



SHIZAIQIAN MSW LANDFILL SITE LFG RECOVERY TO POWER PROJECT

(VCS PROJECT ID: 2352)



Document Prepared By

CTI Certification Co., Ltd.

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Summary:

CTI Certification Co., Ltd. (hereafter referred to as "CTI") has been commissioned by Henan BCCY Environmental Energy Co., Ltd. to perform the verification of project activity "Shizaiqian MSW landfill site LFG recovery to power project" (hereafter referred to as "the project activity") and reported in the Verification Report.

The project activity is a landfill gas recovery and power generation project located on Shizaiqian Landfill Site, Luojiang District, Quanzhou City of Fujian 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 5 MW, consisting of 5 sets of 1 MW generators. The project uses LFG from the Shizaiqian MSW landfill site for power generation. During the 10 years fixed crediting period, the annual power generated by the project is expected to be 123,139 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 Eastern China Power Grid (ECPG). Meanwhile by utilization 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 average annual GHG emission reductions of 68,705 tCO₂e during the crediting period.

During the verification, 1 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed. No Forwarded Action Request (FAR) was raised.

CTI Certification Co., Ltd. (CTI) has performed the verification of the emission reductions reported for the project activity "Shizaiqian MSW landfill site LFG recovery to power project" (VCS Project ID: 2352) for the monitoring period 01/07/2022 to 30/06/2023, to review and determine the monitored reductions in GHG emissions that have occurred as a result of the project activity. These emission reductions are claimed as Verified Carbon Units (VCUs) under the Verified Carbon Standard (VCS) version 4.5.

The verification was performed on the basis of VCS Program Guide version 4.4 and VCS Standard version 4.5 for the VCS projects, as well as criteria given to provide for consistent project operations, monitoring and

reporting. The verification was conducted by means of document review, follow-up interviews and site inspections, and the resolution of outstanding issues. The verification team does not identify any CAR, CL or FAR in this monitoring period.

In CTI's opinion, the GHG emission reductions reported for the project in the monitoring report (version 2.0 dated 08/12/2023) are fairly stated. The GHG emission reductions of the period were calculated correctly on the basis of approved methodology ACM0001 "Flaring or use of landfill gas" (Version 19.0) and the monitoring plan contained in the VCS PD (version 04 dated 21/10/2021).

CTI does not assume any responsibility towards the issuance and utilization of the VCU's hereby verified and certified. Request for issuance of VCU's shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to CTI and the engagement conditions detailed in this report. CTI cannot be held liable by any party for decisions made or not made based on this report.

Hence, CTI is able to certify that the emission reductions from the "Shizaiqian MSW landfill site LFG recovery to power project" during the monitoring period from 01/07/2022 to 30/06/2023 is amount to 146,135 tCO₂e.

1 Introduction	6
1.1 Objective	6
1.2 Scope and Criteria	6
1.3 Level of Assurance	6
1.4 Summary Description of the Project	7
2 Verification Process	8
2.1 Method and Criteria	8
2.2 Document Review	8
2.3 Interviews	9
2.4 Site Visits	10
2.5 Resolution of Findings	11
2.5.1 Forward Action Requests	12
2.6 Eligibility for Validation Activities	12
3 VALIDATION FINDINGS	13
3.1 Participation under Other GHG Programs	13
3.2 Methodology Deviations	13
3.3 Project Description Deviations	13
3.4 Grouped Project	13
4 Verification Findings	14
4.1 Project Implementation Status	14
4.2 Safeguards	22
4.2.1 No Net Harm	22
4.2.2 Local Stakeholder Consultation	23
4.3 AFOLU-Specific Safeguards	24
4.4 Accuracy of GHG Emission Reduction and Removal Calculations	24
4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals	42
4.6 Non-Permanence Risk Analysis	42
5 Verification OPINION	42
APPENDIX A: Abbreviations	46
APPENDIX B: references	47

APPENDIX C: Competence of team members and technical reviewers	50
APPENDIX D: Corrective Action Requests, clarification requests and Forward Action Requests	52

1 INTRODUCTION

Henan BCCY Environmental Energy Co., Ltd. has commissioned CTI Certification Co., Ltd (CTI) to carry out the verification and certification of emission reductions reported for the “Shizaiqian MSW landfill site LFG recovery to power project” (the project) for the period 01/07/2022 to 30/06/2023. This report contains the findings from the verification and includes a verification statement for the verified carbon units.

1.1 Objective

Verification is the periodic independent review and ex-post determination by an accredited verification body of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined verification period.

A verification statement is the written assurance by a verification body that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and provide a verification statement of emission reductions reported for the “Shizaiqian MSW landfill site LFG recovery to power project” for the period 01/07/2022 to 30/06/2023.

1.2 Scope and Criteria

The scope of the verification is:

- To verify that 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 emissions reduction data is free from material misstatement;
- To verify that reported GHG emissions data is sufficiently supported by evidence.

The criteria of the verification are:

- VCS Program Guide (version 4.4) /33/
- VCS Standard (version 4.5) /32/ and other relevant requirements defined by Verra;
- The approved methodology ACM0001 (Version 19.0) /35/ applied by the project;
- All information and references relevant to the project activity’s resulting in emission reductions.

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

1.3 Level of Assurance

The verification report expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement. CTI applied a materiality threshold of 5% (for projects with $ER \leq 300,000$ tCO₂e per year) with respect to emission or misstatements concerning reported quantities as per VCS standard (i.e. para 3.10.1 and 4.1.10 (4) of VCS Standard, version 4.5).

1.4 Summary Description of the Project

Project title:	Shizaiqian MSW landfill site LFG recovery to power project
Project Participants:	Quanzhou BCCY New Energy CO., Ltd. (Project Owner, host country, P. R. China) Henan BCCY Environmental Energy Co., Ltd. (the project proponent, Mother Company of Project Owner, host country, P. R. China)
Project location:	Shizaiqian Landfill Site, Luojiang District, Quanzhou City of Fujian Province, P.R. China. Geographic coordinates: longitude of 118° 37'45.96"E and latitude of 24° 57'55.72"N
VCS Project ID:	2352
Applied methodology:	ACM0001, Version 19.0
Scope/Technical Area	Scope 1: energy industries (renewable-/non-renewable sources) Scope 13: Waste handling and disposal
VCS project crediting period:	01/07/2019 to 30/06/2029 (the 10-year fixed VCS crediting period)
VCU verification period:	01/07/2022 to 30/06/2023

The project activity is a landfill gas recovery and power generation project located in Luojiang District, Quanzhou City of Fujian Province, P.R. China, of which the main purpose is to use landfill gas for electricity generation. The construction date was on 18/06/2018, operation start date was on 01/07/2019, the first monitoring period was from 01/07/2019 to 30/06/2021, and the second monitoring period was from 01/07/2021 to 30/06/2022 . The total installed capacity of the project activity is 5 MW, consisting of 5 sets of 1 MW generators. The project uses LFG from the Shizaiqian MSW landfill site for power generation. During the 10 years fixed crediting period, the annual power generated by the project is expected to be 123,139 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 Eastern China Power Grid

(ECPG). Meanwhile by utilization 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 average annual GHG emission reductions of 68,705 tCO₂e during the crediting period.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification was performed through means of the following three phases in accordance with the requirement of the VCS PD (version 04.0 dated 21/10/2021), the applied methodology, and the VCS Standard (version 4.5) and other relevant VCS requirements:

- A desk review of the monitoring report and all support documents;
- Follow-up interviews with project stakeholders and site inspection;
- The resolution of outstanding issues and the issuance of the verification report and statement.

The following sections outline each step in more detail.

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- The emission reduction calculations and the relevant data records;
- The calibration and maintenance records for the monitoring instruments;
- The management systems to support the project operation and monitoring.

2.2 Document Review

Based on the requirements of competency, experience and qualified sectoral scopes, CTI appointed a verification team in accordance with CTI's internal procedures.

Function	Name	Technical competence	Task Performance*
Team Leader	Wu Yanan	1.2, 13.1, 13.2	☒ DR ☒ SV ☒ RP ☐ TR
Technical Reviewer	Lin Shunrong	1.2, 3.1, 13.1, 13.2 14.1, 15.1	☒ DR ☐ SV ☐ RP ☒ TR

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

In addition to the VER/VCU monitoring report /1/, VCS PD (version 04.0 dated 21/10/2021) /9/ and emission reduction calculation spreadsheet /2/, the following documents also were assessed as a part of the verification audit:

- VCS Validation Report, version 01.1 dated 21/10/2021 /10/;
- VCS Project Description, version 04.0 dated 21/10/2021 /9/;
- Monitoring report of 1st monitoring period, version 02.0 dated 16/07/2021 /25/;
- Monitoring report of 2nd monitoring period, version 01.0 dated 07/07/2022 /36/;
- Verification Report of 1st monitoring period, version 01.0 dated 17/07/2021 /26/;
- Verification Report of 2nd monitoring period, version 01.0 dated 01/11/2022 /37/;
- Baseline and monitoring methodology ACM0001 applied by the project /35/;
- Relevant decisions, clarifications and guidance from the Verra /32/-/34/; and
- Other information and references relevant to the project activity.

During the desk review, CTI has applied standard auditing techniques to assess the quality of information provided. The following activities were performed:

- A review of the data and information presented to verify their completeness;
- A 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; and

An 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.

2.3 Interviews

On 29/11/2023, CTI visited Quanzhou BCCY New Energy CO., Ltd. to perform on-site assessment. The key personnel of the project were interviewed or assisted by the verification team. Main topics of the interview cover implementation of the project, applicability of selected methodology, implementation of project monitoring, emission reduction calculation, etc.

