



NANNING LANDFILL GAS POWER GENERATION PROJECT



Document Prepared By LGAI Technological Center, S.A. (Applus+ Certification)

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Summary:

LGAI Technological Center, S.A. (hereafter referred to as “Applus+ Certification”) has been commissioned by Swiss Carbon Value Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Nanning Landfill Gas Power Generation Project” (VCS Ref. No. 2464, hereafter referred to as “the project activity”) reported in the monitoring report /1/ for the monitoring period 03/04/2020 to 30/06/2021 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 4.0.

The project activity has been validated by Applus+ Certification which is available at <https://registry.verra.org/app/projectDetail/VCS/2464>.

The project activity is a landfill gas recovery and power generation project located at Pingli landfill site in Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, P.R China which is to use landfill gas for electricity generation. The total installed capacity of the project activity is 5.8 MW, consisting of 6 sets with each capacity of 0.966 MW. The landfill where the project located will process 1,135tons of MSW each day. The feed-in electricity is estimated to be 365,083 MWh during the fixed 10 years crediting period. The Project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants of South China Power Grid (SCPG). Meanwhile by utilization the recovered landfill gas, the project activity avoids the emission of methane that would be generated under landfill condition. It's estimated that the proposed project could achieve GHG emission reductions of 231,811 tCO₂e annually in this crediting period.

The purpose and scope of this verification is to ensure that reported emission reductions are complete and accurate in accordance with applicable VCS standards and relevant UNFCCC requirements in order to be certified. A desk review and a site visit have been conducted to verify the data submitted in the monitoring report /1/. Applus+ Certification confirms the following has been reviewed:

- Monitoring plan included in the registered VCS PD /3/, version 1.1 dated 22/04/2021;
- Validation report No. A+SH_SYST_VCS_VAL_2221 /4/, completed on 28/04/2021 by Applus+

Certification;

- Approved methodology, ACM0001: Flaring or use of landfill gas /7/, Version 19.0, dated 14/06/2019;
- VCS standards version 4.1 and VCS Program Guide version 4.0, as well as relevant UNFCCC requirements;
- All information and references relevant to the project activity's resulting in emission reductions.

During this verification, no finding was identified related to the monitoring, implementation or operations of the project activity in relation to relevant VCS standards, guidance and UNFCCC requirements and relevant host party criteria and the applied baseline and monitoring methodology etc.

Applus+ Certification confirms that the project is implemented in accordance with the registered PD /3/. The monitoring plan complies with the applied methodology ACM0001: Flaring or use of landfill gas /7/ Version 19.0 and the monitoring has been carried out in accordance with the monitoring plan in the registered PD /3/. The monitoring system is in place and the emission reductions are calculated without material misstatements. The level of assurance of the verification is reasonable. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ Certification confirms that the implementation of the project has resulted in 246,932 tCO₂e emission reductions during period 03/04/2020 to 30/06/2021.

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1 INTRODUCTION

1.1 Objective

LGAI Technological Center, S.A. (Applus+ Certification) has been commissioned by Swiss Carbon Value Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Nanning Landfill Gas Power Generation Project” (VCS Ref. No. 2464) reported in the Monitoring Report /1/ during monitoring period 03/04/2020 to 30/06/2021.

LGAI Technological Center, S.A. (Applus+ Certification) as the verification body of the project activity has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The objective of verification is to have an independent review and ex post determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registration of VCS project. Certification is the written assurance by the DOE that, during a specific time period, a proposed VCS project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified.

The objective of this verification/certification is to verify and certify emission reductions, reported for the “Nanning Landfill Gas Power Generation Project” in China for the period 03/04/2020 to 30/06/2021.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the registered PD, the Project’s baseline study and Monitoring Report (MR) and other relevant documents. The information in these documents is reviewed against VCS Version 4.0 requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the Project monitoring towards reductions in the GHG emissions.

