



VCS VERIFICATION REPORT

QINGDAO XIAOJIANXI PHASE II MSW LANDFILL SITE LFG RECOVERY TO POWER PROJECT



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Project title	Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project
Project ID	2353
Verification period	01-April-2023 to 31-December-2023
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Client	Henan BCCY Environmental Energy Co., Ltd
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Summary:	

- **A description of the verification of the project**

CTI Certification Co., Ltd. (CTI Certification) has performed the verification of the emission reductions reported for the project activity “Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project” (VCS Project ID: 2353) for the monitoring period 01-April-2023 to 31-December-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 (VCU) under the Verified Carbon Standard (VCS) version 4.7.

The project activity is a landfill gas recovery and power generation project located in Hongdao Economic zone, Qingdao City, Shandong 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 5.95 MW, consisting of 7 sets of 0.85 MW generators. The project uses LFG from the Qingdao Xiaojianxi MSW landfill site for power generation. During the 10 years fixed crediting period, the annual power generated by the project is expected to be 145,625 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 North China Power Grid (NCPG). 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 73,156 tCO₂e during the crediting period.

The project started construction on 08-January-2019 and commissioned on 13-April-2019. the reporting period is the 3rd monitoring period from 01-April-2023 to 31-December-2023. For this monitoring period, the total net electricity of 16,228,629MWh was supplied to NCPG and the total GHG emission reduction was 95,812 tCO₂e

The approved CDM methodology ACM0001 " Flaring or use of landfill gas" (version 19.0) is applied to quantify the GHG removals achieved in this project. The calculation of the GHG emission reductions is

carried out in a transparent and conservative manner. This project is being certified the emission reductions generated from 01-April-2023 to 31-December-2023.

- **The purpose and scope of verification**

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

- **The monitoring period**

The monitoring period is from 01-April-2023 to 31-December-2023.

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

Verification is conducted using CTI Certification Co., Ltd. (CTI Certification) procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques. The verification team assessed the project activity's compliance against the VCS Standard Version 4.7, the selected CDM methodology and the joint project description and monitoring report. The project is eligible under Project Scope 1(Energy (renewable-/non-renewable)) and 13Waste handling and disposal). The verification criteria followed the guidance documents provided by VCS included the following:

VCS Standard Version 4.7, VCS Program Guide Version 4.4 and the applied CDM methodology ACM0001 "Flaring or use of landfill gas" (Version 19.0).

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

In the course of the verification, 1 Corrective Action Requests (CARs), 1 Clarification Requests (CLs) were raised and successfully closed. No Forwarded Action Request (FAR) was raised. The assessment is included in the report.

- **Any uncertainties associated with the verification**

There are no restrictions of uncertainty for verification.

- **Summary of the verification conclusion**

Henan BCCY Environmental Energy Co., Ltd. has commissioned the CTI Certification Co., Ltd. to carry out the verification of the emission reductions for the monitoring period from 01-April-2023 to 31-December-2023 of the project, "Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project" (2353) with regard to the relevant requirements of VCS Standard Version 4.7. CTI confirms all verification activities including objectives, scope and criteria, level of assurance, project description, monitoring and monitoring report adhere to VCS Standard Version 4.7 and all associated updated as documented in this report, are complete.

CTI concludes that the project activity "Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project" in China, as described in the final version of Project-Monitoring-Report, meets all

relevant requirements for VCS verification activity and correctly applied the methodology ACM0001 Version 19.0. Hence CTI is able to certify that the GHG emission reductions from the project during the monitoring period from 01-April-2023 to 31-December-2023 were generated as 94,234tCO₂e, which can be claimed as VCUs.

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1 INTRODUCTION

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 “Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project” from 01-April-2023 to 31-December-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) /36/
- VCS Standard (version 4.7 /35/ and other relevant requirements defined by Verra
- The approved methodology ACM0001 (Version 19.0) /38/ 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 4.7)/35/.

1.4 Summary Description of the Project

Project title	Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project
Project Participants	Qingdao Baichang Environmental Technology 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	Xiaojianxi MSW landfill site, Hongdao Economic Zone, Qingdao City, Shandong Province, P.R. China. Geographic coordinates: longitude of 120 °09'26.06"E and latitude of 36° 16'53.04"N
VCS Project ID	2353
Applied methodology	ACM0001, Version 19.0
Scope/Technical Area	Scope 1: energy industries (renewable-/non-renewable sources) and Scope 13: Waste handling and disposal
VCS project crediting period	13-April-2019 to 12-April-2029 (the 10-year fixed VCS crediting period)
VCU verification period	01-April-2023 to 31-December-2023

The project activity is a landfill gas recovery and power generation project located in Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China, of which the main purpose is to use landfill gas for electricity generation. The construction date was on 08-January-2019, operation start date was on 13-April-2019, and this monitoring period was from 01-April-2023 to 31-December-2023. The total installed capacity of the project activity is 5.95 MW, consisting of 7 sets of 0.85 MW generators. The project uses LFG from the Qingdao Xiaojianxi MSW landfill site for power generation. During the 10 years fixed crediting period, the annual power generated by the project is expected to be 145,625 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 North China Power Grid (NCPG). 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 73,156 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 2.2 dated 06/04/2021)/9/, the applied methodology, and the VCS Standard (version 4.7)/35/ 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	Shao Ting	1.2, 13.1	☒ DR ☒ SV ☒ RP ☐ TR
Team Member	Sun Huajiang	1.2, 13.1, 13.2	☒ DR ☒ SV ☒ RP ☐ TR
Team Member	Deng Bingyao	/	☒ 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, VCS PD (version 2.2 dated 06/04/2021)/9/ and emission reduction calculation spreadsheet, the following documents also were assessed as a part of the verification audit:

- VCS Validation Report, version 01.2 dated 06/04/2021 /10/;
- VCS Project Description, version 2.2 dated 06/04/2021 /9/;
- Monitoring report of 1st monitoring period, version 2.0 dated 14/10/2021 /26/;
- Verification Report of 1st monitoring period, version 01.0 dated 15/10/2021 /27/;
- Monitoring period of 2nd monitoring period, version 3.0 dated 18/08/2023 /28/;
- Verification Report of 2nd monitoring period, version 02.0 dated 22/08/2023 /29/
- Baseline and monitoring methodology ACM0001 applied by the project /38/;
- Relevant decisions, clarifications and guidance from the Verra /35/-/38/; 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

From 08-July-2024~09-July-2024, CTI visited Qingdao Baichang Environmental Technology 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	Organization	Subject
Mr. Song Depo	Plant Manager	Qingdao Baichang Environmental Technology Co., Ltd.	Operation of the project activity;
Mr. Liu Tongshan	Staff		Implementation of the monitoring plan of the project activity;
			Data collection and data achievement;
			Calibration of monitoring;
			No net harm assessment;
			SDGs contribution
Mr. Liu Junfeng	Village Chief	Xiaojianxi Village committee	The impact of the project activity;

Ms. Ren Huihui	Villager	Xiaojianxi Village	Comments from local stakeholders; SDGs contribution
Mr. Li Zhigao	Villager	Xiaojianxi Village	
Mr. Li Yang	Staff	Local government	The impact of the project activity; Comments from local stakeholders; SDGs contribution
Mr. Zhang Yangze	Staff	Henan BCCY Environmental Energy Co., Ltd.	Data collection and ER calculation
Ms. Peng Jinzhu	Staff	Henan BCCY Environmental Energy Co., Ltd.	

2.4 Site Visits

The verification team performed the on-site inspection (Xiaojianxi MSW landfill site, Hongdao Economic Zone, Qingdao City, Shandong Province, P.R. China) from 08-July-2024~09-July-2024. The interviewed personnel and objective are listed in above table. During the site inspection, the project was inspected and documents evidence were checked, details as following table:

No.	Activity performed on-site	Site location	Date	Team Member
1.	Opening meeting Interview with PP Representative, local officers, local residents and Operation Staff	Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China.	08-July-2024	Shao Ting
2	On-site inspection Project site, farms, interview with Operation Staffs of Waste collection sites and Person in charge of the recycling and processing facility(ies); An assessment was conducted for the following items: -Operation of the project activity; -Implementation of the monitor plan of the project activity; -Training provided; -Data collection, QA/QC and data achievement; -Calibration of meters and equipment maintenance; -The impact of the project activity; -The complaint by local stakeholders; -The stakeholder consultation during the operation of the project activity; - Respects for human rights and equity; - ecosystem health; -SDG contribution of the project activity;	Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China.	08-July-2024~09-July-2024	Shao Ting
3	Documents check	Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China.	08-July-2024~09-July-2024	Shao Ting

4	Finding Summary	Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China.	08-July-2024~09-July-2024	Shao Ting
5	Close Meeting	Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China.	09-July-2024	Shao Ting

During the on-site verification, 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/9/;
- An assessment of the status and management of the landfill site is as per the VCS PD/9/;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- 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/9/;
- 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/9/ and the selected methodology;
- An assessment of the appropriateness of SD indicators and sustainable development contributions claimed by the project activity during this reporting period;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- 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 the detailed project documentation, production records, interviews with personnel from the project developer Qingdao Baichang Environmental Technology Co., Ltd., observation measurements, observation of established monitoring and reporting practice, 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)/38/, 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/. 1 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 5.

The final MR (version 03 dated 29-September-2024) 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	1	0	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	1	0
- Monitoring plan	0	0	0
- Stakeholders consultation process	0	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	1	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 validation /10/, 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 06/04/2021 /9//10/. The monitoring report of 1st monitoring period(13/04/2019–30/6/2021) was verified by LGAI Technological Center, S.A. (Applus + Certification) on 15/10/2021 /25//26/. The monitoring report of 2nd monitoring period (01/07/2021–31/03/2023) was verified by CTI Certification Co., Ltd. on 22/08/2023 /27//28/.

The proposed monitoring period from 01-April-2023 to 31-December-2023 is the 3rd VCS verification, and CTI just undertook verification activities for the project according to the VCS Program Guide under Scope 1 and 13. CTI only conducted verification (with monitoring period from 01-April-2023 to 31-December-2023, less than 6 years) of the project activity. Therefore, it is confirmed that 4.1.27 of VCS Standard version 4.7 have been met.

3 VALIDATION FINDINGS

3.1 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: “Flaring or use of land fill gas, Version 19.0 /38/. There was not any methodology deviation applied to this project.

3.2 Project Description Deviations

By checking the registered VCS PD and previous MR, and site visit interviewing with project proponent, it is confirmed that there was 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 2.2 dated 06/04/2021) /9/.