The key personnel interviewed are summarized in the table below:

Interviewed personnel	Role		Subject
Mr. Shen Dongwei	Vice Plant Manager	Quanzhou BCCY New Energy CO., Ltd.	Operation of the project activity; Implementation of the monitoring plan of the project activity; Data collection and data achievement;
Mr. Zhang Junguang	Staff		

Mr. Chen Zhixuan	Associate Manager	Quanzhou Environmental Health Center	Calibration of monitoring equipment; No net harm assessment; SDGs contribution.
Mr. Zhao Shilai	Staff		
Ms. Li Xiujuan	Villager	Mafeng Village	The impact of the project activity; Comments from local stakeholders; SDGs contribution.
Mr. Cheng Jianguo	Villager		
Ms. Fang Yongmei	Project Manager	Henan BCCY Environmental Energy Co., Ltd.	Data collection and ER calculation.
Ms. Zhang Yangyang	Carbon reduction officer		

2.4 Site Visits

The verification team performed the on-site inspection (Shizaiqian Landfill Site, Luojiang District, Quanzhou City of Fujian Province, P.R. China) on 29/11/2023. The interviewed personnel and objective are listed in above table. During the on-site assessment, CTI has applied standard auditing techniques to assess the quality of information provided. The following aspects of the project activity have been verified:

- An assessment of the implementation and operation of the registered project activity is as per the VCS PD;
- An assessment of the status and management of the landfill site is as per the VCS PD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters; and
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD;
- A cross-check between information provided in the monitoring report and data from other sources such as plant logbooks and electricity sale receipts;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD and the selected methodology;
- A review of calculations and assumptions made in determining the GHG data and emission reductions; and
- An identification that quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The data presented in the monitoring report were assessed by review of the detailed project documentation and production records, as well as by interviews with personnel from the project

owner Quanzhou BCCY New Energy CO., Ltd. and observation of collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results, to verify the correct application of the approved monitoring methodology and the determination of the emission reductions.

In addition, all parameters required by the monitoring methodology ACM0001 (Version 19.0)/35/, methodological tools applied by the project, and the management system were assessed during the site visit.

2.5 Resolution of Findings

As an outcome of the verification process, the team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

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

The assessment team shall raise a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM or VCS requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for CTI's positive conclusion on the MR/1/. 3 Clarification Requests (CLs), 1 Corrective Action requests (CARs) and 0 Forward action request (FARs) raised by CTI. And communications were made between the Client and CTI to guarantee the transparency of the verification process, the concerns raised, and responses given are summarized below in the appendix D.

The final MR (version 2.0 dated 08/12/2023) serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main VCS objectives. The VCS main objectives are the reduction

of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project Description and monitoring report	0	0	0
Description of project activity	0	1	0
Application of selected baseline and monitoring methodology and selected standardized baseline			
- Applicability of methodology and standardized baseline	0	0	0
- Deviation from methodology	0	0	0
- Clarification on applicability of methodology, tool and/or standardized baseline	0	0	0
- Demonstration of additionality	0	0	0
- Emission reductions	0	0	0
- Monitoring plan	2	0	0
- Stakeholders consultation process	1	0	0
- Public comments	0	0	0
Others (please specify) - Matter related to double counting - for validation	0	0	0
Others (please specify) - Matter related to Emission reduction calculation - for verification	0	0	0
ER achieved, Matter related to feeder details, breakdown and Calibration - for verification	0	0	0
Total	3	1	0

2.5.1 Forward Action Requests

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

CTI confirmed that there was no FAR identified in the validation report and previous verification report/10//26//37/, and no FAR was raised during this verification.

2.6 Eligibility for Validation Activities

The VCS PD of the project activity was validated by LGAI Technological Center, S.A. (Applus+ Certification) on 21/10/2021/9//10/. The monitoring report of 1st monitoring period from 01/07/2019 to 30/06/2021 was verified by LGAI Technological Center, S.A. (Applus+ Certification) on 17/07/2021 /25//26/. The monitoring report of 2nd monitoring period from 01/07/2021 to 30/06/2022 was verified by CTI Certification Co., Ltd. on 01/11/2022/36//37/. The proposed monitoring period from 01/07/2022 to 30/06/2023 is the 3rd VCS verification, and CTI just undertook verification activities for the project according to the VCS Program Guide under Scopes 1 and 13. CTI has conducted verification (with monitoring

period from 01/07/2021 to 30/06/2023, less than 6 years) of the project activity and therefore it is confirmed that 4.1.27 of VCS Standard version 4.5 have been met.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project was validated by LGAI Technological Center, S.A. (Applus+ Certification) on 21/10/2021 for registration of VCS PD (<https://registry.verra.org/app/projectDetail/VCS/2352>). The project does not participate in any other emission trading programs by checking public information on Internet, interviewing with project owner and statement issued by project owner.

Therefore, CTI deemed the project is eligible to participate under the VCS Program as there is no double counting for the emission reduction during any period.

3.2 Methodology Deviations

The validation process/10/ has assessed all factors and issues that constitute the basis for emission reductions from the project according to the applicable CDM methodology ACM0001 (Version 19.0) /35/. There was not any methodology deviation applied to this project

3.3 Project Description Deviations

By checking the registered VCS PD and previous MR, and site visit interviewing with project proponent, it is confirmed that there were no project description deviations identified by CTI to this monitoring period.

The verification team assessed through visual inspection and document review that all physical features of the proposed project activity including data monitoring, reporting and collecting systems have been implemented in accordance with the monitoring plan included in the registered VCS PD (version 04.0 dated 21/10/2021) /9/.

3.4 Grouped Project

The project was not a grouped project; hence this clause is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Project Implementation in accordance with the registered project design document

The project is a landfill gas recovery and power generation project, which is located in Shizaiqian Landfill Site, Luojiang District, Quanzhou City of Fujian Province, P.R. China. The total installed capacity of the project activity is 5 MW consisting of 5set of 1 MW generators. The landfill handles an average of 810 tonnes MSW per day which is mainly from Quanzhou City. The project uses LFG from Shizaiqian MSW landfill for power generation. The power generated by the project is estimated to be 123,139 MWh during the fixed 10 years crediting period. The actual implementation of the project during this verification period was verified in terms of name plate capacities of each gas-fired Engine/generator and monitoring equipment/17/. The details of gas-fired Engine / generator with respect to installation and capacity have been verified to be consistent with description indicated in the VCS PD/9/. The project activity started construction on 18/06/2018 which has been validated during the validation stage. The gas-fired Engine/generator put into operation on 01/07/2019, which has been validated during the validation stage. The electricity generated by the project activity was supplied to the Eastern China Power Grid (ECPG), which can be confirmed by the Power Purchase Agreement (PPA) signed between the project owner and State Grid Quanzhou Electric Power Co., Ltd./3/. The project start date was identified as 01/07/2019 when the gas-fired Engine/generator started to operate and began generating GHG emission reductions.

The technical parameters have been verified with the nameplates /17/ as below:

Type	Gas engine, 1000GF-NK
Manufacturer	CNPC JICHAI POWER EQUIPMENT COMPANY
Rated Rotation Speed	1000 r/min
Rated capacity	1200 kW
Type	Generator, 1000GF-NK
Manufacturer	CNPC JICHAI POWER EQUIPMENT COMPANY
Rated Rotation Speed	1000 r/min

Rated capacity	1000 kW
Capacity factor	0.8 (lagging)

By checking equipment contract /38/, equipment nameplate/17/ and on-site visit, the assessment confirmed that since project implementation (i.e., commercial operation began on July 1, 2019), the four engines (Engines 1#, 2#, 3#, and 4#) have been installed, while Engine 5# has not been installed (including this monitoring period). This project does not involve a flare system.

By checking monthly report/8/ and Power Generation Project Cycle Report/45/, the assessment confirmed that the electricity export during this monitoring period is 26,186.946 MWh. The operation time of each generator in this monitoring period is 7,970h (generator 1#), 8,037h (generator 2#) and 8,067h (generator 3#), 8,029h (generator 4#). All of the monitoring data are fully recorded and archived by DCS automatically during this monitoring period. The project had no incidents of special impact but operates smoothly during this monitoring period.

Via onsite investigation and checking daily operation and maintenance records/6//7/, the verification team confirmed the units were shut down for maintenance and overhaul as follows:

Duration	Main Event
19/10/2022 23:00-20/10/2022 02:00	1# gas engine shut down for maintenance of utility equipment
30/11/2022 8:00-05/12/2022 8:00	1# gas engine shut down for minor maintenance
13/09/2022 8:00-17/09/2022 16:00	2# gas engine shut down for minor maintenance
19/10/2022 23:00-20/10/2022 02:00	2# gas engine shut down for maintenance of utility equipment
16/12/2022 08:00-25/12/2022 08:00	2# gas engine shut down for major maintenance
19/10/2022 23:00-20/10/2022 02:00	3# gas engine shut down for maintenance of utility equipment
27/10/2022 12:00-31/10/2022 11:00	3# gas engine shut down for minor maintenance
02/10/2022 12:00-07/10/2022 08:00	4# gas engine shut down for minor maintenance

19/10/2022 23:00- 20/10/2022 02:00	4# gas engine shut down for maintenance of utility equipment
06/12/2022 23:00- 13/112/2022 02:00	4# gas engine shut down for major maintenance
23/12/2022 11:00- 23/12/2022 15:00	4# gas engine shut down for fault
21/01/2023 01:00- 21/01/2023 04:00	1# gas engine shut down for maintenance of utility equipment
08/03/2023 12:00- 08/03/2023 18:00	1# gas engine shut down for fault
12/03/2023 09:00- 12/03/2023 14:00	1# gas engine shut down for main pipe line
28/03/2023 08:00- 06/04/2023 08:00	1# gas engine shut down for major maintenance
20/05/2023 08:00- 28/05/2023 08:00	1# gas engine shut down for medium maintenance
11/06/2023 08:00- 16/06/2023 08:00	1# gas engine shut down for minor maintenance
21/01/2023 01:00- 21/01/2023 04:00	2# gas engine shut down for maintenance of utility equipment
06/03/2023 11:00- 14/03/2023 08:00	2# gas engine shut down for medium maintenance
26/03/2023 09:00- 30/03/2023 18:00	2# gas engine shut down for minor maintenance
06/01/2023 08:00- 13/01/2023 13:00	3# gas engine shut down for major maintenance
21/01/2023 01:00- 21/01/2023 04:00	3# gas engine shut down for maintenance of utility equipment
12/03/2023 09:00- 12/03/2023 14:00	3# gas engine shut down for main pipe line
25/04/2023 08:00- 29/04/2023 12:00	3# gas engine shut down for minor maintenance

06/05/2023 10:00-14/05/2023 09:00	3# gas engine shut down for medium maintenance
19/05/2023 13:00-19/05/2023 17:00	3# gas engine shut down for fault
21/01/2023 01:00-21/01/2023 04:00	4# gas engine shut down for maintenance of utility equipment
12/03/2023 09:00-12/03/2023 14:00	4# gas engine shut down for main pipe line
02/04/2023 12:00-10/04/2023 09:00	4# gas engine shut down for medium maintenance
13/04/2023 08:00-17/05/2023 17:00	4# gas engine shut down for minor maintenance

As para 5 in Appendix of CDM Tool 08/49/, “If there are any periods for which one or more destruction devices are not operational, emission reductions from methane destruction for these periods may be claimed provided that verification confirms the fulfilment of all the following conditions indicated below. In such a case, the destruction efficiency of the least efficient destruction device in operation shall be used as the destruction efficiency for all destruction devices monitored by this single flow meter”, PP has claimed it is eligible for all destruction devices monitored by a single flow meter when the generator is not operational.

