analyzers"[51] requires a calibration every 1-3 years 4. Relative evidences for the monitoring parameters have been provided to demonstrated the actual values. 5. simplified procedures to identify the baseline scenario and demonstrate additionality has been used by the PP. 6. The values and detailed of all the monitoring parameters have been filled, from 01/01/2025 to 28/02/2025. All the blank columns have been complemented in the monitoring part.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. The PP has provided the source and value of ρ_(CH4,n) based on Tool 06 (Version 04.0). The explanation is sufficient and aligns with the methodology. 2. The justification for treating W_(j,x) as an ex-ante parameter under Application A is valid and supported by Tool 04 (Version 08.1) 3. Relevant national standards and calibration frequencies for all monitoring equipment have been added with appropriate references. This satisfies the requirement 4. PP has submitted supporting documents for monitored parameters. The evidence is complete and acceptable 5. Changes has been made appropriately. 6. All required monitoring data for the period 01/01/2025 to 28/02/2025 has been completed, and missing sections in the JPD&MR have been properly filled. The submission now aligns with the template requirements. Therefore, CAR 05 has been closed.

[49] https://www.doc88.com/p-2377330908298.html

[50] https://www.doc88.com/p-87316994994493.html

[51] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=6E51118C99155530C20F46FF8AED49B5

Finding	CAR 05
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Table 3. FAR from Joint Validation & verification

Finding	FAR 01		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *(VVB)*	N/A		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*			
VVB Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.*			
Conclusion *Tick the appropriate checkbox*	☒ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☐ The finding is closed		

APPENDIX 4: ABBREVIATIONS

BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
DVR	Draft Validation Report
EB	CDM Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
FPIC	Free, Prior, and Informed Consent
GHG	Greenhouse gas(es)
HR	Human Resource
IPCC	Intergovernmental Panel on Climate Change
IP	Indigenous people
JPD&MR	Joint-PD-MR
LC	Local communities
MP	Monitoring Period
MW	Mega Watt
MWh	Mega Watt Hour
NA	Not Applicable
NOVS	Notice of Validation/Verification services
OSV	On Site Visit
PD	Project Description
PE	Project emissions
PER	Project Evaluation Report
PLC	Programmable Logic Controller
PP	Project Proponent
QC/QA	Quality control/Quality assurance
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit
VVB	Validation Verification Body
VVM	Validation and Verification Manual
VVS	Validation and Verification Standard

APPENDIX 5: CERTIFICATE OF COMPETENCE

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Muhammed Suhail K

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS, A 6.4 AS/ ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Validator/Verifier (Trainee)	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☐ SDG Expert	☐ Expert Social aspect	☐ Expert Environmental Aspect	☐ Health Expert
☒ Regional Expert for India		☒ FOEN Approved Technical Expert	☐ FOEN Approved Quality officer

in the following Technical Areas:

☐ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☐ TA 13.1	☐ TA 13.2
☐ TA 14.1	☐ TA 15.1	☐ TA 16.1		

Issue Date

06th February 2025

Expiry Date

31st December 2025

Mr. Vikash Kumar Singh
Director - Compliance

Revision History of the document:

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Jan 2025[1]	Revised as per latest organogram
Feb 2025	Revised to include FOEN requirements

CCIPL_FM 7.9 Certificate of Competency_V8.0_05022025

[1] Please refer to previous version of FM 7.9 for the revision history

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Vijay Mathew

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS, A 6.4 AS/ ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Validator/Verifier (Trainee)	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☒ Financial Expert	☐ Environmental, Health and Safety financial matters
☒ SDG Expert	☒ Expert Social aspect	☒ Expert Environmental Aspect	☐ Health Expert
☒ Regional Expert for India		☒ FOEN Approved Technical Expert	☐ FOEN Approved Quality officer

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Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Ms. Stefimol T A

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS, A 6.4 AS/ ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Validator/Verifier (Trainee)	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
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☒ Regional Expert for India		☒ FOEN Approved Technical Expert	☐ FOEN Approved Quality officer

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☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
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31st December 2025

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Director - Compliance

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Carbon CHECK

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Ms. Nara Shen Yan

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS, A 6.4 AS/ ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

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☒ Validator	☒ Verifier	☐ Team Leader	☒ Technical Expert
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☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☐ SDG Expert	☐ Expert Social aspect	☐ Expert Environmental Aspect	☐ Health Expert
☒ Regional Expert for China		☐ FOEN Approved Technical Expert	☐ FOEN Approved Quality officer

in the following Technical Areas:

☐ TA 1.1	☒ TA 1.2	☐ TA 2.1	☐ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☐ TA 13.1	☐ TA 13.2
☐ TA 14.1	☐ TA 15.1	☐ TA 16.1		

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Expiry Date

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Director - Compliance

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Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. S Ranganathan

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS, A 6.4 AS/ ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

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☒ Technical Reviewer	☐ Validator/Verifier (Trainee)	☐ Gender Expert	☐ Plastic Waste Expert
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