3.3 New Project Activity Instances in Grouped Projects

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

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes

☒ No

The project has not undergone baseline reassessment during this monitoring period.

4 VERIFICATION FINDINGS

4.1 Project Details

By checking the VSC PD/9/, the MRs/26//28/, verification reports/27//29/ of 1st, 2nd monitoring period, equipment list/41/, Operation and Maintenance Record/6/, Daily and Monthly Report/11//12/, communicating with on-site staff, visiting and taking pictures of Nameplate of electricity meter, gas analyzer, flow meter and generators, it can be concluded the project started to construct on January 2019 and started operation on 13/04/2019. The designed total installed capacity is 5.95MW (7*850kW). The engine 1# 2# 3# 4# and 5# (745kW) were put into operation on 13-April-2019. The remain engine 6# and 7#(745kW) were put into operation on 01-July-2021 Via on-site inspection and viewing Operation and Maintenance Record/6/, Daily and Monthly Report/11//12/, CTI confirms that the project run well during the third monitoring period without leakage situation. Besides, the overhaul of the 7 units will not be carried out at the same time, with some units being overhauled and the rest of the units in normal operation to combust and destroy all LFG recovered.

By checking the equipment list/41/and on-site inspection, CTI can confirm the project is main consisted by 3 systems, LFG collection system, LFG treatment system and Electricity generation and grid connection system. By interviewing the employees and reviewing the operation documents (Operation and Maintenance Record/6/, Daily and Monthly Report/11//12/), the technology of the project kept same with design in VCS PD, using the LFG collected from QINGDAO XIAOJIANXI PHASE II MSW site to generate electricity without flaring, and the details of generators can be seen in below:

Main Equipment	Parameter	Value
Generator	Type	850GF-NK
	Manufacturer	CNPC Jichai Power Company Limited

	Rated Capacity	850 kW
	Rated rotation speed	1000 r/min
	Capacity factor	0.8 (lagging)

Reviewing the records of operation, including: Operation and Maintenance Record/6/ Daily and Monthly reports/11//12/, it can be defined the description in MR/1/ is correct for this monitoring period, with the operating time of generators 1#, 2#,3#,4#, 5#, 6#, 7# being 6104h, 6047h, 6005h, 6079h, 6186h, 6163h and 6140h, individually. It can show that the situation of LPG can meet the demand of generators without stop operation in long-time from the monitoring parameters of flow and concrete of methane/11//12/.

Via on-site inspection and checking the training record/57/, Monitoring manual and management procedure/4/, CTI can conclude the LFG flow can be adjusted based on LFG demand of the project. When the gas generators stop caused by maintained, emergency situation, the whole system will automagical control to avoid accident. Besides, the design of the project has considered the shutdown situation, which establish sufficient space to storage the LFG in length pipe between the landfill and the pre-treatment facility. The relative equipment changes the frequency to extract less LFG from the MSW site to ensure the safety of the project during the shutdown period. At the same-time, the professional employees will handle the emergency situation as soon as possible. Hence, the project will not emit the LFG into the atmosphere in the project design and there was no leakage happened in the monitoring period according to the Operation and Maintenance Record/6/ and the interviewing with stakeholders on-site.

Item	Evidence gathering activities, evidence checked, and assessment conclusion:
Audit history	This project activity was validated by LGAI Technological Center, S.A. (Applus + Certification) on 06/04/2021 /9//10/. The monitoring report of 1st monitoring period (13/04/2019–30/6/2021) was verified by LGAI Technological Center, S.A. (Applus + Certification) on 15/10/2021 /25//26/. The monitoring report of 2nd monitoring period (01/07/2021–31/03/2023) was verified by CTI Certification Co., Ltd. on 22/08/2023 /27//28/. CTI undertook the on-site assessment on 08-July-2024 - 09-July-2024, and completed the verification on 30-September-2024.
Double counting and participation under other GHG programs	CTI checked public information from the UNFCCC website/51/, REC Mechanism database of China/58/, Gold Standard Registry/49/, Chinese Certified Emission Reduction Mechanism (CCER)/59/ and interviewed with project owner during site visit to confirm that except VCS scheme/60/, the project has not been

	participated or been rejected under any other GHG programs since validation. CCER mechanism is currently suspended by Chinese government, while the project activity 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.
No double claiming with emissions trading programs or binding emission limits	China's national emissions trading scheme (ETS) is at early stage, only including fossil fuel-fired power plants recently. China's ETS wants to include companies meeting two requirements at the same time in future. The requirements are companies annual emit GHG greater than 26,000 tCO₂e, and companies are included in 8 high-carbon intensity industry, such as power generation, petrochemicals, chemicals, building materials, non-ferrous metals, papermaking, steel and aviation/18//19/. By reviewing the VCS PD/9/, MR/1/ and visiting on-site, and checking the public website/76/, CTI confirmed the project is neither included in the above eight sectors nor the annual GHG emissions of the project proponent surpass 26,000 tCO₂e, so national ETS cannot influence this project. No emission cap will be enforced on the project proponent, nor can it participate in carbon transactions in the national ETS. No emission cap will be enforced on the project proponent, nor can it participate in carbon transactions in the national ETS
No double claiming with other forms of environmental credit	By checking the declarations/61/ signed by project proponent, including "No Double Counting Statement" and "Not involved in other GHG scheme", CTI can confirm that the project proponent have signed a declaration of "No Double Counting Statement" and declaration of "Not involved in other GHG scheme" to promise that no double count emissions reductions will appear in this project. By interview with PP and relative staff, CTI can confirm that the project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates.

Supply chain (scope 3) emissions double claiming

The project purpose is collecting LFG to generate electricity, which can replace the electricity generated by fossil of North China Power Grid (NCPG). The emission reduction of LFG power generation projects is consisted of two aspects. One is reducing the consumption of fossil, and another is avoiding releasing LFG (mainly methane) into atmosphere at the landfill site. Both of them are not involved in Scope 3. Therefore, the assessment team confirmed that the Supply Chain (Scope 3) Emissions are not applicable for the project activity.

Sustainable development contributions

By checking interviewing with stakeholders during site visit and checking relative documents (including VCS PD/9/, Staff roster /30/, China's National Plan on Implementation of the 2030 Agenda for Sustainable Development, and 17 SDGs defined by UNDP), the verification team confirmed that the project activity is able to contribute sustainable development for China. The specific sustainable development goals that the project activity could achieve have been listed as follows:

- SDG13 "Climate Action":

The project can recover and destroy landfill gas to generate energy, while the LFG would be released directly into the atmosphere without the project. This project can reduce GHG emissions and air pollution in the surrounding area and decrease odour nuisance to minimize health risks of local residents. This project can minimize the potential for LFG migration to reduce the explosion risks by reasonable utilizing the LFG. Besides, total GHG emission reductions and removals of 731,560 tCO_{2e} will be achieved during the fixed 10 years crediting period according to the project's VCS PD/9/, while the emission reduction of this project has been verified during the 1st, 2nd and 3rd monitoring period (from 13-April-2019 to 31-December-2023), with 620,109 tCO_{2e}. During this monitoring period (01-April-2023 to 31-December-2023), the project can avoid anthropogenic emissions of greenhouse gases (GHG) of 95,812 tCO_{2e}. The contribution is consistent with 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".

- SDG7 "Renewable energy generated":

The project can provide clean and renewable electricity generated by landfill gas to displace the power from fossil-fuel power plants to reduce fossil fuel consumption in NCPG. Based on the previous monitoring periods from VERRA website, it delivered 97,717.5 MWh electricity generated using LFG to NCPG from 13 April-2019 to 31-March-2023/25//26//27//28/. During this monitoring, there was 16,230.459 MWh power delivered to national grid from 01-April-2023 to 31-December-2023. By checking the pervious MR, Verification Report/25//26//27//28/ and the MR of this monitoring/1/, this project delivered 113,947.959 MWh electricity to NCPG over project lifetime(13-April-2019 to 31-December-2023). The influence of clean energy can promote the sustainable developing of China, with one SDG of China being “increase the share of non-fossil fuels in primary energy consumption to about 20% by 2030.”

- SDG 8 “Decent works and Economic Growth”:

The project activity increases 15 long term employment opportunities for the management, operation and maintenance of the power plant. By checking the Staff Roster/30/, the number of employees during the monitoring period was confirmed to be 15. By checking previous MR, Verification Report/25//26//27//28/ and the MR of this monitoring/1/, this project created fixed 15 long term employment opportunities over the project lifetime. This activity conforms to SDG of China, with Vigorously enforce the Law on Promotion of Employment showing: Increase labour force participation rate through implementation of the classification policy”.

The verification team confirmed that there is no proposed or actual change to the VCS PD/9/ 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.

Additional information relevant to the project

No commercially sensitive information has been excluded from the public version of the project description.

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

Through interviews with the project developer, CTI confirms that there is no other relevant information that may have a bearing on the eligibility of the project, the reductions or removals, or the quantification of the project's reductions or removals.

4.2 Safeguards and Stakeholder Engagement

4.2.1 Stakeholder Identification

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder identification	The stakeholders should be all the communities and parties which are relevant to the project activity or impacted by the project or have interest in the project. The MR illustrates that this project's stakeholders are local government, village committees, the employees of landfill site, landfill personnel, local residents, and project company personnel. Local government: governmental bodies have the responsibility to regulate and oversee various aspects of the project, including environmental regulations, and industrial development permits, licenses, and enforce compliance with relevant laws and regulations. Village committees: they live in close proximity to the landfill, so they may be directly impacted such as noise, smoke, and potential environmental concerns. The employees of landfill site, landfill personnel, local residents: they live in close proximity to the landfill and they may be directly impacted by its operations, including factors such as noise, smoke, and potential environmental concerns. Besides, the project can provide jobs for local residents.