The destruction efficiency of gas generators is 100% by reviewing the FSR/55/ and Monthly report/12/. By reviewing the Instruction manuals for solenoid valve /50/, on-site visit and interviewed the PP, the solenoid valve on the intake pipeline at the front end of the each gas generator is also automatically activated if the gas generators stop operating due to an emergency, preventing the LFG from entering the gas generators. The LFG is temporarily stored in the landfill and in the pipelines and cannot escape into the atmosphere. When all 4 generators were shut down at the same time (12/03/2023 09:00-12/03/2023 14:00, 12/03/2023 09:00-12/03/2023 14:00, 21/01/2023 01:00-21/01/2023 04:00), it was confirmed that no LFG was collected and left in the entire project system during the planned shutdown by checking the Monthly report /12/. By checking the FSR /55/ and Design Manual /56/, It was verified that the design is compliant, the landfill has gas wells, the landfill gas volume was considered in the design to ensure safety, and the pipeline from the landfill to the pre-treatment direct is also capable of storing LFG and meets the design requirements. At this time the roots blower pumps will not be inlet at this moment either. When the unit is shut down in an emergency, it is confirmed that intake pressure is increased and the roots blower pumps will reduce its frequency and extract less LFG from the landfill site by checking the Design Manual /56/, LFG intake is smaller when one generator is not operating by checking the Methane flow statistics during shutdown/51/. It is a type of interlocking control, ensuring that

the pressure in the unit is balanced and that a very small portion of the LFG stored in the pipework can be accommodated. At the same time, the maintenance personnel will handle the malfunction as soon as possible. Thus, the valve on the input gas line will close automatically if the generator becomes non-operational, it is confirmed that the LFG can not pass through and into the atmosphere while the generator remains non-operational, which can meet the conditions listed under paragraph 5 (a) in Appendix of CDM Tool 08/49/.

During this monitoring period, the shutdowns were categorised into two states, case 1 where only one generator was not operating and the other three generators were operating normally, and case 2 where all generators were not operating by checking daily operation /6/ and maintenance records/7/, which have been listed in the above table. As reviewed the Methane flow statistics during shutdown/51/, 3 generators operated and 1 generator not operated were documented, the average hourly methane handled by each of the remaining 3 generators was calculated from 0.13 to 0.23 tCH₄/h based on the gas flow monitored by the single flow meter in case 1, which is below the maximum designed capacity to destroy methane by each operating gas generator is 0.25 tCH₄/h by checking the Technical agreement for generator sets /53/. As reviewed the Methane flow statistics during shutdown/51/, there was no monitored gas flow and LFG did not enter the generator in case 2 (12/03/2023 09:00-12/03/2023 14:00, 12/03/2023 09:00-12/03/2023 14:00, 21/01/2023 01:00-21/01/2023 04:00). Thus, the remaining generators have the capacity to destroy the LFG recorded when one or more generators within this arrangement are not operational, it can meet the conditions listed under paragraph 5 (b) in Appendix of CDM Tool 08 /49/ .

Furthermore, for crosschecking the output flow of gas, PP calculated the destroyed methane based on the actual power generation using the following Equation(a), which is from the Equation (6) in the AMS-III.G(version 10.0)/54/. It has been checked by reviewing the Calculation table for methane destruction by month/51/.

$$F_{CH_4} = \frac{EG_y \times 3600 \times D_{CH_4}}{NCV_{CH_4} \times EE_y} \quad \text{Equation(a)}$$

EG_y is the electricity generated in the project from the Monthly report/12/, it is confirmed as 27,986.552 MWh; D_{CH₄} is 0.0007168 tCH₄/m³CH₄ (Normal conditions: 0°C and 101.325kPa), same as ρ_{CH₄}; NCV_{CH₄} is 35.9MJ/Nm³, which is the default value in AMS-III.G(version 10.0)/54/; EE_y is the Energy Conversion Efficiency of the project equipment, 30% is provided from supplier which is higher value of the efficiency of the generator by reviewing Technical agreement for generator sets /53/; 3600 is the Conversion factor (1 MWh = 3,600 MJ). FCH₄=27,986.552*3,600*0.0007168/(35.9*30%)=6,705.55 tCH₄. AS confirmed by reviewing the ER/2/ and calculation in Section 5.1 of MR/1/, amount of methane in the LFG which is used in the project activity (F_{CH₄,PJ,y}) is 6,645.43 tCH₄ from 01/07/2022 to 30/06/2023. Therefore, it is confirmed that the output can correspond to the flow of gas, which can meet the conditions listed under paragraph 5 (b) in Appendix of CDM Tool 08 /49/.

- all required equipment and procedures are available and implemented in an appropriate manner;

- the project is completely operational and all necessary monitoring instruments are installed;
- all required instruments including standby and operating procedures for the same have been implemented in an appropriate manner;
- neither mistakes nor malfunction on main meters have been observed during this monitoring period.
- the control system at the power plant is automated and assures continuous operation, including monitoring on malfunction of equipment;
- no serious malfunction happened and the plant was under a normal operation as expected in this monitoring period.

Furthermore, on-site training /29/ 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 operation.

In conclusion, as part of the site visit, CTI confirms that:

- the monitoring plan contained in the VCS PD (version 04.0 dated 21/10/2021) is in accordance with the approved methodology applied by the project activity, i.e. ACM0001 (Version 19.0);
- the project implementation is in accordance with the VCS PD (version 04.0 dated 21/10/2021);
- all the monitoring system in operation period is in accordance with the VCS PD (version 04.0 dated 21/10/2021);
- all physical features of the proposed project activity including data collection systems and storage systems have been implemented in accordance with the VCS PD (version 04.0 dated 21/10/2021) through visual inspection and document review.

Participation or any rejection under any other GHG programs, any other form of environmental credit or emissions trading program since validation or previous verification

CTI checked public information from the UNFCCC website, REC Mechanism database of China, Chinese Emission Trading System (Chinese ETS), Gold Standard Registry, Chinese Certified Emission Reduction Mechanism (CCER) and interviewed with project owner during site visit, it is confirmed that except VCS scheme, the project has not been participated or been rejected under any other GHG programs since validation. Also, CCER mechanism is currently suspended by Chinese government, the project activity will not and is not allowed to registered under CCER mechanism. Thus, the assessment team concluded that the project activity not involved on other emissions trading programs and other binding limits.

Furthermore, as per "Total National Carbon Emission Trading Allowances for the Years 2021 and 2022 Implementation Program for Setting and Allocation (Power Generation Sector)" /18/

issued by Ministry of Ecology and Environment of P. R. China, China has a national emissions trading scheme covering thermal power generation industry. By checking "Public Notice on the List of Key Emission Units in Fujian Province to be Included in the Management of Quotas in the National Carbon Emission Trading Market in 2022" /19/ issued by Fujian Provincial Department of Ecology and Environment, the project proponent is not included in the mandatory emission control scheme and thus no emission cap was enforced for the project proponent.

Therefore, the verification team confirmed that the project only applies VCUs under VCS, and no rejection from VCS occurs, there are no other forms of environmental credits applied or issued for the project activity, the emission reductions resulted from the project during this monitoring period would only apply for VCUs.

Issuance of public statement(s) to help prevent Scope 3 emissions double claiming

The Project can reduce GHG emissions by utilization the recovered landfill gas provided by Shizaiqian MSW landfill site (waste management service), avoiding the emission of methane that would be generated under landfill condition; and by replacing the electricity generated by fossil fuel fired power plants of Eastern China Power Grid (ECPG). For LFG power generation projects, the GHG emission reductions come from avoiding CO₂ emissions from those fossil fuel-based power plants connected to the grid and avoiding GHG emissions from releasing LFG into atmosphere at the landfill site, and does not happen in a supply chain. Therefore, it is confirmed that the Supply Chain (Scope 3) Emissions are not applicable for the project activity. The assessment team confirmed that this section is not applicable for the project activity.

Email notification of the potential risk of Scope 3 emissions double claiming

Not applicable since Supply Chain (Scope 3) Emissions are not applicable for the project activity.

Leakage management for AFOLU projects

The project activity is not a AFOLU project, therefore, this section is Not applicable.

In conclusion, the verification team confirmed that the project only applies VCUs under VCS, and no rejection from VCS occurs, there are no other forms of environmental credits applied or issued for the project activity, the emission reduction resulted from the project during this monitoring period would only apply for VCUs.