1.3 Level of Assurance

The verification report is based on the VCS-PD, the VCS Monitoring Report (MR), supporting evidences made available to the verifier and information collected through performing interviews and during the on-site assessment.

The verification conclusion is assured a reasonable level of assurance.

1.4 Summary Description of the Project

Project title	Nanning Landfill Gas Power Generation Project
VCS reference number	2464
Project Participants	Guangxi Ruirong Energy Technology Co., Ltd. (Project Owner, host country, P. R. China)
Location of the project	Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, P.R China Geographic coordinates: Longitude: 108°38'11"E Latitude: 23°00'43"N
Project start date	Construction date: 30/09/2019 Operation start date: 03/04/2020
Version of VCS PD	version 1.1 dated 22/04/2021
Monitoring period	03/04/2020 to 30/06/2021
First monitoring report	Version 01 dated 02/07/2021
Final monitoring report	Version 01.1 dated 16/07/2021
Applied Methodology/Version	ACM0001: Flaring or use of landfill gas, Version 19.0, dated 14/06/2019
Scope/Technical Area	1/1.1 13/13.1

The project activity is a landfill gas recovery and power generation project located at Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, P.R China which is to use landfill gas for electricity generation. The total installed capacity of the project activity is 5.8 MW, consisting of 6 sets with each capacity of 0.966 MW. The landfill where the project located will process 1,135tons of MSW each day. The feed-in electricity is estimated to be 365,083 MWh during the fixed 10 years crediting period. The Project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants of South China Power Grid (SCPG). Meanwhile by utilization the recovered landfill gas, the project activity avoids the emission of methane that would be generated under landfill condition. It's estimated that the proposed project could achieve GHG emission reductions of 231,811 tCO₂e annually in this crediting period.

The project activity has been validated by Applus+ Certification which is available at <https://registry.verra.org/app/projectDetail/VCS/2464>.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS Standard version 4.1, the latest version of the CDM Validation and Verification Standard, and relevant UNFCCC requirements and applying standard auditing techniques.

Applus+ Certification completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

Applus+ Certification verified the implementation of the monitoring plan and the data presented in the Monitoring Report /1/ for the period in question. This involved a site visit and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

The information of the assessment team is included in below:

Assessment team

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in Applus+ Certification. The composition of assessment team has to be approved by the Applus+ Certification ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)/ Auditor Trainee (AiT)
- Technical Reviewer (TR)

- Technical Experts (TE)

Name	Qualification	Coverage of scope	Coverage of Technical Area	Host country experience
Doris Dai	LA/TE	Y (1.1 and 13.1)	Y	Y
Simon Shen	TR	Y (1.1 and 13.1)	Y	Y

Doris Dai (Master's Degree in Environmental Sciences, Bachelor's Degree in Environmental Technology) is an Auditor appointed by Applus+ LGAI for the GHG project assessment and auditing. She has more than 6 years of work experience in CDM/VCS project assessment. Before she joined Applus+ LGAI, she has been working for CTI Certification as senior GHG Auditor for 3.5 years.

Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD before he joined Applus+ for 3.5 years. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

2.2 Document Review

The VCS monitoring report /1/ version 01 dated 02/07/2021, Version 01.1 dated 16/07/2021 and the emission reduction calculations spreadsheet /2/, were assessed as part of the verification. In addition, the registered PD /3/ version 1.1 dated 22/04/2021 in particular the baseline estimations and the monitoring plan, the validation report /4/ version 01.0 dated 28/04/2021, as well as relevant documents, were reviewed. A detailed documents reviewed are listed in Appendix 1 of the report.