	Project company personnel: project company personnel participate directly in the development and operation of projects. Meanwhile, the salary has directly linear relationship with the operation of the project. Therefore, it is verified that each stakeholder is correctly identified, relevant analysis and evaluation, and the relevance of the stakeholder to the Project activities in the MR is sufficient.
Legal or customary tenure/access rights	By on-site inspection and checking relative documents (MR/1/, VCS PD/9/, EIA and EIA approval/43/, QD-Land lease agreements/46/, land use certificate/47/, Co-operation Agreements - Supplementary Agreements/48/), CTI confirmed that the Project is located at Xiaojianxi Phase II MSW landfill site of Hongdao Economic zone, Qingdao City Qingdao City, Shandong Province, P.R. China. By checking the contracts between Qingdao Solid Waste Disposal Company Limited and Qingdao Baichang Environmental Technology Co., Ltd. (Project Owner, host country, P. R. China) signed on 4-April-2018, named QD-Land lease agreements/46/ and Co-operation Agreements - Supplementary Agreements/48/, CTI confirmed that Qingdao Baichang Environmental Technology Co., Ltd have leased the land of Xiaojianxi Phase II MSW landfill site from 4-April-2018 to 2-October-2029. According to the property right certificate provided, the land is solely owned by Qingdao Solid Waste Disposal Limited Liability Company and the foundation of the land was municipal solid waste site before. Hence there is no land issue involved in this project, such as the occupation of farmland, relocation compensation and other issues.
Stakeholder diversity and changes over time	By on-site interview and checking relative documents(MR/1/, VCS PD/9/, Co-operation Agreements - Supplementary Agreements, EIA and EIA approval, On-grid tariff approval and land use certificate provided by local governments/34//43//47//48/), CTI confirmed that the stakeholders of this project are local governments, village committees, local residents and employees of this project and the details of diversity of each stakeholder as follow: Local governments: Local governments focus on regulatory compliance, environmental protection, and economic development with the project. Interactions among government officials may include policy discussions, regulatory enforcement, coordination efforts to promote the development of

environment and economy for the project. It is crucial for project that collaboration between governments and other stakeholders to ensure compliance and sustainable development. Different governments may public and update different policies and regulations with various reasons, such as the progress of technology, the variation of economy.

The village committees:

The main work of the Village Committee is to resolve consultant and enquiries from villagers. The most effective method of village committees is assisting the processing documents, publicizing important information and decisions, organizing participation of villagers in stakeholder meeting, taking and storing meeting minutes. The member of village committee usually has a high level of education background and awareness. Over time, co-operation with the village committee to communicate with local village is a crucial factor to smooth operation of this project.

Employees:

The employees of Xiaojianxi Phase II MSW landfill site are local residents. Although they have similar backgrounds, they still have many differences in age, education level, previous work experience and income level. Over time, the makeup of this workforce may be influenced by many factors, such as workforce turnover, training opportunities, and changes in project requirements. Interactions among employees could refer to the collaboration on tasks, skill-sharing, and fostering a supportive work environment.

Local residents:

Residents living near Xiaojianxi Phase II MSW landfill site are diversity, with different ages, levels of education, incomes, social networks and interactions. As the Population survey data for Licang District, Qingdao/57/ shows: The resident population of the district is 737,281. Of these, 49.43% are male and 50.57% are female. Of the total population, 16.72% are aged 0-14, 66.30% are aged 15-59, 16.98% are aged 60-65, and 11.06% are aged 65 and above. Of the total population of the region, 36,356 were educated at the university level (college and above), 17,580 at the high school level (including junior college), 23,237 at the junior high school level, and 13,271 at the primary school's level. Of the city's population, 7,688,474, (76.34%) live in towns, while 2,383,248(23.66%) live in villages.

Expected changes in well-being	By checking VSC PD/9/, MR/1/, Minutes of Operational Stakeholder Meetings/33/ and interviewing with relative stakeholders, CTI can confirm that this project would bring well-being in two aspects: economy and environment. Economic well-being – the project activity can provide employments to the locality and stimulate economic vitality, so economic well beings are expected; Environmental well-being – (1) It can bring environmental well-being in the locality by reducing the methane emissions in atmosphere by recovering and utilizing LFG to generate electricity. (2) Electricity supplied by the project to the grid is estimated to be 16,230.495MWh during this monitoring period, which could replace the equivalent electricity from fossil fuel-based grid to reduce the consumption of fossil.
Location of stakeholders	According to the explanation above, the stakeholders are live nearby the project location, so CTI can confirm that the location of stakeholders is Hongdao Economic zone, Qingdao City, Shandong Province, P.R. China.
Location of resources	Combined with the VCS PD/9/, MR/1/ and Qindao 2023 National Economic and Social Development Statistics Bulletin/62/, the resources of stakeholders refer to food, tobacco, alcohol, clothing, housing, education, health care, transport, communication and services of third industry, which are not affected by the project. PP has the ownership of LFG for recovering and treatment as verified the contact QD-Land lease agreements /46/ signed with Qingdao Solid Waste Disposal Limited Liability Company, covering the period from 4-April-2018 to 2-October-2029. Besides, the land is solely owned by Qingdao Solid Waste Disposal Limited Liability Company according to the land use certificate/47/.

4.2.2 Stakeholder Consultation and Ongoing Communication

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Ongoing consultation	By checking Operational Follow-up Stakeholder Meeting/33/, interviewing with relative stakeholders and viewing grievance expression book, CTI confirmed that a stakeholder meeting was

conducted on 25-July-2023 in the monitoring period (01-April-2023–31-December-2023). The site of this meeting was the conference room of Qingdao Baichang Environmental Technology Co., Ltd. and the participants were consisted by landfill staff, the local government and local residents.

The content of the meeting is as follows:

1 Yao Hongliang, plant manager of Qingdao Baichang, introduced the basic information of this project and collected villagers' concerns such as environmental pollution, noise, etc. Besides, the plant manager introduced the operation in 2023, The operation status is stable during the monitoring period, without emergency, leakage of methane and exhaust gas, which can be justified by the operation records, including Operation and Maintenance Record/6/, Project cycle report downtime details/7/, daily report/11/ and monthly report/12/.

2. Director of the project expressed his perspective that this project can not only collect, purify and reuse the LFG to generate electricity to grid, but also minimize the impact of MSW site. Apart from that, it can create employment to local residents and contribute to local economy to promote the development of economy and environment

3. In this meeting, villagers still worried about the project may have negative impact on local in future, such as pollution and noise. The plant manager gave the following reply to the above question:

(1) The project has installed the vibration and noise reduction devices and constructed the green isolation zone around the plant to weaken the noise, with the environmental monitoring report (annual) showing the noise lower than relative laws. Besides, the relevant measures can be further strengthened in the future to optimize the reduction of noise.

(2) The foundations of this project are: emission reduction from MSW, electricity generation, improvement of security of MSW. In the other words, this project can reduce pollution rather than increase it. The activities were well received by the villagers in attendance.

All the people in this meeting expressed great satisfaction and had no other comments.

In conclusion, CTI confirmed that the project proponent took appropriate methods to communicate and consult with stakeholders

	during the monitoring period, and all stakeholders felt satisfied with this project.
Date(s) of stakeholder consultation	By checking Operational Follow-up Stakeholder Meeting/33/, interviewing with relative stakeholders, CTI confirmed that the stakeholder meeting was held on 25-July-2023 in this monitoring period.
Communication of monitored results	By checking Operational Follow-up Stakeholder Meeting/33/, interviewing with relative stakeholders and viewing grievance expression book, CTI confirmed that the one stakeholder consultation meeting was held during the monitoring period. In the meeting, the plant manager disclosed the information of the project, including basic operation situation, projects well-beings. Besides, PP answered the noise and pollution problem from stakeholders that problems they worried about has been resolved. Questions raised by stakeholders were answered on site.
Consultation records	During so-site period, verification team reviewed the Operational Follow-up Stakeholder Meeting/33/ and communicated with stakeholders to determined that one person is designated to record the meeting during stakeholder consultation meeting, The questions and suggestions raised by stakeholders at the meeting were recorded completely. On-site, verification team found a grievance expression book in the office of the project, which is used to collect stakeholders' views about the project. Every stakeholder can make comments by grievance expression book or contact information. Project Participant checked the comments in the book record responses regularly. Verification team found there were the bulletins to disclose relative information in time. Browsing the grievance expression book, CTI found no relevant complaints and recommendations were received during the project monitoring period.
Stakeholder input	During the consultation, all stakeholders were supportive of the project, there were no negative comments received for the project. There are no updates to the project design.

4.2.3 Free, Prior, and Informed Consent

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Consent	The Project is located in Xiaojianxi MSW landfill site, Hongdao Economic Zone, Qingdao City, Shandong Province, P.R. China. This location was a MSW site before the project construction, operated by Qingdao Solid Waste Disposal Co., Ltd., the owner of this land. PP signed the Co-operation Agreements - Supplementary Agreements/48/ and QD-Land lease agreements/46/ with Qingdao Solid Waste Disposal Co., Ltd on 1-October-2021, with the cooperation being PP can lease the land to construct and operate a project to generate electricity by collecting LFG from this site from 4-April-2018 to 2-October-2029. This cooperation did not infringe the right of other third parties. By checking the Procedures of public comments/63/, Monitoring manual and management procedure/4/, Records of training for on-site staff/5/, the verification team justified that the project has complete procedure to communicate with stakeholders. For example, they will inform and seek advice and agreement for stakeholders when the project proponent need to change the project (including design, any measures) caused by incident or emergency. Besides, the project proponent organized meetings with stakeholders regularly to seek advices and inform the operation situation of the project with any downtimes and emergencies, which can be justified by Minutes of Operational Stakeholder Meetings. combined with Daily Report of Xiaojianxi/11/, Monthly Report/12/, Operation and Maintenance Record/13/, CTI deduced that the operation of the project during this 3rd monitoring period is smooth without any long-downtimes, leakage accidents, change in project design. According to the VCS PD/9/, MR/1/, Procedures of public comments/63/, Monitoring manual and management procedure/4/, Minutes of Operational Stakeholder Meetings/33/, Questionnaire records/64/, Grievance book/53/, the project owner distributed questionnaires to local residents who may be impacted by the project to collect opinions. Most of them concerned about the project may influence local society, environment, economy, daily life etc. On 01/12/2018, the Invitation letter was posted in bulletin to invite stakeholders to participant in the meeting to express their opinions

	and/or suggestions about the implementation of the project and VCS application of the project. The stakeholder consultancy meeting for the parties interested in the project was organized at Xiaojianxi Landfill site on 15/12/2018 to collect opinions from all stakeholders, such as representatives of local residents, Xiaojianxi solid waste management station, and the project owner and so on. In this meeting, 15 stakeholders attended and the project owner took meeting minute. During the stakeholder consultancy meeting, some stakeholders worried that the project will bring noise, land occupying and pollution. For these concerns, the project owner offered solutions and made clarifications: installation of sound proof devices and plating of green isolation belts to mitigate noise. The location of the project is the same as MSW site, which means this project will not occupancy other area or land and this site will far from the residential area. Thus, the effect of the noise from the plant is little to local residents. Besides, the PP will be compliance strictly with the laws to construct and operate the project to avoid any negative influence, such as environment, noise, economy and so on. All attendances to the meeting were satisfied to the measures and replies. As a whole, the impacts of construction of the project are basically positive. All stakeholders were pleased with the development of the project. The VCS project would actually facilitate the development of the local economy and increase the income of local residents. According to the VCS PD/9/, MR/1/, Minutes of Operational Stakeholder Meetings/33/, Questionnaire records/64/, Grievance book/53/, CTI can confirm that there are not ongoing or unresolved conflicts.
Outcome of FPIC discussion	It is can be clearly seen from the cooperation contract that the PP established cooperation with Qingdao Solid Waste Disposal Co., Ltd., to lease land to develop power plants by LFG from 4-April-2018 to 2-October-2029. According to the file of questionnaire surveys and stakeholder consultation meetings/4//9/, local residents expressed support for the project. The impacts of construction of the project are basically positive. All stakeholders were pleased with the development of the project. The EIA and EIA approval/43/ show that this project would actually facilitate the development of the local economy and increase the income of local residents.