SD contributions resulted by implementation of the project activity

By checking registered VCS PD, Staff roster /27/, China's National Plan on Implementation of the 2030 Agenda for Sustainable Development and 17 SDGs defined by UNDP, interviewing with stakeholders during site visit, the verification team confirmed that the project activity would contribute sustainable development in the region and China's Sustainable Development Goals (SDG). The specific sustainable development goals that the project activity could achieve have been listed as follows:

- SDG13 “Take urgent action to combat climate change and its impacts”: the project will recover and destroy landfill gas that would otherwise be released directly into the atmosphere, effectively reducing GHG emissions and air pollution in the surrounding area and decreasing odour nuisance and minimizing health risks of local residents. Meanwhile, the project activity is able to increase the safety on the landfill through Proper extraction and utilization of the landfill gas, which minimizes the potential for LFG migration on site and reduce the explosion risks of landfill gas. This contributes to achieve one of China’s stated sustainable development priorities “Actively adapt to climate change and strengthen resistance capacity to climate risks in agriculture, forestry, water resources and other key fields, as well as cities, coastal regions and ecologically vulnerable areas”. During this monitoring period, total GHG emission reductions were 146,135 tCO₂e. By checking the previous monitoring reports/25//36/ and SDG contribution report/46/ through VERRA website, it is confirmed that the cumulative contributions for the period 01/07/2019 to 30/06/2023 were 567,185 tCO₂e emission reductions achieved.

- SDG7 “Ensure access to affordable, reliable, sustainable and modern energy for all”: the project activity will provide clean and renewable energy source through making use of landfill gas, displacing the power generation of fossil fuel power plants by using renewable energy sources, reducing fossil fuel consumption in ECPG. This contributes to one of the China’s actions for promoting sustainable developing, “By 2030, increase the share of non-fossil fuels in primary energy consumption to about 20 percent”. During this monitoring period, 26,186.946MWh of renewable electricity was delivered to ECPG. By checking the previous monitoring reports/25//36/ and SDG contribution report/46/ from VERRA website, it is confirmed that the cumulative contributions for the period from 01/07/2021 to 30/06/2023 were 53,607.373MWh of renewable energy delivered to ECPG.

- SDG 8 “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”: the project activity increases 5 long term employment opportunities for the management, operation and maintenance of the power plant. By checking the Staff Roster, the number of employees during the monitoring period was confirmed to be 5. This contributes to one of the China’s actions for promoting sustainable developing, “Increase labor force participation rate through implementation of the classification policy. Vigorously enforce the Law on Promotion of Employment”.

The verification team confirmed that there is no proposed or actual change to the VCS PD during this monitoring period. All required equipment and procedures are available and implemented in an appropriate manner. All necessary monitoring instruments are installed. All required instruments including standby and operating procedures for the same have been implemented in an appropriate manner. The project is completely operational and the same has been confirmed on-site. Neither mistakes nor malfunction on main meters have been observed during this monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

By checking the EIA report/39/, it is confirmed that the impact caused by LFG power generation on the surrounding ecosystem and residents, water, and atmosphere etc. is very little, there would be no net harm caused due to the project activity. The Environmental Impact Assessment (EIA) Report for the project was compiled by Fujian Huanan Environmental Assessment and Testing Co., Ltd.. The EIA Report for the project has been approved by Environment Protection Bureau of Quanzhou City on 25/06/2018.

Waste water

During the crediting period, domestic sewage and a small amount of condensate were treated by the landfill leachate treatment station. By checking the EIA report/39/ and EIA approval /40/, the same treatment has been used during the crediting period. Through the on-site visit, the verification team confirmed the same treatment used in the project. The environmental monitoring reports/41/ from 2022 to 2023 show that the wastewater has met the requirements of Table 2 of “Domestic Waste Landfill Pollution Control Standard” (GB16889-2006), which was conducted by Fujian Hewin occupational health evaluation Co., LTD.

Waste gas

As MR describes, the exhaust gas produced by this project is mainly the exhaust gas of the generators. Each generator unit is equipped with a 15m high exhaust funnel for high-altitude emissions, with a total of four 15m high exhaust funnels. According to the review of EIA and EIA approval /39//40/, the treatment is consistent with the EIA approval/40/. Through the on-site visit, the verification team confirmed the same treatment used in the project. The project's environmental monitoring reports /41/ from 2022 to 2023, conducted by a third party testing company (Fujian Hewin occupational health evaluation Co., LTD.), The assessment verified that the unorganised exhaust gas has met “Ambient air quality standard” (GB13223-2011).

Noise pollution

During the crediting period, Low noise equipment were selected and reasonably arranged. Effective sound insulation, noise reduction and shock absorption measures were used to low the noises caused by Roots blower, generator set, and air compressor. After implementation of the above measures, it can meet class 2 standard of “Emission standard for Environmental Noise at Boundary of Industry and Enterprises” (GB12348-2008). The verification team checked the EIA and EIA approval/39//40/, the same measures has been took during the crediting period. The project's environmental monitoring reports /41/ from 2022 to 2023, conducted by a third party testing company (Fujian Hewin occupational health evaluation Co., LTD.), have verified that the noise has meet the category II of “Displacement noise standard for industrial enterprise” (GB12348-2008).

Solid waste

During the crediting period, the site of this project is located within the landfill site, and domestic waste were directly sent to the landfill area for landfill. The empty oil drum were regularly recycled by the manufacturer. Hazardous waste was managed by dedicated personnel, temporarily stored according to hazardous waste storage requirements, and promptly recycled and disposed of by qualified units. The verification team checked the EIA and EIA approval /40/, the same measures has been took during the crediting period. During the on-site visit, PO provided the Hazardous waste disposal contracts /42/. Disposal is in accordance with the the EIA and EIA approval /39//40/.

Furthermore, the project activity helps to improve local socio-economic development through creating employment opportunities. No potential environment or social economic matter was found during the site visit. The project is renewable energy project and thus no net harm observed in air or water quality on-site.

4.2.2 Local Stakeholder Consultation

As per registered VCS PD, the verification team confirmed that a local stakeholder consultation meeting was held on 23/10/2018 by the project owner. Before the stakeholder consultation meeting, the project information with contact information and the stakeholder meeting notice were published on the bulletins at and nearby the project site on 08/10/2018 to invite Local stakeholders.

During the meeting, the project information and the continuous input / grievance mechanism have been introduced to the local stakeholders. The project information with contact information has also been posted on the bulletins at and nearby the project site. During the meeting, a survey was carried out on the local residents and comments received from the survey are summarized as follows. The survey was conducted through distributing and collecting responses to a questionnaire. In total 25 out of 25 questionnaires were returned with a 100% response rate.

The opinions expressed by the stakeholders were recorded and are available on request. The stakeholder meeting and the survey showed that the project receives active support on its the construction and operation.

All such conclusion has been verified through site visit and check registered VCS PD.

Project owner has developed a mechanism for on-going communication with local stakeholders. The verification team checked the minutes/30/ of stakeholder meetings during operation on 19/09/2022 and 17/04/2023, at the meeting, the plant manager presented the project's construction and operational phases. The Director of the landfill plant commented that the project had a positive impact on the environment, reduce safety hazards, save energy and reduce carbon emissions. Nearby villagers raised questions about whether the project generated noise. The plant manager said that the relevant measures had been strengthened to optimize the reduction of noise, and the noise of the project was also annually tested by the

third qualified agency and it could meet class 2 standard of “Emission standard for Environmental Noise at Boundary of Industry and Enterprises” (GB12348-2008). The environmental indicators met the standards, and was processed and discharged in accordance with the regulations, and had no impact on the lives of the residents. The power plant has mitigated noise through vibration and noise reduction devices in the generator room and green belts around the plant, problems at the meeting were resolved learned through site visits. The verification team believes that the communication between stakeholders during the operation period has been put in place, which can truly reflect the views of the people in the neighborhood on the project and is conducive to the operation of the project. Through interviewing with local residents, there are no negative comments on this project. Project owner has regularly communicated with local stakeholders to understand stakeholder views on the project. The local authority also conducts spot checks on the implementation of the project at periodic intervals as per relevant regulations. The local authority also didn’t have negative perceptions about the project.

4.3 AFOLU-Specific Safeguards

For non-AFOLU projects, this section is not required.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PD /9/.

The parameter of methane generation from the landfill in the absence of the project ($BE_{CH_4, SWDS,y}$) is used for ex-ante estimation of relevant parameter $F_{CH_4,PJ,y}$. For $F_{CH_4,PJ,y}$, there is an ex post determination method. Thus, in this monitoring period, $BE_{CH_4,SWDS,y}$ and the relevant basic parameters (ϕ_y , OX , F , DOC_f , MCF_f , K_j , $W_{j,x}$, DOC_j , f_y , η_{PJ}) for calculation of $BE_{CH_4, SWDS,y}$ are not included here.

The data in table below has been verified against the data sources and the registered PD/9/.

Parameters determined ex-ante

Parameter title	Description	Data	Unit	Source
OX_{top_layer}	Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline	0.1	/	Consistent with how oxidation is accounted for in the methodological tool “Emissions from solid waste disposal sites”
GWP_{CH_4}	Global warming potential of CH_4	28	/	IPCC Fifth Assessment Report (AR5)
ρ_{CH_4}	Density of methane gas at Normal Conditions	0.0007168	$tCH_4/m^3 CH_4$	At standard temperature and pressure (0 degree Celsius and 1,013 bar) the density of

				methane is 0.0007168 tCH ₄ /m ³ CH ₄
EF _{grid,OM,y}	Operating margin CO ₂ emission factor in year y	0.7921	tCO ₂ /M Wh	2019 Baseline Emission Factors for Regional Power Grids in China dated 29/12/2020 published by China DNA /16/
EF _{grid,BM,y}	Build margin CO ₂ emission factor in year y	0.3870	tCO ₂ /M Wh	2019 Baseline Emission Factors for Regional Power Grids in China dated 29/12/2020 published by China DNA /16/
TDL _{j,y} and TDL _{k,y}	Average technical transmission and distribution losses for providing electricity to source j, k in year y	3 and 20	%	Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0)

rmind ex-post

Data / Parameter	Management of SWDS
Data unit	/
Description	Management of SWDS
Purpose of the data:	Calculation of baseline emissions
Parameter value:	/
Source of data used:	Original design of the landfill
Information flow:	Not applicable
Monitoring method, frequency and equipments:	This parameter was monitored annually by the project owner through following up with any changes in the management of Shizaiqian landfill site. Through interview with staff from Shizaiqian landfill site and by checking the Statement of Management Technical/4/, the assessment team confirmed that there was no changes in the management of the SWDS after the implementation of the project activity, which is consistent with that in the registered PD and MR.
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the

	crediting period to which the records pertain.
Means of verification:	Staff from Shizaiqian MSW landfill site was interviewed, the Statement of Management Technical/4/ was checked, and on-site inspection was conducted by the verification team, all monitoring method and frequency meets the description in the PD.