In conclusion, the project has not encroached on land, relocated without consent, forcibly evicted or economically evicted.

4.2.4 Grievance Redress Procedure

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Grievance received and steps taken to resolve the grievance including the outcomes of the resolution	No grievance was received during the monitoring period.
Grievance redress procedure	No grievance was received during the monitoring period.

On-site, verification team found the Grievance book/53/ in project owner office, and bulletins nearby the project. By checking the grievance book, CTI did not find any complaints and recommendations in the book during the monitoring period. By interviewing stakeholders and PP, CTI found that stakeholders felt the procedure was easily accessible to them for ongoing consultation. Besides, the project information with contact information was posted on the bulletins. With communicating with stakeholders, CTI found that the stakeholders knew how to reflect their thoughts by telephone or grievance book. Via on-site communicating with staff and checking Procedures of public comments/63/, Monitoring manual and management procedure/4/, CTI found the PP has established a complete procedure to solve suggestions from various stakeholders. Once the recipient acknowledges receive the comments, they will write statements to the manager of the PP within 5 working days. At the same time, the recipient will explain the procedure to the people and delivery the comments to corresponding staff. The specific staff will solve problems and make reports to conduct the case to people involved and the PP within 10 working days.

4.2.5 Public Comments

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

Via checking project's page on the Verra Registry, CTI confirmed this project has not received any complaints or comments during or outside the public comment period

4.2.6 Risks to Local Stakeholders and the Environment

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Risks to stakeholder participation	No risk identified; From VCS PD/9/, MR/1/, EIA and EIA approval/43/ Minutes of Operational Stakeholder Meetings/33/, Grievance book/53/ Procedures of public comments/63/, it can be deduced that the PP concerned the stakeholders and held stakeholder meetings in time to communicate with them, and the stakeholders involved in the project are very supportive of the project. The PP signed contract/46/ with Qingdao Solid Waste Disposal Co., Ltd., to lease land to develop power plants by LFG from 4-April-2018 to 2-October-2029. The EIA/43/ has been approved by Qingdao Environmental Protection Bureau high-tech branch on 12 December- 2018. Verification teams thought the investment, construction and operation of the project are in compliance with the relevant laws and regulations of the People's Republic of China, so the project has no risks on stakeholder participation.
Working conditions	No risk identified; According to the project's EIA/43/, approved by local governments on 12 December-2018, a small amount of waste gas, wastewater, noise and solid waste may be generated during the operation of the project, which will be treated by environmental protection facilities in this project, having any negative impact on human body. By on-site investigation and reviewing Safe Operation Manual/65/, Documents of ISO45001 Occupational Safety Management System Certification/66/, CTI confirmed that the project equipped with the fire extinguishing exhaust silencers, SCR tail gas off-take treatment system to mitigate noise and waste gas influence to staff and local environment. The result of the Environmental monitoring reports/39/ shows the measures are effective with the key parameters reaching the standards of GB16297-1996 and GB12348-2008. Besides, the PP established Occupational Safety Management System to guarantee the safety of working condition. The staff of the project accepted training (including safety monitoring and operation, emergency plan) and medical check-up regularly, which can be provided by Training record/50/, Staff manual/52/, Safe Operation Manual/65/, Medical report/67/.

	Through the documents mentioned before, it can be deduced there is no risk of working conditions for this project.
Safety of women and girls	No risk identified; China has published “Women’s Rights Protection Law” to provide support and protection to women and girls. The project owner has strictly complied with these laws and regulations. Workers including women will be employed during construction and operation period, which can be proved by the staff roster/30/ and VSC PD/9/. The project owner made staff manual/60/, being consistent with Women’s Rights Protection Law”/54/, which stipulates the employees need to be trained in gender sensitivity on 25-june-2023 to provide support and benefits to women, such as, awareness of gender discrimination and gender-based violence, and how to prevent and respond to these issues. During on-site period, verification team communicated with relative stakeholders, and the stakeholders including males and females reflected they had accepted relative trainings and they all know how to protect themselves. The information from staff roster/30/ shows the project did not employ underage girls, with the age of employees being larger than 18. During on-site period, verification team knew that one of recruitment requirements is the limitation of age, with the employees providing ID for PP to double check. Hence, the project has established effective monitoring and reporting mechanisms so that women can report any safety issues or acts of gender discrimination, ensuring that their voices are adequately addressed and protected. By checking the internal reflect record /68/ and on-site interview, the verification team did not find any report to any safety issues or acts of gender discrimination.
Safety of minority and marginalized groups, including children	No risk identified; China has published protection laws on the minors. Employment regulations are described in this Law. The Project requires skilled employees to operate, maintain, and manage the power plant. Therefore, the project does not employ and is not complicit in any form of child labour.

	According to the staff roster/30/, including name, position, gender, and age, there was no minors working in this project. It can be shown from staff manual/52/, this project provided equal job opportunities, without discrimination against marginalized groups. Besides, by interviewing with project managers, verification team found that the staffs of this project accepted staff training quarterly about non-discrimination against marginalized groups, which can be justified by train records. It to be noticed the staff manual/52/ and illustration of Microblogging program/69/ show the PP established WeChat microblogging program feedback mechanism to support employee to reflect problems, including Safety of minority and marginalized groups and children Therefore, the project does not pose a risk to marginalized groups, including children.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	No risk identified By checking the EIA and EIA approval/43/ summary and conclusion provided in the VCS PD/9/, 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) was completed in accordance with Chinese regulation as part of the feasibility study for the Project on 29/11/2018, which was approved by the Environmental Protection Bureau of High-tech District, Qingdao city on 12/12/2018/43/. Wastewater According to the EIA and EIA approval/43/, the wastewater in the project are softening wastewater and employees' living wastewater. Living wastewater will be treated in septic tank, then combined with softening wastewater to be delivered to landfill regulating pool. According to the environment monitoring reports/39/ the main pollutants in domestic sewage after septic tank treatment are: COD $\leq$ 450mg/L, BOD5 $\leq$ 250mg/L, SS $\leq$ 200mg/L, ammonia nitrogen $\leq$ 30mg/L, which can meet the B-level standard of "Sewage discharged into urban sewerage water quality standards (GB/T31962-2015). Waste Gas As the MR/1/ describes, before LFG into generators, it is pretreated by iron oxide to filtrate, dehydrate and removal H₂S and dust. The exhaust

gas produced by combustion is disposed by seven SCR systems, then be discharged through seven exhaust cylinders(15m-high) finally. According to the EIA and EIA approval/43/, equipment contracts/40/, equipment lists/41/ and via on-site visit, the treatment is consistent with the mitigation measures required by the EIA approval/43/ as described in section 2.3 of the PD /9/. Through the on-site visit, the verification team confirmed the same treatment used in the project. The project's environmental monitoring reports /39/ in 2023 conducted by a third-party testing company (Qingdao Zhongbo Huake Testing Technology Co.), have verified that the unorganized exhaust gas has met GB16297-1996)

Noise pollution

According to section 2.3 of the PD /9/, during the crediting period, as per the EIA and EIA approval/43/ equipment contracts/40/, equipment list/41/, the measures to mitigate noise including: The internal combustion generator set is arranged in the power plant; Install fire-fighting exhaust silencer; Production workshop set up sound insulation; The outdoor fan adopts the foundation shock absorber and the muffler is installed. It is confirmed by the verification team via on-site visit the mitigation measures are same as required by the EIA and EIA approval/43/. After the measures have been taken, the noise should meet the category II of “Displacement noise standard for industrial enterprise” (GB12348-2008). The project's environmental monitoring reports/39/ in 2023, conducted by a third party testing company (Qingdao Zhongbo Huake Testing Technology Co.), 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, household waste is collected and sent to Xiaojianxi MSW landfill site regularly, hazardous waste is recycled by the manufacturer, waste oil is settled in the hazardous waste temporary storage room and entrusted with hazardous waste disposal qualified units for disposal. Via on-site visit and by checking waste disposal contracts /44/, Hazardous waste disposal contracts ledgers/45/, the verification team confirmed the mitigation measures have been implemented as required by EIA and EIA approval/43/, and the same as those in section 2.3 of the PD /9/. During the on-site visit, project manager provided the Hazardous waste disposal contracts/44/ in 2023. Disposal is in accordance with the standards of the General Industrial Solid Waste

	Storage and Disposal Site Pollution Control Standards (GB18599-2001) and Hazardous Waste Storage Pollution Control Standards (GB 18597-2001). According to the project annual environmental monitoring reports/39/ issued by a third party with professional qualifications, the project has adopted various effective measures to control environmental impacts, and the monitoring data is in line with environmental protection requirements. Therefore, the project will have no negative impact on the environment.
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4.2.7 Respect for Human Rights and Equity

4.2.7.1 Labor and Work

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Discrimination and sexual harassment	As the MR description, the project proponent respect human rights in accordance with the International Bill of Human Rights and universal instruments relating to human rights in project design and implementation. China has published “Labor Law” and “Women’s Rights Protection Law”/54/, and established the website called Credit China to record the criminal records of all Chinese enterprises. By checking the website, verification team did not find any relevant records in Credit China with Qingdao Baichang Environmental Technology Co., Ltd. The project company signed legally binding labour contracts with all staff with legal effect to avoid discrimination and sexual harassment. Thus, the project has strictly complied with the relevant laws and regulations. Besides, by checking Illustration of Microblogging program/69/ and operating the program on-site, CTI found the PP established Microblogging program on Wechat for staff to reflect their suggestions and problems, which will be recorded in Internal reflect record /68/, and there was not have sexual harassment during the monitoring period. As can be seen from the project's staff roster/30/, there are female staff during the monitoring period, indicating that there is no gender discrimination. Via on-site investigation, CTI found the main jobs are front-line operation requiring great strength, which may less attraction for female, so the phenomenon of female was less than man is reasonable without discrimination, which can be proved by the Recruitment requirements/70/ without gender requirement.