Data / Parameter	$F_{CH_4,BL,R,y}$
Data unit	tCH_4/yr
Description	Amount of methane in the LFG which is flared due to a requirement in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	1,329.13
Source of data used:	This parameter was calculated by Fraction of LFG that is required to be flared due to a requirement in year y ($P_{reg,y}$) and Amount of methane in the LFG which is flared and/or used in the project activity in year y ($F_{CH_4,PJ,y}$) as below: $F_{CH_4,BL,R,y} = P_{reg,y} * F_{CH_4,PJ,y}$ For Amount of methane in the LFG which is flared and/or used in the project activity in year y ($F_{CH_4,PJ,y}$), it is calculated by Volumetric flow of the gaseous stream in time interval t on a dry basis ($V_{t,db}$), Volumetric fraction of greenhouse gas I in a time interval t on dry basis ($V_{i,t,db}$) and Operation of the electricity generators that consume the LFG ($O_{pj,h}$). $V_{t,db}$, $V_{i,t,db}$ and $O_{pj,h}$ were verified in the report and not be repeated.
Information flow:	Not applicable
Monitoring method, frequency and equipments:	Annually
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	$V_{t,db}$, $V_{i,t,db}$ and $O_{pj,h}$ were verified as follows in the report, $P_{reg,y}$ was confirmed as 20% in the following monitoring parameter, MR

	calculation sheet/2/ was checked, the calculation of $F_{CH_4,BL,R,y}$ is correct.
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Data / Parameter	$P_{reg,y}$
Data unit	Dimensionless
Description	Fraction of LFG that is required to be flared due to a requirement in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	20%
Source of data used:	According to the methodology ACM0001 (version 19.0), 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 percent is assumed
Information flow:	Not applicable
Monitoring method, frequency and equipments:	Annually
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	Data of the parameter was verified by checking ACM0001. All data is in line with ACM0001.

Data / Parameter	$V_{t,db}$
Data unit	m ³ dry gas/h
Description	Volumetric flow of the gaseous stream in time interval t on a dry basis
Purpose of the data:	Calculation of baseline emissions
Parameter value:	2051.52
Source of	Volumetric flow of the gaseous stream in time interval t on a dry basis are all

data used:	sourced from Monthly Report /12/ issued by the project owner.				
Information flow:	By on-site visit, the assessment confirmed that $V_{t,db}$ was measured continuously by a flow meter F installed On the preprocessing system (average hourly value should be used in the calculations of baseline emission reductions). Data to be aggregated monthly. The data for Monthly Report have been sent to the VCS consulting company for reporting of GHG emission reductions.				
Monitoring method, frequency and equipment s:	The parameter was monitored continuously and recorded automatically. The type, serial number and accuracy have been confirmed by site visit, which were:				
	Equipment	Type	Serial Number	Accuracy	
	Flow meter	RVM-VS12IIJF63N2	18070801	0.5	
Calibration:	The calibration information are shown as below/23/:				
	Model	Certificate NO.	Accuracy class	Date of calibration	Validity
	RVM-VS12IIJF63N2	72260116 FJJ230403029122001	0.5	02/06/2022	01/06/2023
				31/05/2023	30/05/2024
The calibration was conducted by accredited third parties which are Calibration and Testing Center For Gas Flowmetre of the Quality and Technology Supervision Bureau of Jiangsu, which was accredited by Jiangsu Provincial Market Supervision Administration/22/, and Guangzhou Zhongce-Measuring Co., Ltd, which was accredited by Jiangsu Provincial Market Supervision Administration/24/ .					
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.				
Means of verification :	By on-site visit, the assessment confirmed that the flow meter collects data at standard conditions, temperature and pressure are continuously monitored in real time. Data of parameter was verified by checking Monthly Report/12/, and all information is consistent; Data recorded in Daily Report of gas analyzer and flow meter /11/ has been crosschecked with that in Monthly Report of LFG Volumetric fraction recorded in Pretreatment and Transformer Inspection Records /12/, which is verified to be consistent. By checking the same, it is confirmed value of $V_{t,wb}$ was 557.63m ³ dry gas/h (hourly average value at normal conditions) for this				

monitoring period.

By checking the Temperature statistics table /48/ of the gaseous stream during the monitoring period, the temperature of the gaseous stream is 286.45~304.05K, which is less than 333.15 K (60 ° C). It could meet the requirements of per 31(b) of Tool 08 (version 3.0) /49/. Thus the gaseous stream is dry for calculating flow measurement of LFG $F_{CH_4,PJ,y}$ on a dry basis ($F_{CH_4,PJ,y}$ is calculated as volumetric flow of the gaseous stream in time interval t on a dry basis multiplied by volumetric fraction of greenhouse gas i in a time interval t on dry basis).

Monitoring method was verified by on-site visit, checking calibration certificates, all monitoring method is consistent with the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.

Data / Parameter	V _{i,t,db}			
Data unit	m ³ gas i/m ³ dry gas			
Description	Volumetric fraction of greenhouse gas I in a time interval ton s dry basis			
Purpose of the data:	Calculation of baseline emissions			
Parameter value:	51.59% (average value)			
Source of data used:	Volumetric flow of the gaseous stream in time interval t on a dry basis are all sourced from Monthly Report/12/ issued by the project owner.			
Information flow:	As confirmed via on-site visit, 1 gas analyser is installed at project site to measure the fraction continuously and data was archived electronically. At 24:00 hr of last day of each month, the monitoring system automatically calculates the average value of V _{i,t,db} of each month and the staff from project owner read the average value and fill out Monthly Report. The data for Monthly Report/12/ have been sent to the VCS consulting company for reporting of GHG emission reduction.			
Monitoring method, frequency and equipments :	The parameter was monitored continuously and recorded automatically. The type, serial number and accuracy have been confirmed by site visit, which were:			
	Equipment	Type	Serial Number	Accuracy

	Gas analyser	GTR196 IR	56403/8	II
Calibration:	The calibration information are shown as below/20/:			
	Model	Certificate NO.	Accuracy class	Date of calibration
	GTR196 IR	207018785	II	21/06/2023
		FJJ230403029122002		20/06/2023
				20/06/2024
	The calibration was conducted by accredited third parties which are Shenzhen Academy of Metrology & Quality Inspection National Hi-tech Metrology Station, which was accredited by Guangdong Provincial Market Supervision Administration/21/, and Guangzhou Zhongce-Measuring Co., Ltd, which was accredited by Jiangsu Provincial Market Supervision Administration/24/.			
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.			
Means of verification:	Data of parameter was verified by checking Monthly Report/12/, and all information is consistent; Data recorded in Daily Report of gas analyzer and flow meter/11/ has been crosschecked with that in Monthly Report/12/of LFG Volumetric fraction, which is verified to be consistent. By checking the Temperature statistics table /48/ of the gaseous stream during the monitoring period, the temperature of the gaseous stream is 286.45~304.05K, which is less than 333.15 K(60 ° C). It could meet the requirements of per 31(b) of Tool 08 (version 3.0) /49/. Thus the gaseous stream is dry for calculating flow measurement of LFG $F_{CH4,PJ,y}$ on a dry basis ($F_{CH4,PJ,y}$ is calculated as volumetric flow of the gaseous stream in time interval t on a dry basis multiplied by volumetric fraction of greenhouse gas i in a time interval t on dry basis). Monitoring method was verified by on-site visit, checking calibration certificates, all monitoring method is consistent with the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.			

Data / Parameter

Op_{j,h}

Data unit	/
Description	Operation of the equipment that consumes the LFG
Purpose of the data:	Calculation of baseline emissions
Parameter value:	generator 1# : 7,970h generator 2# : 8,037h generator 3# : 8,067h generator 4# : 8,029h
Source of data used:	Operation of the equipment that consumes the LFG are all sourced from Monthly Report /12/ issued by the project owner.
Information flow:	The monitoring system was used to determine the status of operation of the equipment that consumes the LFG and recorded in the Monthly Report/12/.
Monitoring method, frequency and equipments:	Operation of the gas generators is automatically monitored and recorded in the daily records by a built-in programme when receiving voltage and speed signals from the gas generators, which is regularly maintained to ensure accuracy. By checking the Equipment Instruction Manual /47/ and interviewed with PP, it is confirmed that the operation hours of the generator are timed by a built-in programme, which belongs to the control module of the generator set, and the probability of problems with this controller is very small, so it does not require daily calibration and maintenance.
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	Data recorded in the daily report of power generation /11/ was crosschecked with that recorded in the Monthly Report/12/ and verified to be consistent; Information flow was verified by checking Monthly Report, and all information is consistent; Monitoring method was verified by on-site visit, checking calibration certificates, all monitoring method is consistent with the description in the PD.
Data / Parameter	EG _{PJ,y}

Data unit	MWh								
Description	Amount of electricity generated using LFG by the project activity in year y								
Purpose of the data:	Calculation of baseline emissions								
Parameter value:	26,186.946								
Source of data used:	Amount of electricity generating using LFG by the project activity in year y are all sourced from Monthly Report /12/ issued by the project owner, Online power confirmation notification issued by power grid company covering monitoring period.								
Information flow:	As confirmed via on-site visit, 1 bidirectional electricity meter is installed at project site to measure the electricity generation continuously, data was recorded monthly and archived electronically. At 24:00 hr of last day of each month, the staff from project owner recorded the electricity meter’s readings and filled out Monthly Report. The staff from power grid company recorded the meter readings of meter then transcribes the data into Online power confirmation notification/08/, then after the confirmation of the project owner for the Online power confirmation notification, the project owner issued the invoice as sales receipts. The data for Monthly Report and Online power confirmation notification/08/ have been sent to the VCS consulting company for reporting of GHG emission reduction. The conservative one would be used for ER calculation.								
Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded monthly by 1 bidirectional electricity meter installed at project site. See below for the information of 1 bidirectional electricity meter verified by site visit and checking calibration certificates /13/: <table><tr><th>Meter</th><th>Model</th><th>Serial number</th><th>Accuracy class</th></tr><tr><td>Electricity Meter</td><td>DSZ188</td><td>010129540186</td><td>0.2S</td></tr></table> The type,serial number and accuracy have been confirmed by	Meter	Model	Serial number	Accuracy class	Electricity Meter	DSZ188	010129540186	0.2S
Meter	Model	Serial number	Accuracy class						
Electricity Meter	DSZ188	010129540186	0.2S						

	site visit.								
Calibration:	The calibration information are shown as below: <table><tr><th>Meter</th><th>Date of calibration</th><th>Valid until</th></tr><tr><td rowspan="2">DSZ188</td><td>14/06/2022</td><td>13/06/2023</td></tr><tr><td>06/06/2022</td><td>05/06/2024</td></tr></table> The calibration was conducted by accredited third parties which are Fujian State Grid Quanzhou power supply company, which was accredited by Fujian Market Supervision Administration/14/. .	Meter	Date of calibration	Valid until	DSZ188	14/06/2022	13/06/2023	06/06/2022	05/06/2024
Meter	Date of calibration	Valid until							
DSZ188	14/06/2022	13/06/2023							
	06/06/2022	05/06/2024							
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.								
Means of verification:	Value of $EG_{EC,y}$ was sourced from Monthly Report/12/. Data recorded in the daily report/11/ was crosschecked with that recorded in Monthly Report/12/ and verified to be consistent. Likewise, the date from the Online power confirmation notification/08/ and sales receipts/44/ were crosschecked with that recorded in Monthly Report and verified to be consistent. Monitoring method was verified by on-site visit, checking calibration certificates, all monitoring method is consistent with the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.								

Data / Parameter	$EG_{EC,y}$
Data unit	MWh
Description	Amount of electricity consumed by the project activity in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	0.33
Source of data used:	Amount of electricity consumed by the project activity in year y are all sourced from Monthly Report/12/ issued by the project owner, Offline power confirmation notification/08/ issued by

	power grid company covering monitoring period.								
Information flow:	As confirmed via on-site visit, 1 bidirectional electricity meter is installed at project site to measure the electricity consumed continuously, data was recorded monthly and archived electronically. At 24:00 hr of last day of each month, the staff of project owner recorded the electricity meters’s readings and filed out Monthly Report. The data for Monthly Report and Offline power confirmation notification/08/ have been sent to the VCS consulting company for reporting of GHG emission reduction. The conservative one would be used for ER calculation.								
Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded monthly by 1 bidirectional electricity meter installed at project site. See below for the information of 1 bidirectional electricity meter verified by site visit and checking calibration certificates /13/: <table><tr><th>Meter</th><th>Model</th><th>Serial number</th><th>Accuracy class</th></tr><tr><td>Electricity Meter</td><td>DSZ188</td><td>010129540186</td><td>0.2S</td></tr></table> The type,serial number and accuracy have been confirmed by site visit.	Meter	Model	Serial number	Accuracy class	Electricity Meter	DSZ188	010129540186	0.2S
Meter	Model	Serial number	Accuracy class						
Electricity Meter	DSZ188	010129540186	0.2S						
Calibration:	The calibration information are shown as below: <table><tr><th>Meter</th><th>Date of calibration</th><th>Valid until</th></tr><tr><td rowspan="2">DSZ188</td><td>14/06/2022</td><td>13/06/2023</td></tr><tr><td>06/06/2022</td><td>05/06/2024</td></tr></table> The calibration was conducted by accredited third parties which are Fujian State Grid Quanzhou power supply company/14/ which was accredited by Fujian Market Supervision Administration.	Meter	Date of calibration	Valid until	DSZ188	14/06/2022	13/06/2023	06/06/2022	05/06/2024
Meter	Date of calibration	Valid until							
DSZ188	14/06/2022	13/06/2023							
	06/06/2022	05/06/2024							
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.								

Means of verification:	Value of $EG_{EC,y}$ was sourced from Monthly Report. After checking the Daily Report, the date was recorded without errors. Data recorded in the daily report/11/ was crosschecked with that recorded in Monthly Report/12/ and verified to be consistent. Likewise, the date from the Offline power confirmation notification/08/ was crosschecked with that recorded in Monthly Report and verified to be consistent. Monitoring method was verified by on-site visit, checking calibration certificates, all monitoring method is consistent with the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.
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Data / Parameter	CAPEX and OPEX
Data unit	CNY
Description	Total investment to implement the project and total cost to operate the project
Purpose of the data:	Not applicable
Parameter value:	CAPEX: 31,312,376.86 CNY OPEX: 5,896,838.01 CNY
Source of data used:	CAPEX is sourced from Engineering, procurement and construction contracts and maintenance contracts which has been verified in the first period verification. OPEX is sourced from Statement for the operation cost /28/.
Information flow:	Not applicable
Monitoring method, frequency and equipments:	At the first issuance request after each phase of the project is fully implemented
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	Data of the parameter was verified by checking completion acceptance form/43/ and statement for the operation cost/28/. All data is in line with completion acceptance form and

	statement for the operation cost.
Data / Parameter	Tariff of electricity exported
Data unit	CNY/kWh
Description	Tariff of the electricity exported
Purpose of the data:	Not applicable
Parameter value:	0.629
Source of data used:	Tariff of electricity exported is sourced from Tariff approval /31/
Information flow:	Not applicable
Monitoring method, frequency and equipments:	At the first issuance request after each phase of the project is fully implemented
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	Data of the parameter was verified by checking Tariff approval. All data is in line with Tariff approval.

Data management and control

The project owner is responsible for operation and routine maintenance of power plant under the project activity. The quality assurance and quality control procedures have been addressed in the VER monitoring manual and management procedure/4/, including the organization structure with the responsibilities, personnel competencies, monitoring procedures and monitoring management. By interview with the staff and check records /4/-/6/ during on-site visit, it can be confirmed that the monitoring management system is implemented following the project management and monitoring manual.

All monitoring devices have been calibrated and maintained periodically to ensure the accuracy of measurement. Calibration records of instruments used in measurements were made available during the verification visit and found to be valid for the entire period of the verification. Competence and training records of in-plant personnel engaged in measurement of plant parameters were presented during verification and found to be in order.

By checking the Operation and Maintenance Record/6/, Equipment Instruction Manual/47/ and interviewing PP, as a single flow meter is used to monitor flow of LFG to all engines

described in section 4.1 above, which meets the conditions listed in paragraph 5 (a) & (b) in the Appendix of CDM Tool 08 - Tool to Determine Mass Flow of Greenhouse Gas in a Gaseous Stream /49/.

CTI 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.

Emission reduction calculation

CTI 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.

According to the applied methodology, the emission reductions are determined as the difference between the baseline emissions, project emissions and leakage:

$$ER_y = BE_y - PE_y - LE_y$$

Baseline emissions

As per registered VCS PD/9/, baseline reductions are determined as:

$$BE_y = BE_{CH_4,y} + BE_{EC,y}$$

Baseline emissions of methane from the SWDS ($BE_{CH_4,y}$)

As per ACM0001 and registered PD, $BE_{CH_4} = \left((1 - OX_{top_layer}) \times F_{CH_4,PJ,y} - F_{CH_4,BL,y} \right) \times GWP_{CH_4}$. The calculation process has been included in the ER calculation spreadsheet and confirmed by the verification team to be correct. The value of parameters in the equation are listed as follows:

Parameter	Description	01/07/2022-31/12/2022	01/01/2023-30/06/2023	Total
OX_{top_layer}	Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless)	0.1	0.1	0.1
$F_{CH_4,PJ,y}$ (tCH ₄)	Amount of methane in the LFG which is flared and/or used in the project activity	3,802.30	2,843.13	6,645.43
$F_{CH_4,BL,y}$ (tCH ₄)	Amount of methane in the LFG that would be flared in the baseline in year y	760.48	568.65	1,329.13

GWP _{CH4} (tCO _{2e} /tCH ₄)	Global warming potential of CH ₄	28	28	28
BE _{CH4,y} (tCO _{2e})	Baseline emissions of methane from the SWDS	74,521	55,722	130,243

As per registered VCS PD, for the project activity, $F_{CH4, PJ, y} = F_{CH4, EL, y}$, which is calculated using equation below:

$$F_{i,t} = V_{t,wb,n} \times v_{i,t,wb} \times \rho_{i,n}$$

With:

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

Where:

- $F_{i,t}$ = Mass flow of greenhouse gas i in the gaseous stream in time 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 (m³ wet gas/h)
- $v_{i,t,wb}$ = Volumetric fraction of greenhouse gas i in the gaseous stream in time interval t on a wet basis (m³ gas i/m³ wet gas)
- $\rho_{i,n}$ = Density of greenhouse gas i in the gaseous stream at normal conditions (kg gas i/m³ wet gas i)
- P_n = Absolute pressure at normal conditions (Pa)
- T_n = Temperature at normal conditions (K)
- MM_i = Molecular mass of greenhouse gas i (kg/kmol)
- R_u = Universal ideal gases constant (Pa.m³/kmol.K)

The detailed calculation process of $F_{CH4, PJ, y}$ has been included in the ER calculation spreadsheet and confirmed by the verification team to be correct. The value of $F_{CH4, PJ, y}$ during this monitoring period are as follows:

Parameter	Description	01/07/2022- 31/12/2022	01/01/2023- 30/06/2023	Total
$F_{CH4, PJ, y}$ (tCH ₄)	Amount of methane in the LFG which is flared and/or used in the project activity	3,802.30	2,843.13	6,645.43

$F_{CH_4,EL,y}$ (tCH ₄)	Amount of methane in the LFG which is used for electricity generation	3,802.30	2,843.13	6,645.43
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Baseline emissions associated with electricity generation ($BE_{EC,y}$)