	Therefore, there is no discrimination or sexual harassment of the project during the monitoring period, which can be justified by Illustration of Microblogging program/69/, Internal reflect record /68/, staff roster/30/, Recruitment requirements/70/.
Management experience	The project proponent has developed some VCS projects with extensive development and management experience, which can be found on the company's official website/56/. Local governments such as Bureau of Qingdao Hi-Tech Zone Administrative Committee, Ecology and Environment Bureau of Qingdao City are the supervision organization which is responsible for guiding and coordinating projects implementation. Local governments have rich experience in ecological environment and local community management over time. As for this project's documents, including EIA and EIA approval/43/, Co-operation Agreements - Supplementary Agreements/48/, and equipment contracts/40/.Enterprise investment project record certificate, Letter of opinion on access to the grid and so on, the public and approval of all of them needed the local governments' participant and coordination. Before the construction of the project, the project owner signed a contract with Qingdao Baichang Environmental Technology Co., Ltd.(Parent company) a professionally qualified construction unit. Therefore, the management team is experienced and very professional in terms of their professional competence and experience in implementing such projects and participating in the community. At the same time the project has developed a recruitment strategy to fill gaps in skills and experience.
Gender equity in labor and work	By on-site interviewing and checking staff roster/30/, CTI confirms that the Project has male and female employees of different genders and that there are female employees in management positions. Project participants strictly abide by labour laws and sign labour contracts with their employees. The legitimate rights and interests of employees are protected by Chinese laws. There is no significant gender difference between female employees and male employees in terms of salary, promotion opportunities and welfare benefits, and employees of different genders have equal opportunities to obtain training and development resources which can be provided by staff manual/52. In regular employee satisfaction surveys, all employees feel that the project is treated equally in terms of gender and pay.
Human trafficking,	The project will not use victims of human trafficking, forced labor, and child labour. Human trafficking is a serious crime that is strictly regulated and combated in the Chinese legal system. By checking the website of Credit

forced labor, and child labor	China/71/, verification team did not find any relevant records in Credit China with Qingdao Baichang Environmental Technology Co., Ltd. The PP makes employee satisfaction survey/72/ in time, with the result of this recorded in Internal reflect record /68/. CTI can deduce that the project proponent strictly abides the labour law, without forced labour by reviewing satisfaction survey/72/, Internal reflect record /68/, staff manual/52/ and on-site interviewing. China has published protection laws on the minors. Employment regulations are described in this Law. The Project requires skilled employees to operate, maintain, and manage the power plant. Therefore, the project does not employ and is not complicit in any form of child labour. According to the project's staff roster/30/, Recruitment requirements/70/, staff manual/52/ and via on-site visit, it was confirmed that the Project does not employ any child labour.
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4.2.7.2 Human Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Human rights	PP respects the right of local communities about FPIC (Free, prior, and informed consent). According to the VCS PD/9/, MR/1/, monitoring manual and management procedure/4/, Minutes of Operational Stakeholder Meetings/33/, Grievance books/53/ the on-going communication mechanism was established during the project monitoring period, allowing stakeholders to voice their complaints and suggestions at any time. PP listen to their views and aspirations. PP respect their traditional knowledge, culture and customs and fully consider their views and interests in the planning and implementation of projects. As the cooperation/46/ with Qingdao Solid Waste Disposal Co., Ltd. shows, PP has leased 5-8 acres of land from 4 April 2018 to 2 October 2029. The project owner needs to pay for the land lease at a negotiated compensation price. Besides, the land use certificate/47/ shows that the land of MSW landfill site is legal, without any violation of the rights and interests of others. The documents mentioned before show that the PP respect the rights of local communities to land and natural resources and ensure that projects do not infringe on their land tenure, resource access and traditional ways of livelihood. It is can be verified by staff manual/52/, training recordings/50/, staff rolls/30/, that the project owner strictly complies with the above laws and regulations. to respect and protect human rights. For example, PP actively

work with local communities to provide equal employment opportunities between men and women, and no child labor, no forced labor. PP provide training and employment opportunities for local communities to upgrade their skills and participate in project implementation. PP prioritize working with local communities to ensure they can directly benefit from the project and participate in the decision-making process.

The project owner has made Recruitment requirements/70/ following relative laws and standards, signed an employment contract/73/ with each employee and developed a staff manual/52/. All of them can show that the project proponent and its activities are strictly regulated by local and national regulations(such as Women's Rights Protection Law, issued on 3/4/1992 by The National People's Congress/54/, Labor Law/55/). The legal approval by authorities demonstrate that the project does not and will not violate the regulations. Besides, it is verified have established an on-going-communication mechanism with stakeholders to ensure the protection of IPs, LCs, etc. and customary rights holders by checking the Grievance redress procedure and the Grievance book/53/

4.2.7.3 Indigenous Peoples and Cultural Heritage

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Preservation and protection of cultural heritage	By on-site investigation and checking the EIA and EIA approval/43/, no indigenous peoples present in or within the area of influence of the Project. By on-site investigation and checking the EIA and EIA approval/43/, the Project area does not include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture.

4.2.7.4 Property Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Disputes over rights to territories and resources	The project owner has entered into a land lease agreement with the holder of the land use right (Qingdao Solid Waste Disposal Co., Ltd.). According to the terms of the agreement, the project owner is leasing 5-8 acres of land, and the lease is valid for the period from 4 April 2018 to 2 October 2029. The project owner will pay for the land lease at a negotiated compensation price. The above information can be provided by the Co-operation Agreements - Supplementary Agreements/48/, land use certificate/47/, and QD-Land lease agreements/46/.

	Thus, the project does not involve land occupation or requisition, do not involve occupation or requisition of property rights, do not involve encroach on private, stakeholder, or government property or relocate people off their lands, and forced physical or economic displacement.
Respect for property rights	By checking the VSC PD, MR, meetings minutes/33/, CTI confirmed that PP respect the rights of local communities to land, natural resources and other property, ensure that projects do not infringe on their land tenure, resource access and traditional ways of livelihood. At the same time the project will not result in forced physical or economic displacement.

4.2.7.5 Benefit Sharing

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Summary of the benefit sharing plan	NA
Benefit sharing during the monitoring period	NA

4.2.8 Ecosystem Health

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Impacts on biodiversity and ecosystems	According to the EIA and EIA approval/43/ report of the project, it can be concluded that the project exhaust gas is mainly the combustion exhaust gas of the landfill gas of the generator set, and the main pollutants are soot, NO _x and SO ₂ . 7 sets of generators of the project run in the medium term with all the units open. It was confirmed via on-site visit and by checking environment monitoring reports/39/, equipment contracts/40/, equipment list/41/, the exhaust gas from generators is discharged by 7 sets of SCR system denigration treatment and then discharged through 7 15m-high exhaust tubes. The project's generator sets are internal combustion units. When the units are running, the emission concentrations of soot, SO ₂ and NO _x can meet the requirements of the standard limits for key control areas in Table 2 of the "Comprehensive Emission Standards for Regional Air Pollutants in Shandong Province"

	(DB37/2376-2013) ($\text{SO}_2$50mg/m³, NO_x100mg/m³, soot10mg/m³), leading a relatively small impact on the surrounding. It is ascertained by the Environmental test report/39/ from Qingdao Zhongbo Huake Testing Technology Co., with the parameters being lower than the limiting value. Therefore, CTI can confirm the impact of the project on biodiversity and ecosystem is negligible
Soil degradation and soil erosion	The project utilizes the LFG from Xiaojianxi MSW landfill site to generate electricity by gas engines, which means the project activity cannot lead to the soil degradation and soil erosion. Besides, it is can been clearly seen from the Co-operation Agreements - Supplementary Agreements/48/, land use certificate/47/, and QD-Land lease agreements/46/ that the nature of the location of this project did not change. Therefore, there will be no impact on soil degradation and erosion.
Water consumption and stress	According to the EIA and EIA approval/43/, the domestic wastewater of the project is 85% of the water consumption, and the domestic wastewater discharge is 595.7m/a (1.63m/d). The main pollutants in domestic sewage after septic tank treatment can meet the Standard for the Quality of Sewage Discharged into Urban Sewerage (GB/T31962-2015) standard. As verified during the on-site visit, the softening wastewater generated by the project is small, and domestic sewage (domestic sewage is first treated by septic tank) together with the xiaoJianxi sanitary landfill regulating pool of domestic waste, and into the rubbish leachate disposed of together. Therefore, the project will not cause pollution and pressure on the water environment.
Usage of fertilizers	The project is LFG recovery and utilization project. Therefore, the Project does not involve the application of fertilizers.

4.2.8.1 Rare, Threatened, and Endangered species

By checking the VCS PD, MR, EIA and EIA approved, verification team can deduce the project isn't located in, or adjacent to habitats for rare, threatened, or endangered species. Therefore, the following table isn't applicable.

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Species or habitat	. Not applicable

4.2.8.2 Introduction of Species

No planting or species introduction are in the project.

Species introduced	Evidence gathering activities, evidence checked, and assessment conclusion
NA	NA

According to EIA, no invasive species exist in the project area. Therefore, the following table isn't applicable.

Existing invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
NA	NA

4.2.8.3 Ecosystem conversion

Not applicable. The project isn't ARR, ALM, WRC or ACoGS project.

Item	Evidence gathering activities and evidence checked
Ecosystem conversion	NA

4.3 Accuracy of Reduction and Removal Calculations

The monitoring has been carried out in accordance with the monitoring plan contained in the VCS PD. CTI confirms that all parameters stated in the monitoring plan are monitored and reported appropriately. All parameters required to be monitored by the monitoring plan as per the monitoring methodology ACM0001 Version 19.0 and the management system were assessed during the site visit. The monitoring report has listed each parameter with detail, including description, source of data, information flow, frequency of monitoring/recording, application of data and so on.

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} , ρ_{Jy} . For F_{CH_4} , ρ_{Jy} , 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.

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)

EF _{grid,OM,y}	Operating margin CO ₂ emission factor in year y	0.9680	tCO ₂ /MWh	2017 Bulletin on the Baseline Emission Factors of the Grid China dated in 12/2017 published by China DNA/16/(The value is published by Ministry of Ecology and Environment of the People's Republic of China, based on China Electric Yearbook (2014-2016), Electricity Industry Statistics (2013-2015), China Energy Statistic Yearbook (2014-2016) and IPCC data)
EF _{grid,BM,y}	Build margin CO ₂ emission factor in year y	0.4578	tCO ₂ /MWh	2017 Bulletin on the Baseline Emission Factors of the Grid China dated in 12/2017 published by China DNA/16/(The value is published by Ministry of Ecology and Environment of the People's Republic of China, based on China Electric Yearbook (2014-2016), Electricity Industry Statistics (2013-2015), China Energy Statistic Yearbook (2014-2016) and IPCC data)
ρ _{CH4}	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
TDL _{i,y} and TDL _{k,y}	Average technical transmission and distribution losses for	3 and 20	%	Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 030)

Parameters monitored ex post:

Data / Parameter	Management of SWDS
Data unit	-
Description	Management of SWDS
Source of data	Original design of the landfill
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 equipment:	This parameter was monitored annually by the project owner through following up with any changes in the management of Xiaojianxi landfill site. Through interview with staff from Xiaojianxi 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 Xiaojianxi 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 is flared due to a requirement in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	856.09
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 ($P_{reg,y}$). 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: $F_{CH_4,BL,R,y} = P_{reg,y} \times F_{CH_4,PJ,y}$ As for the amount of methane in the LFG flared and/or used in the project activity in year y ($F_{CH_4,PJ,y}$), it can be 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 equipment:	This parameter was calculated by Fraction of LFG that is required to be flared due to a requirement in year y ($P_{reg,y}$). 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:

	$F_{CH4,BL,R,y} = p_{reg,y} \times F_{CH4,PJ,y}$ As for the amount of methane in the LFG flared and/or used in the project activity in year y ($F_{CH4,PJ,y}$), it can be 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.
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 was checked, the calculation of $F_{CH4,BL,R,y}$ is correct.

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:	Information of the host country's regulatory requirements relating to LFG, contractual requirements, or requirements to address safety and odour concerns.
Source of data used:	20%
Information flow:	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.
Monitoring method, frequency and equipment:	Not applicable
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 data	Calculation of baseline emissions					
Parameter value:	1,827.91					
Source of data	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:	1 flow meter installed at project site was measured continuously, recorded hourly and archived electronically. Moreover, the value will be converted automatically into standard value V _{t,db} (at the normal condition of 0 °C and 101,325 Pa). At 24:00 hr of last day of each month, the monitoring system will automatically calculate the average value of V _{t,db} of each month. Then, the staff from project owner read the average value and fill out Monthly Report. The data for Monthly Report have been sent to the VCS consulting company for reporting of GHG emission reductions.					
Monitoring frequency and equipments:	method, and	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	BF-3000-2400	E01325000003	1.5	
Calibration:	The calibration information is shown as below					
		Model	Serial number	Accuracy class	Date of calibration	Validity
		BF-3000-2400	E01325000003	1.5	19-March-2023	18-March-2024
		The calibration was conducted by accredited third parties, Guangzhou Zhongce-Measuring Co.Ltd. /23/, which was accredited by Guangzhou Provincial Market Supervision Administration and Calibration and Testing Center.				
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, 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 documents, it is confirmed value of $V_{t,db}$ was 1,827.91 m³ dry gas/h (hourly average value at normal conditions) for this monitoring period.

Monitoring method was verified by on-site visit. By 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.

By on-site investigation and checking manual of gas analyser/74/, equipment contracts/41/, Calibration certificates for gas analyzer/20/, CTI can confirm that the gas analyzer is hydrophobic, which mean it is easy to break down when it meets water. The PP installed pretreat system for LFG from the MSW site to filtrate, dehydrate and removal H₂S and dust to protect other equipment. Since the operation of the project and gas analyzer are running smoothly form the daily and monthly records/11//12/, Operation and Maintenance Record/6/, Calibration certificates for gas analyzer/20/ , CTI can conduce that the gas is dry to reach the requirement of tool-08-v3.0 Tool to determine the mass flow of a greenhouse gas in a gaseous stream/75/. According to the manual of gas analyser and flow meter/74/ and interview with staff, the flow meter has the ability to monitoring temperature and the temperature were lower than 60°C(333.15 K).

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 tons dry basis
Purpose of data	Calculation of baseline emissions
Paremeter value:	49.5% (average value)
Source of data	Monitored by the project participant
Information flow:	1 gas analyser installed at project site was measured continuously and archived electronically. At 24:00 hr of last day of each month, the monitoring system will automatically calculate 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 have been sent to the VCS consulting company for reporting of GHG emission reduction.														
Monitoring method, frequency and equipment:	The parameter was monitored continuously ana recorded automatically. The type serial number and accuracy of monitoring equipment have been confirmed by site visit, which were: <table><tr><td>Equipment</td><td>Type</td><td>Serial Number</td><td colspan="2">Accuracy</td></tr><tr><td>Gas analyser</td><td>GTR196</td><td>GTR196-001</td><td colspan="2">2%</td></tr></table>					Equipment	Type	Serial Number	Accuracy		Gas analyser	GTR196	GTR196-001	2%	
Equipment	Type	Serial Number	Accuracy												
Gas analyser	GTR196	GTR196-001	2%												
Calibration:	The calibration information is shown as below <table><tr><td>Model</td><td>Serial number</td><td>Accuracy class</td><td>Date of calibration</td><td>Validity</td></tr><tr><td>Gas analyser 0</td><td>GTR196-001</td><td>2%</td><td>19-March-2023</td><td>18-March-2024</td></tr></table> The calibration was conducted by accredited third parties, Guangzhou Zhongce-Measuring Co.,Ltd. /20/, which was accredited by Guangzhou Provincial Market Supervision Administration and Calibration and Testing Center.					Model	Serial number	Accuracy class	Date of calibration	Validity	Gas analyser 0	GTR196-001	2%	19-March-2023	18-March-2024
Model	Serial number	Accuracy class	Date of calibration	Validity											
Gas analyser 0	GTR196-001	2%	19-March-2023	18-March-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:	Data of parameter was verified by checking Monthly Report, 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, which is 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, the calibration of monitoring equipment meets the requirement indicated in the PD. By on-site investigation and checking manual of gas analyser and flow meter/74/, equipment contracts/41/, Calibration certificates for gas analyzer/20/, CTI can confirm that the gas analyzer is hydrophobic, which mean it is easy to break down when it meets water. The PP installed pretreat system for LFG from the MSW site to filtrate, dehydrate and removal H2S and dust to protect other equipment. Since the operation of the project and gas analyzer are running smoothly form the daily and monthly records/11//12/, Operation and Maintenance Record/6/, Calibration certificates for gas analyzer/20/, CTI can conduce that the gas is dry to reach the requirement of tool-08-v3.0 Tool to determine the mass flow of a greenhouse gas in a gaseous stream/75/.														

	According to the manual of gas analyser and flow meter/74/ and interview with staff, the flow meter has the ability to monitoring temperature and the temperature were lower than 60°C(333.15 K).
Data / Parameter	$O_{pj, h}$
Data unit	-
Description	Operation of the equipment that consumes the LFG
Purpose of the data:	Calculation of baseline emissions
Parameter value:	6,104 h (generator 1#) 6,047 h (generator 2#) 6,005 h (generator 3#) 6,079 h (generator 4#) 6,186 h (generator 5#) 6,163 h (generator 6#) 6,140 h (generator 7#)
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 will be 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 equipment:	For each equipment unit j using the LFG monitor that the plant is operating in hour h by the monitoring any one or more of the following three parameters: (a) Temperature. Determine the location for temperature measurements and minimum operational temperature based on manufacturer's specifications of the burning equipment. Document and justify the location and minimum threshold in the PDD; (b) Flame. Flame detection system is used to ensure that the equipment is in operation; (c) Products generated. Monitor the generation of steam for the case of boilers and air-heaters and glass for the case of glass melting furnaces. This option is not applicable to brick kilns. $O_{p,j,h}=0$ when:

	(a) One of more temperature measurements are missing or below the minimum threshold in hour h (instantaneous measurements are made at least every minute); (b) Flame is not detected continuously in hour h (instantaneous measurements are made at least every minute); (c) No products are generated in the hour h. Otherwise, $Op_{j,h}=1$
Calibration:	Not applicable
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, the 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	16,230.459
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, Electricity Transaction Notes (ETNs)/8/ issued by power grid company, and electricity sale invoices/42/ issued by the project owner covering monitoring period.
Information flow:	1 bidirectional electricity meter installed at project site was measured continuously, daily recorded and aggregated monthly recorded electronically. At 24:00 hr of last day of each month, the staff from project owner will record the electricity meters' readings and fill out Monthly Report. The staff from power grid company will record the meter readings of meter then transcribes the data into ETNs to delivery to the project owner. Then the project owner will issue the invoice as sales receipts. The data for Monthly Report, ENTs and electricity sale invoices 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 equipment:	The parameter was measured continuously and recorded monthly by a bidirectional electricity meter installed at project site. See below for the information of the bidirectional electricity meter verified by on-site and checking calibration certificates /13/: <table><tr><td>Meter</td><td>Model</td><td>Serial number</td><td>Accuracy class</td></tr><tr><td>Electricity Meter</td><td>DSZ331</td><td>110029364505</td><td>0.5S</td></tr></table> The type serial number and accuracy have been confirmed by on-site visit.	Meter	Model	Serial number	Accuracy class	Electricity Meter	DSZ331	110029364505	0.5S		
Meter	Model	Serial number	Accuracy class								
Electricity Meter	DSZ331	110029364505	0.5S								
Calibration:	The calibration information are shown as below: <table><tr><td>Model</td><td>Serial number</td><td>Accuracy class</td><td>Date of calibration</td><td>Validity</td></tr><tr><td>DSZ331</td><td>110029364505</td><td>0.5S</td><td>24-March-2023</td><td>23-March-2024</td></tr></table> The calibration was conducted by accredited third party, Henan Institute of Metrology /14/, which was accredited by State Administration for Market Regulation.	Model	Serial number	Accuracy class	Date of calibration	Validity	DSZ331	110029364505	0.5S	24-March-2023	23-March-2024
Model	Serial number	Accuracy class	Date of calibration	Validity							
DSZ331	110029364505	0.5S	24-March-2023	23-March-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 $EG_{PJ,y}$ was from Monthly Report/12/, which was crosschecked with daily report/11/ with the same value. Besides, the monitoring data of $EG_{PJ,y}$ from the Monthly Report can be crosschecked with the Electricity Transaction (ETNs)/08/ and electricity sale invoices/39/, and the data was 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, the 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	1.830