As per registered VCS PD, this parameter is calculated as:

$$BE_{EC,y} = \sum_k EC_{BL,k,y} \times EF_{EL,k,y} \times (1 + TDL_{k,y})$$

The detailed calculation process of $BE_{EC,y}$ has been included in the ER calculation spreadsheet and confirmed by the verification team to be correct. The parameters determining $BE_{EC,y}$ during this monitoring period are as follows:

Parameter	Description	01/07/2022-31/12/2022	01/01/2023-30/06/2023	Total
$EC_{BL,k,y}$ (MWh)	Quantity of electricity that would be consumed by the baseline electricity consumption source k. In this project, the equivalent electricity is from CCPG.	14,984.831	11,202.115	26,186.946
$EF_{EL,k,y}$ (tCO ₂ /MWh)	Emission factor for electricity generation for source k (tCO ₂ /MWh). In this project, it is EF of CCPG. $EF_{EL,k,y} = EF_{grid,CM,y}$	0.58955	0.58955	0.58955
$TDL_{k,y}$	Average technical transmission and distribution losses for providing electricity to source k	3%	3%	3%
$BE_{EC,y}$ (tCO ₂)	Baseline emissions associated with electricity generation	9,095	6,799	15,894

Hence, the corresponding baseline emission reductions are calculated as:

Parameter	Description	01/07/2022-31/12/2022	01/01/2023-30/06/2023	Total
BE _y (tCO _{2e})	Baseline emissions	83,616	62,521	146,137
BE _{EC,y} (tCO _{2e})	Baseline emissions associated with electricity generation	9,095	6,799	15,894
BE _{CH₄,y} (tCO _{2e})	Baseline emissions of methane from the SWDS	74,521	55,722	130,243

Project emissions

As per the registered VCS PD, Project emissions are calculated as follows: $PE_y = PE_{EC,y}$

In which

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

The detailed calculation process of PE_{EC,y} has been included in the ER calculation spreadsheet and confirmed by the verification team to be correct. The parameters determining PE_{EC,y} during this monitoring period are as follows:

Parameter	Description	01/07/2022-31/12/2022	01/01/2023-30/06/2023	Total
EC _{PJ,j,y} (MWh)	Quantity of electricity consumed by the project electricity consumption source j	0.09	0.24	0.33
EF _{EL,j,y} (tCO ₂ /MWh)	Emission factor for electricity generation for source j	0.58955	0.58955	0.58955
TDL _{j,y}	Average technical transmission and distribution losses for providing electricity to source j	20%	20%	20%
PE _{EC,y} (tCO ₂)	Emissions from consumption of electricity due to the project activity	1	1	2

Hence, the corresponding project emissions are calculated as:

Parameter	Description	01/07/2022-31/12/2022	01/01/2023-30/06/2023	Total
PE _y (tCO ₂)	Project emissions	1	1	2
PE _{EC,y} (tCO ₂)	Emissions from consumption of electricity due to the project activity	1	1	2

Leakages

Leakage does not need to be accounted for this project as per the VCS PD.

Emission reductions

The emission reductions for this monitoring period was calculated as:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01/07/2022-31/12/2022	83,616	1	0	83,615
01/01/2023-30/06/2023	62,521	1	0	62,520
Total	146,137	2	0	146,135

Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in validated VCS PD

The emission reductions claimed are 146,135 tCO₂e in this monitoring period. Based on the registered VCS PD, the amount of estimated emission reductions for this monitoring period would be $157,647/365 \times 184 + 117,931/365 \times 181 = 137,951 \text{ tCO}_2\text{e}$. Compared with yearly expected emission reductions 146,135 tCO₂e in the VCS PD, the reported emission reductions in this monitoring period are 5.93% more than that estimated in the registered VCS PD. For LFG power project, with many external factors affecting the amount and quality of LFG generated, including climate, quantity of domestic waste landfill, waste composition, gas collection efficiency and technology etc., it is reasonable that the amount of LFG generated differs with the estimated value based on hypothetical model given by the tool given by CDM EB, and the actual LFG methane fraction is different with the estimated value used in the hypothetical model. According to the ex ante calculation, emission reductions mainly come from CH₄

destruction comparing to the baseline scenario, and electricity generation depends on the amount of CH₄ consumption as well. Comparing to the estimated emission reductions, the mainly reasons of the difference are for that: (1) by checking the VCS PD (version 04 dated 21/10/2021)/9/ and the monthly report/12/, the assessment team confirmed the actual LFG methane fraction as monitored is 51.59% (average value), however the estimated value is 50%, (2) by checking the VCS PD (version 04 dated 21/10/2021)/9/ and the monthly report/12/, the assessment team confirmed the LFG in ex ante calculation is 17,379,006.00 Nm³ and actual LFG is 17,971,342.96 Nm³, with the improvement of gas collection efficiency and technology, actual LFG captured is 3.41% more than the estimated, (3) by checking the VCS PD (version 04 dated 21/10/2021)/9/ and the monthly report/12/, the assessment team confirmed the actual generators operation hour is more than ex ante calculation resulting in that the electricity generated by using the LFG is accordingly 0.19% higher than the estimated value. Therefore, the increase 5.93% is reasonable and acceptable for LFG power project.

The verification team considered 5.93% higher than the estimation reflects to the operation practice of the project, and did not impact the project's baseline determination and additionality assessment.

Therefore, CTI is able to confirm that the emission reductions reported in this monitoring period are reasonable and appropriate. CTI verified the input data for calculating emission reductions and the calculating process, and confirmed the result were complete and transparent.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

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

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

4.6 Non-Permanence Risk Analysis

Not applicable as a renewable project.

5 VERIFICATION OPINION

Shenzhen CTI International Certification Co., Ltd (CTI) has performed the verification of the emission reductions that have been reported for the project activity "Shizaiqian MSW landfill

site LFG recovery to power project” in China (VCS Project ID: 2352) for the period 01/07/2022 to 30/06/2023.

In the course of the verification, 1 Corrective Action Requests (CARs), 3 Clarification Requests (CLs) were raised and closed successfully. No Forwarded Action Request (FAR) was identified.

The verification is based on the baseline and monitoring methodology ACM0001 (Version 19.0), VCS PD (version 04.0 dated 21/10/2021) and the monitoring report (version 02 dated 30/11/2023). The verification consisted of the following three phases:

- i) desk review of the project design and the baseline and monitoring plan;
- ii) follow-up interviews with project stakeholders;
- iii) resolution of outstanding issues and the issuance of the final verification and certification report.

The project proponents are responsible for the collection, calculation and determination of the GHG data in accordance with the monitoring plan and the reporting of GHG emission reductions on the basis set out within the project monitoring report.

Our verification approach was based on the requirements as defined under the applicable VCS Standard Version 4.5 and relevant UNFCCC requirements. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is implemented and operated as per the VCS PD;
- the monitoring plan in VCS PD is as per the applied methodology;
- the monitoring complies with the monitoring plan in the VCS PD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard Version 4.5 and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

It is CTI's responsibility to provide an independent verification statement on the reported GHG emission reductions for the project. Based on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these, CTI planned and performed our work to obtain the information and explanations that we considered necessary to provide reasonable assurance that reported GHG emission reductions are fairly stated.

CTI does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to

an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to CTI and the engagement conditions detailed in this report. CTI cannot be held liable by any party for decisions made or not made based on this report.

In CTI's opinion the GHG emissions reductions of the "Shizaiqian MSW landfill site LFG recovery to power project" for the period 01/07/2022 to 30/06/2023 are fairly stated in the monitoring report (version 02 dated 30/11/2023). The GHG emission reductions were calculated correctly on the basis of the approved methodology ACM0001 (Version 19.0) and the monitoring plan contained in the VCS PD (version 04.0 dated 21/10/2021).

CTI can confirm that the GHG emission reductions are calculated without material misstatements. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CTI confirms the following statement:

Verification period: From 01/07/2022 to 30/06/2023

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01/07/2022-31/12/2022	83,616	1	0	83,615
01/01/2023-30/06/2023	62,521	1	0	62,520
Total	146,137	2	0	146,135



Shunrong Lin

Ms. Wu Yanan

Team Leader

06/05/2024

Ms. Lin Shunrong

Technical Reviewer

06/05/2024

APPENDIX A: ABBREVIATIONS

CAR	Corrective Action Request
CL	Clarification request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CTI	Shenzhen CTI International Certification Co., Ltd
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
MR	Monitoring Report
MRRs	Meter Reading Records
CCPG	Central China Power Grid
PD	Project Description
PP	Project Proponent
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit

APPENDIX B: REFERENCES

Documentation used to verify the information provided by the project proponents

- /1/ Quanzhou BCCY New Energy CO., Ltd.: VER/VCU Monitoring Report for Shizaiqian MSW landfill site LFG recovery to power project, version 1.0 dated 30/10/2023 and version 2.0 dated 08/12/2023.
- /2/ Quanzhou BCCY New Energy CO., Ltd.: Emission reduction calculation spreadsheet for Shizaiqian MSW landfill site LFG recovery to power project.
- /3/ Quanzhou BCCY New Energy CO., Ltd. and State Grid Fujian Electric Power Co., Ltd.: Power Purchase Agreement for Shizaiqian MSW landfill site LFG recovery to power project.
- /4/ Quanzhou BCCY New Energy CO., Ltd. : VER monitoring manual and management procedure.
- /5/ Quanzhou BCCY New Energy CO., Ltd. : Records of training for on-site staff.
- /6/ Quanzhou BCCY New Energy CO., Ltd.: Operation and Maintenance Record, from 01/07/2022 to 30/06/2023.
- /7/ Quanzhou BCCY New Energy CO., Ltd.: Project cycle report-downtime details, from 01/07/2022 to 30/06/2023.
- /8/ State Grid Fujian Electric Power Company Quanzhou Power Supply Branch: Power on and off the grid notification of amount of electricity generated using LFG by the project activity in year y measured by electricity meter, from 01/07/2022 to 30/06/2023.
- /9/ Registered VCS PD, version 04.0 dated 21/10/2021.
- /10/ LGAI Technological Center, S.A. (Applus+ Certification): VCS Validation Report, version 01.1 dated 21/10/2021
- /11/ Quanzhou BCCY New Energy CO., Ltd.: Daily Report of Shizaiqian, from 01/07/2022 to 30/06/2023.
- /12/ Quanzhou BCCY New Energy CO., Ltd.: Monthly Report of Shizaiqian, from 01/07/2022 to 30/06/2023.
- /13/ Quanzhou BCCY New Energy CO., Ltd.: Calibration certificates for electricity meter.
- /14/ Fujian Market Supervision Administration: Fujian State Grid Quanzhou power supply company, issued on 01/11/2017 valid till 31/10/2027.
- /15/ State Economic and Trade Commission: Technical administrative code of electric energy metering (DL/T 448-2016).
- /16/ 2019 Baseline Emission Factors for Regional Power Grids in China dated 29/12/2020 published by China DNA.
- /17/ Quanzhou BCCY New Energy CO., Ltd.: Nameplate and Photos of electricity meter, gas analyzer, flow meter and generators.