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. ETNs issued by power grid company /8/, electricity purchase invoices /42/ issued by power grid company covering monitoring period.										
Information flow:	1 bidirectional electricity meter installed at project site was measured continuously, daily recorded and aggregated monthly record electronically. At 24:00 hr of last day of each month, the staff from project owner will record the electricity meters’ readings and fill out Monthly Report. The staff from power grid company will record the meter readings of meter, then transcribes the data into ETNs to delivery to the project owner. Then the grid company will issue the invoice as sales receipts. The data for Monthly Report, ETNs and electricity purchase invoices 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 equipment:	The parameter was measured continuously and recorded monthly by a bidirectional electricity meter installed at project site. See below for the information of the bidirectional electricity meter verified by on-site and checking calibration certificates /13/: <table><tr><td>Meter</td><td>Model</td><td>Serial number</td><td>Accuracy class</td></tr><tr><td>Electricity Meter</td><td>DSZ331</td><td>110029364505</td><td>0.5S</td></tr></table> The type serial number and accuracy have been confirmed by on-site visit.	Meter	Model	Serial number	Accuracy class	Electricity Meter	DSZ331	110029364505	0.5S		
Meter	Model	Serial number	Accuracy class								
Electricity Meter	DSZ331	110029364505	0.5S								
Calibration:	The calibration information are shown as below: <table><tr><td>Model</td><td>Serial number</td><td>Accuracy class</td><td>Date of calibration</td><td>Validity</td></tr><tr><td>DSZ331</td><td>110029364505</td><td>0.5S</td><td>24-March-2023</td><td>23-March-2024</td></tr></table> The calibration was conducted by accredited third party, Henan Institute of Metrology /14/, which was accredited by State Administration for Market Regulation.	Model	Serial number	Accuracy class	Date of calibration	Validity	DSZ331	110029364505	0.5S	24-March-2023	23-March-2024
Model	Serial number	Accuracy class	Date of calibration	Validity							
DSZ331	110029364505	0.5S	24-March-2023	23-March-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 from Monthly Report, which was crosschecked with daily report/11/ with the same value.										

	Besides, the monitoring data of $EG_{EC,y}$ from the Monthly Report can be crosschecked with the Electricity Transaction (ETNs)/08/ and electricity sale invoices/39/, and the data was 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, the 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: 33,139,282.33 CNY OPEX: 4,664,400.31 CNY
Source of data used	CAPEX is sourced from completion acceptance form issued by the construction company, 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 equipment:	Not applicable
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 and statement for the operation cost. 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:	0.594 (including VAT)
Source of data used	Tariff of electricity exported is sourced from Tariff approval /31/
Information flow:	Not applicable
Monitoring method, frequency and equipment:	Not applicable
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.

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:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation(1)}$$

Baseline emissions:

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

$$BE_y = BE_{CH_4,y} + BE_{EC,y} \quad \text{Equation(2)}$$

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

As per ACM0001 and registered PD:

$$BE_{CH_4,y} = \left((1 - OX_{top,layer}) \times F_{CH_4,PJ,y} - F_{CH_4,BL,y} \right) \times GWP_{CH_4} \quad \text{Equation(3)}$$

The calculation process has been include 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	Unit	01/04/2023-31/12/2023
$OX_{top,layer}$	Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless)	/	0.1
$F_{CH_4,PJ,y}$	Amount of methane in the LFG which is flared and/or used in the project activity in year y	tCH ₄	4,280.43
$F_{CH_4,BL,y}$	Amount of methane in the LFG that would be flared in the baseline in year y	tCH ₄	856.09
GWP_{CH_4}	Global warming potential of CH ₄	tCO ₂ e/tCH ₄	28
$BE_{CH_4,y}$	Baseline emissions of methane from the SWDS in year y	tCO ₂ e	83,896.48

As per registered VCS PD:

$$F_{CH_4,PJ,y} = F_{CH_4,EL,y} \quad \text{Equation(4)}$$

And $F_{CH_4,EL,y}$ is calculated using equation below:

$$F_{i,t} = V_{t,db} \times v_{i,t,db} \times \rho_{i,t} \quad \text{Equation(5)}$$

$$\rho_{i,t} = \frac{P_t \times MM_i}{R_u \times T_t} \quad \text{Equation(6)}$$

The parameters as shown in below:

$F_{i,t}$	=	Mass flow of greenhouse gas I in the gaseous stream in the interval t (kg gas/h)
$V_{t,db}$	=	Volumetric flow of the gaseous stream in time interval t on a dry basis (m ³ dry gas/h)
$v_{i,t,db}$	=	Volumetric fraction of greenhouse gas I in the gaseous stream in a time interval t on a dry basis (m ³ gas i/m ³ dry gas)
$\rho_{i,t}$	=	Density of greenhouse gas i in the gaseous stream in time interval t (kg gas i/m ³ dry gas)
P_t	=	Absolute pressure of the gaseous stream in time interval t (101,325Pa)
T_t	=	Temperature of the gaseous stream in time interval t (273.15K)
MM_i	=	Molecular mass of greenhouse gas i (16.04 Kg/kmol)
R_u	=	Universal ideal gases constant (8,314Pa.m ³ /kmol.k)

Combine with relative parameters, the result of $F_{CH_4,PJ,y}$ and $F_{CH_4,EL,y}$ are shown in below:

Parameter	Description	Unit	01/04/2023-31/12/2023
$F_{CH_4,EL,y}$	Amount of methane in the LFG which is for electricity generation	tCH ₄	4,280.43
$F_{CH_4,PJ,y}$	Amount of methane in the LFG which is flared and/or used in the project activity in year y	tCH ₄	4,280.43

Baseline emissions associated with electricity generation ($BE_{EC,y}$)

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

$$BE_{EC,y} = EC_{BL,k,y} \times EF_{EF,k,y} \times (1 + TD L_{k,y}) \quad \text{Equation(7)}$$

$$EF_{EF,K,y} = \omega_{OM} \times EC_{grid,OM,y} + \omega_{BM} \times EC_{grid,BM,y} \quad \text{Equation(8)}$$

$$EF_{EF,K,y} = 0.5 \times 0.9680 + 0.5 \times 0.4578 = 0.7129$$

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	Unit	01/04/2023-31/12/2023
$EC_{BL,k,y}$	Quantity of electricity that would be consumed by the baseline electricity consumer k in year y	MWh	16,230.459
$EF_{EF,k,y}$	Emission factor for electricity generation for source k in year y	tCO ₂ /MWh	0.7129
$TDL_{k,y}$	Average technical Transmission and Distribution losses for Providing electricity to source k in year y	/	3%
$BE_{EC,y}$	Baseline emission from electricity consumption in year y	tCO ₂	11,917.82

Hence, the corresponding baseline emission reductions are calculated as:

Parameter	Description	Unit	01/04/2023-31/12/2023
$BE_{CH_4,y}$	Baseline emissions of methane from the SWDS	tCO ₂ e	83,896.48
$BE_{EC,y}$	Baseline emissions associated with electricity generation	tCO ₂ e	11,917.82
BE_y	Baseline emissions	tCO ₂ e	95,814

Project emissions;

As per the registered VCS PD, Project emissions are calculated as follows:

$$PE_y = PE_{EC,y} \quad \text{Equation9)}$$

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} * EF_{EL,j,y} * (1 + TDL_{j,y}) \quad \text{Equation(10)}$$

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	Unit	01/04/2023-31/12/2023
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project Electricity consumption source j in year y	MWh	1.83
$EF_{EL,j,y}$	Emission factor for electricity generation for source j in year y	tCO ₂ /MWh	0.7129
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y	/	20%
$PE_{EC,y}$	Project emissions from electricity consumption in year y	tCO ₂	2

Hence, the corresponding project emissions are calculated as:

Parameter	Description	Unit	01/04/2023-31/12/2023
$PE_{EC,y}$	Project emissions from electricity consumption in year y	tCO ₂	2
PE_y	Project emission in year y	tCO ₂	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 were calculated as follows:

$$ER_y = BE_y - PE_y \quad \text{Equation(11)}$$

Where:

ER_y = Emission reduction in year y (t CO₂e/yr)

BE_y = Baseline emissions in year y (t CO₂e/yr)

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)	Removal VCU (tCO ₂ e)	Total VCUs (tCO ₂ e)
01/04/2023-31/12/2023	95,814	2	0	95,812	0	95,812

4.4 Quality of Evidence to Determine 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.

4.5 Non-Permanence Risk Analysis

The project is not AFOLU project, and thus non-permanence risk analysis is not applicable for the project.

5 VERIFICATION OPINION

5.1 Verification Summary

CTI Certification Co., Ltd (CTI) has performed the verification of the emission reductions that have been reported for the project activity “Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project” in China(VCS Project ID: 2353) for the period from 01-April-2023 to 31-December-2023.

In the course of the verification, 1 Corrective Action Requests (CARs), 1 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 2.2 dated 06/04/2021) and the monitoring report (version 03 dated 29-September-2024). The verification consisted of the following three phases:

- a) desk review of the project design and the baseline and monitoring plan;
- b) follow-up interviews with project stakeholders;
- c) 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 4.7 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 4.7 and VCS 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 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.

5.2 Verification Conclusion

In CTI's opinion the GHG emissions reductions of the “Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project” for the period from 01-April-2023 to 31-December-2023 are fairly stated in the monitoring report (version 03 dated 29-September-2024). 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 2.2 dated 06/04/2021).