- /18/ "Total National Carbon Emission Trading Allowances for the Years 2021 and 2022 Implementation Program for Setting and Allocation (Power Generation Sector)" issued by Ministry of Ecology and Environment of P. R. China.
5b2f4703b3734d2295a07ef938a4b2c1.pdf (www.gov.cn)
- /19/ "Public Notice on the List of Key Emission Units in Fujian Province to be Included in the Management of Quotas in the National Carbon Emission Trading Market in 2022" issued by Fujian Provincial Department of Ecology and Environment
https://sthjt.fujian.gov.cn/zwgk/ywxx/dqhjgl/202209/t20220928_6007789.htm
- /20/ Quanzhou BCCY New Energy CO., Ltd.: Calibration certificates for gas analyzer covering this monitoring period.
- /21/ Guangdong Market Supervision Administration: Metrological Authorization Certification of Shenzhen Academy of Metrology & Quality Inspection National Hi-tech Metrology Station, issued on 30/07/2019 valid till 29/07/2024.
- /22/ Jiangsu Provincial Market Supervision Administration: Metrological Authorization Certification of Gas Flowmetre of the Quality and Technology Supervision Bureau of Jiangsu, issued on 21/01/2022 valid till 20/01/2025.
- /23/ Quanzhou BCCY New Energy CO., Ltd.: Calibration certificates for flow meters.
- /24/ China National Accreditation Commission for Conformity Assessment: Metrological Authorization Certification of Guangzhou Zhongce-Measuring Co.,Ltd., issued on 18/12/2017 valid till 17/12/2023.
- /25/ VERRA Website: Monitoring period of 1st monitoring period, version 02.0 dated 16/07/2021
- /26/ VERRA Website: Verification Report of 1st monitoring period, version 01.0 dated 17/07/2021
- /27/ Staff roster provided by the project owner
- /28/ Quanzhou BCCY New Energy CO., Ltd.: Statement for the operation cost.
- /29/ Quanzhou BCCY New Energy CO., Ltd.: Carbon reduction related training.
- /30/ Quanzhou BCCY New Energy CO., Ltd.: Minutes of Operational Stakeholder Meetings.
- /31/ Shandong Provincial Development and Reform Commission: On-grid tariff approval.
- /32/ Verified Carbon Standard: VCS Standard, version 4.5.
- /33/ Verified Carbon Standard: VCS Program Guide, version 4.3.
- /34/ Verified Carbon Standard: Registration and Issuance Process, version 4.3.
- /35/ UNFCCC EB: Approved methodology, ACM0001, Version 19.0.
- /36/ VERRA Website: Monitoring period of 2nd monitoring period, version 01.0 dated 07/07/2022
- /37/ VERRA Website: Verification Report of 2nd monitoring period, version 01.0 dated

- 01/11/2022
- /38/ CNPC JICHAI POWER EQUIPMENT COMPANY: Contracts for the purchase of equipment, dated 10/02/2018
 - /39/ Fujian Huanan Environmental Assessment and Testing Co., Ltd.: EIA report , 2018
 - /40/ Environment Protection Bureau of Quanzhou City :EIA approval, on 25/06/2018
 - /41/ Fujian Hewin Occupational Health Evaluation Co.:Environmental Inspection Reports, 2022-2023
 - /42/ Hazardous waste disposal contracts: Hazardous waste disposal contracts, 2021-2023
 - /43/ Henan Shengmao Joint Accounting Firm: Completion acceptance form, 06/12/2018
 - /44/ Sales receipts
 - /45/ Power Generation Project Cycle Report
 - /46/ SDG contribution report
 - /47/ Equipment Instruction Manual
 - /48/ Temperature statistics table of the gaseous stream
 - /49/ Tool 08 : Tool to determine the mass flow of a greenhouse gas in a gaseous stream, version 03.0
 - /50/ Instruction manuals for solenoid valve
 - /51/ Methane flow statistics during shutdown
 - /52/ Calculation table for methane destruction by month
 - /53/ Technical agreement for generator sets
 - /54/ AMS-III.G : Landfill methane recovery (version 10.0)
 - /55/ Feasibility study report (FSR), completed by Coal Industry Zhengzhou Design & Research Institute Co., 24/11/2017.
 - /56/ Design Manual

APPENDIX C: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS



CERTIFICATE OF APPOINTMENT

Ms. Yanan WU

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

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

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater

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

Approved by: *Shunrong Lin*

Shunrong LIN

Technical Competent Manager

Shenzhen, 31/10/2023



CERTIFICATE OF APPOINTMENT

Ms. Shunrong LIN

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

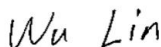
Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	✓	✓	✓	✓	✓	✓

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 3: Energy demand	TA 3.1: Energy demand
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation
SS 15: Agriculture	TA 15.1: Agriculture

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

Approved by:

Wu LIN



Technical Competent Manager

Shenzhen, 25/10/2022

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

Table 1: Corrective Action Requests

CL ID	01	Section no.	2.1	Date: 10-11-2023
Description of CL				
By checking MR(version 1.0 dated 30-10-2023), in Section 2.1, PP was asked to clarify whether the environmental impact mitigation measures specified in the EIA report were effectively implemented during the monitoring period.				
Project proponent response				Date: 30-11-2023
The environmental impact mitigation measures specified in the EIA report were effectively implemented during the monitoring period and the details about mitigation measures implementation have been supplemented in Section 2.1 of MR (version 02). Environmental testing reports are provided as evidence.				
Documentation provided by project proponent				
Revised (version 2.0 dated 08/12/2023), EIA report and Environmental testing reports				
VVB assessment				Date: 30-11-2023
By checking MR (version 02, dated 30-11-2023), the assessment team Confirm that the environmental impacts generated by the project as well as the control measures have been added and are complete and consistent with the EIA EIA report, and the monitoring report for 2022 has been reviewed to confirm that there are no environmental hazards associated with the project. CL1 was closed.				

CL ID	02	Section no.	2.2	Date: 10-11-2023
Description of CL				
By checking MR(version 1.0 dated 30-10-2023), in Section 2.2, PP should provide additional information on how it communicates with stakeholders on an ongoing basis during this monitoring period and provide supporting documents accordingly.				

Project proponent response	Date: 30-11-2023
The communicates with stakeholders on an ongoing basis during this monitoring period been supplemented in Section 2.2 of MR (version 02). The meeting attendance list, survey questionnaire and meeting minutes regarding to communicates with stakeholders on an ongoing basis are provided as evidence.	
Documentation provided by project proponent	
Revised MR (version 2.0 dated 08/12/2023), documents about the meeting attendance list, survey questionnaire and meeting minutes regarding to communicates with stakeholders on an ongoing basis.	
VWB assessment	Date: 30-11-2023
By checking MR (version 02, dated 30-11-2023), the assessment team Confirm that the communicates with stakeholders on an ongoing basis during this monitoring period been supplemented in Section 2.2 of MR (version 02). And the meeting attendance list, survey questionnaire and meeting minutes regarding to communicates with stakeholders on an ongoing basis are provided as evidence. CL2 was closed.	

CL ID	03	Section no.	4.2	Date: 10-11-2023
Description of CL				
By checking MR(version 1.0 dated 30-10-2023), in Section 4.2, PP should supplement the monitoring equipment, number, accuracy and other basic information of post-monitoring parameters during this monitoring period.				
Project proponent response				Date: 10-06-2023
The monitoring equipment, number, accuracy and other basic information of post-monitoring parameters during this monitoring period have been supplemented in Section 4.2 of MR (version 02).				
Documentation provided by project proponent				
Revised MR (version 2.0 dated 08/12/2023)				
VWB assessment				Date: 10-06-2023
By checking MR (version 02, dated 30-11-2023), the assessment team Confirm that the monitoring equipment, number, accuracy and other basic information of post-monitoring parameters during this monitoring period have been supplemented in Section 4.2, and reviewed for accuracy. CL3 was closed.				

Table 2: Clarification Requests

CAR ID	01	Section no.	1.11	Date: 07-06-2023
Description of CAR				
By checking MR(version 1.0 dated 30-10-2023), in Section 1.11, PP is requested to update the “Contributions Over Project Lifetime” column to only report the contributions that have been achieved by the project so far. Since this is the first SDG reporting period, the column must have the same claims as the “Current Project Contributions” column.				
Project proponent response				Date: 10-06-2023
“Contributions Over Project Lifetime” column has been updated in Section 1.11 of MR (version 02).				
Documentation provided by project proponent				
Revised MR (version 2.0 dated 08/12/2023)				
VVB assessment				Date: 10-06-2023
By checking MR (version 02, dated 30-11-2023), the assessment team Confirm that “Contributions Over Project Lifetime” column has been updated in Section 1.11, and data verified as correct. CAR 1 was closed.				

Table 3: Forward Action Requests

FAR ID	Forward Action Request	Response by Project Proponent	Verification Team Assessment
NA	NA	NA	NA