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-April-2023 to 31-December-2023

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

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)	Removal VCU (tCO ₂ e)	Total VCU (tCO ₂ e)
01-April-2023 to 31-December-2023	95,814	2	0	95,812	0	95,812
Total	95,814	2	0	95,812	0	95,812

5.3 Ex-ante vs Ex-post ERR Comparison

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-April-2023 to 31-December-2023	100,833	95,812	4.98%	Compared with yearly expected emission reductions 100,833 tCO ₂ e in the VCS PD, the reported emission reductions in this monitoring period are 4.98% less than the estimation in the registered VCS PD. There are 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, and all of them can impact the emission reductions. Compared with expected emission reduction, the reality emission reductions were less caused by the reduction of LFG to lead the electricity generated less. The predicted LFG was 13,345,691.23m³, while the LFG was 12,064,198m³, decreasing 9.6%. Hence, the verification team think the variation is reasonable.
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APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

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

APPENDIX 2: REFERENCES

Documentation used to verify the information provided by the project proponents

/1/	Qingdao Baichang Environmental Technology Co., Ltd.: VER/VCU Monitoring Report for Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project,,version 03 dated 29-September-2024
/2/	Qingdao Baichang Environmental Technology Co., Ltd.: Emission reduction calculation spreadsheet for Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project
/3/	Qingdao Baichang Environmental Technology Co., Ltd. and State Grid Qingdao Electric Power Co., Ltd.: Power Purchase Agreement for Qingdao Xiaojianxi Phase II MSW landfill site LFG recovery to power project
/4/	Qingdao Baichang Environmental Technology Co., Ltd. : monitoring manual and management procedure.
/5/	Qingdao Baichang Environmental Technology Co., Ltd. : Records of training for on-site staff
/6/	Qingdao Baichang Environmental Technology Co., Ltd. : Operation and Maintenance Record, from 01-April-2023 to 31-December-2023.
/7/	Qingdao Baichang Environmental Technology Co., Ltd. : Project cycle report- downtime details,from 01-April-2023 to 31-December-2023.
/8/	State Grid Shandong Electric Power Company Qingdao Power Supply Branch: Electricity Transaction (ETNs) of amount of electricity generated using LFG by the project activity in year measured by electricity meter, from 01-April-2023 to 31-December-2023.
/9/	Registered VCS PD, version 2.2 dated 06/04/2021
/10/	LGAI Technological Center, S.A. (Applus+ Certification): VCS Validation Report, version 01.2 dated 06/04/2021
/11/	Qingdao Baichang Environmental Technology Co., Ltd.: Daily Report of Xiaojianxi,from 01-April-2023 to 31-December-2023.
/12/	Qingdao Baichang Environmental Technology Co., Ltd.: Monthly Report of Xiaojianxi,from 01-April-2023 to 31-December-2023.
/13/	Qingdao Baichang Environmental Technology Co., Ltd.: Calibration certificates for electricity meter.
/14/	General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China: Metrological Authorization Certification of Energy Metrology Center of Henan Institute of Metrology, 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 Bulletin on the Baseline Emission Factors of the Grid China dated in 29/12/2020 published by China DNA
/17/	Qingdao Baichang Environmental Technology Co., Ltd. : Nameplate and Photos of electricity meter, gas analyzer, flow meter and generators.
/18/	"2019-2020 Implementation Plan for the Total Set and Distribution of National Carbon Emissions Trading Allowances (Thermal Power Industry)" issued by Ministry of Ecology and Environment of P. R. China. http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/t20201230_815546.html
/19/	"List of key emissions in the national carbon emissions transaction quota management in 2019-2020" issued by Ministry of Ecology and Environment of P.R.China. http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/t20201230_815546.html
/20/	Qingdao Baichang Environmental Technology Co., Ltd.: Calibration certificates for gas analyzer covering this monitoring period
/21/	General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China: Metrological Authorization Certification of Henan Institute of Metrology, 2022-2027

/22/	General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China: Metrological Authorization Certification of Guangzhou Zhongce- Measuring Co.,Ltd., issued on 18/12/2017 valid till 09/05/2027
/23/	Qingdao Baichang Environmental Technology Co., Ltd.: Calibration certificates for flow meters.
/24/	Qingdao Baichang Environmental Technology Co., Ltd.: Calibration certificates for electricity meter.
/25/	Qingdao Baichang Environmental Technology Co., Ltd.: Calibration certificates for gas analyze
/26/	VERRA Website: Monitoring period of 1st monitoring period, version 2.0 dated 14/10/2021
/27/	VERRA Website: Verification Report of 1st monitoring period, version 01.0 dated 15/10/2021
/28/	VERRA Website: Monitoring period of 2st monitoring period, version 3.0 dated 13/08/2023
/29/	VERRA Website: Verification Report of 2st monitoring period, version 2.0 dated 22/08/2023
/30/	Staff roster provided by the project owner
/31/	Qingdao Baichang Environmental Technology Co., Ltd.: Statement for the operation cost.
/32/	Qingdao Baichang Environmental Technology Co., Ltd.: Carbon reduction related training.
/33/	Qingdao Baichang Environmental Technology Co., Ltd.: Minutes of Operational Stakeholder Meetings.
/34/	Shandong Provincial Development and Reform Commission: On-grid tariff approval
/35/	Verified Carbon Standard: VCS Standard, version 4.7
/36/	Verified Carbon Standard: VCS Program Guide, version 4.4
/37/	Verified Carbon Standard: Registration and Issuance Process, version 4.4
/38/	UNFCCC EB: Approved methodology, ACM0001, Version 19.0.
/39/	Qingdao Zhongbo Huake Testing Technology Co.: Environmental monitoring reports
/40/	Equipment contracts
/41/	Equipment list
/42/	Electricity sale invoices and electricity purchase invoices from 01-April-2023 to 31-December-2023.
/43/	EIA and EIA approval
/44/	Hazardous waste disposal contracts during monitoring period
/45/	Hazardous waste disposal contracts ledgers during monitoring period
/46/	QD-Land lease agreements
/47/	land use certificate
/48/	Co-operation Agreements - Supplementary Agreements
/49/	https://www.goldstandard.org/?ref=%2a.co2.press;
/50/	Training record
/51/	https://unfccc.int/;
/52/	Staff manual
/53/	Grievance book
/54/	Women' s Rights Protection Law, issued on 3/4/1992 by The National People's Congress
/55/	Labor Law, issued on 01/01/1995 by The National People's Congress
/56/	http://mail.bccynewpower.com/ Henan Baichang Environmental Technology Co., Ltd
/57/	Population survey data for Licang District, Qingdao
/58/	https://www.greenenergy.org.cn/productList#:~:text=%E6%AC%A2%E8%BF%8E%E8%AE%BF%E9%97%AE%E4%B8%AD%E5%9B%BD%E7%BB%BF%E8%89%B2%E7%94%B5%E5%8A%9B
/59/	https://www.ccer.com.cn/
/60/	https://verra.org/

/61/	Qingdao Baichang Environmental Technology Co., Ltd.: Statement of No Double Counting and Not involved in other GHG scheme
/62/	Qindao 2023 National Economic and Social Development Statistics Bulletin
/63/	Procedures of public comments
/64/	Questionnaire records
/65/	Safe Operation Manual
/66/	Documents of ISO45001 Occupational Safety Management System Certification
/67/	Medical reports
/68/	Internal reflect record
/69/	Illustration of Microblogging program
/70/	Recruitment requirements
/71/	Credit China: http://www.creditchina.gov.cn
/72/	satisfaction survey
/73/	Employment contract
/74/	manual of gas analyser
/75/	tool-08-v3.0 Tool to determine the mass flow of a greenhouse gas in a gaseous stream
/76/	http://mee.gov.cn/ywgz/xdqhbh/wsqtz/202212/P020221230799532329594.pdf

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS



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

Wu Lin

Technical Competent Manager

Shenzhen, 25/10/2022

CERTIFICATE OF APPOINTMENT

Ms. Ting SHAO

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. Huajiang SUN

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
	TA 13.2: Manure

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, 15/08/2024

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

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

FAR ID	NA	Section no.	NA	Date: NA
Description of FAR				
NA				
Project proponent response				Date: NA
NA				
Documentation provided by project proponent				
NA				
DOE assessment				Date: NA
NA				

Table 2. CL from this verification

CL ID	01	Section no.	2.1.1	Date: 10/06/2024
Description of CL				
The VVB found that during the period from 01-April-2023 to 31-December-2023, the documents to prove the description of Legal or customary tenure/access rights is not sufficient and PP was asked to explain more details and provide more evidences.				
Project proponent response				Date: 26/07/2024
The project is located at Xiaojianxi Phase II MSW landfill site of Hongdao Economic zone, Qingdao City. On 4-April-2018, a lease agreement was signed with Qingdao Solid Waste Disposal Company Limited, Valid until 2-October-2029, According to the property right certificate provided, the land is solely owned by Qingdao Solid Waste Disposal Limited Liability Company, which does not involve the occupation of farmland, relocation compensation and other issues. Thus, there is no land issue involved in this project. According to the cooperation agreement signed between the project owner and Qingdao Solid Waste Disposal Company Limited (4-April-2018 to 2-October-2029) the project owner has the right to use their LFG for power generation				
Documentation provided by project proponent				
MR, Co-operation Agreements - Supplementary Agreements, QD-land use certificate				
DOE assessment				Date: 26/07/2024
By checking the updated MR, Co-operation Agreements - Supplementary Agreements, QD-land use certificate, CTI confirmed that during the monitoring period, there is no land issue involved in this project. The CL 01 is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	4.1	Date: 10/06/2024
Description of CAR				
In the ER sheet, the Emission factor for electricity generation use the data from 2017 Bulletin on the Baseline Emission Factors of the China Grids. According to the VCS Standard, this document will be updated from time-to-time, and readers shall ensure that they are using the most current version of the document. Where external documents are referenced (e.g. The 2019 Refinement to the 2006 IPCC				

Guidelines for National GHG inventories), and when such documents are updated, the most recent version of the document shall be used.	
Project proponent response	Date: 26/07/2024
The most up-to-date version of emission factors of the North China Regional Power Grid and associated calculations have been updated in the ER sheet and MR.	
Documentation provided by project proponent	
ER sheet and MR.	
DOE assessment	Date: 26/07/2024
By checking the updated ER sheet and MR, VVB confirmed the North China Regional Power Grid and associated calculations have been updated.	
The CAR 01 is closed.	

APPENDIX 5: ABBREVIATIONS

Abbreviations	Full texts
AWMS	Animal Waste Management System
CAR	Corrective Action Request
CL	Clarification request
BE	Baseline Emission
CDM	Clean Development Mechanism
CME	Coordinating/managing entity
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
GHG	Greenhouse gas(es)
EIA	Environmental Impact Assessment
ER	Emission Reduction
ETS	Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MR	Monitoring Report
PA	Project Activity
PD	Project Description
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VVB	Validation/Verification Body
NCPG	North China regional power grid