2.3 Interviews

The key personnel interviewed are summarized in the table below:

Interviewed personnel	Role	Organization	Subject
Mr. Chen Anjiang	General Manager	Guangxi Ruirong Energy Technology Co., Ltd.	Operation of the project activity;
Mr. Chen Hongtao	Administrative Staff		Implementation of the monitoring plan of the project activity; Data collection and data

Mr. Li Chaoshen	Head of Production Department		achievement; Calibration of meters and equipment maintenance.
Ms. Yang Ruyi	Staff	Pingli Landfill site	Status of Pingli Landfill site; Management of Pingli Landfill site.
Mr. Li Xianwen	Staff	Local Environmental Protection Bureau	The impact of the project activity during the monitoring period; The comments by local stakeholders during the monitoring period.
Ms. Lin Shuhong	Villager	Naxingpo Village	
Mr. Li Qiang	Villager	Linghongpo Village	
Mr. Liu Guosheng	Villager	Jiduanpo Village	
Ms. Yang Sui	Project Manager	Swiss Carbon Value Ltd.	Data collection and ER calculation.

2.4 Site Inspections

The assessment team performed the on-site verification (Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, P.R China) during 15/07/2021 - 16/07/2021. The interviewed personnel and objective are listed in above table.

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:

- 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;
- Modifications to the implementation, operation and monitoring of the project activity has not been sufficiently documented by the project participants;
- 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 requirements have been met.

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

There are no CARs and CLs raised for this monitoring period for the project.

2.5.1 Forward Action Requests

No FAR was raised during the verification process. Also there are no remaining from former verification and validation.

2.6 Eligibility for Validation Activities

Not applicable as LGAI Technological Center, S.A. holds the accreditation for the validation and verification for projects under scope 1 and 13.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

Through reviewing the registered PD /3/ and validation report /4/, it was validated that the project has been registered as VCS project which is available at <https://registry.verra.org/app/projectDetail/VCS/2464>. The project does not participate in the other emissions trading program by checking public information on Internet, interviewing with project owner and statement issued by project owner.

Therefore, Applus+ Certification consider the project is eligible to participate under the VCS Program as there is no double counting for the emission reduction during any period.

3.2 Methodology Deviations

Not applicable as not deviation for methodology.

3.3 Project Description Deviations

Not applicable as not deviation for project description.

3.4 Grouped Project

Not applicable as not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

By means of on-site visit, the assessment team confirms that all physical features of the project activity proposed in the registered VCS PD /3/ are in place and the PP has operated the project as per registered VCS PD /3/. The total installed capacity of the project activity is 5.8 MW, consisting of 6 sets with each capacity of 0.966 MW. The landfill where the project located will process 1,135 tons of MSW each day. The electricity generated is transmitted to the local Power Grid via a transformer station, which was then exported to the SCPG. The feed-in electricity is estimated to be 365,083 MWh during the fixed 10 years crediting period. The construction of the project started on 30/09/2019, the project started operation on 03/04/2020 verified by checking Opinions on Completion Inspection of Power-receiving Projects /45/. There are no changes on the key equipment and technology since the validation of the project. No special event which would affect the monitoring of the project has been observed during the monitoring period.

By checking EIA Report /47/, Staff roster /11/, China's National Plan on Implementation of the 2030 Agenda for Sustainable Development and 17 SDGs defined by UNDP, interviewing stakeholders during site visit, the assessment team confirmed that the project activity would contribute sustainable development in the region and China's Sustainable Development Goals (SDG). The specific sustainable development goals that the project activity could achieve have been listed as follows:

- SDG13 "Take urgent action to combat climate change and its impacts": the project will utilize and destroy landfill gas that would otherwise be released directly into the atmosphere, effectively reducing GHG emissions and air pollution in the surrounding area and decreasing odour nuisance and minimizing health risks of local residents. Meanwhile, the project activity is able to increase the safety on the landfill through Proper extraction and utilization of the landfill gas, which minimizes the potential for LFG migration on site and reduce the explosion risks of landfill gas. This contributes to achieve one of China's stated sustainable development priorities "Actively adapt to climate change and strengthen resistance capacity to climate risks in agriculture, forestry, water resources and other key fields, as well as cities, coastal regions and ecologically vulnerable areas". During this monitoring period, total GHG emission reduction was 246,932 tCO₂e.

- SDG7 "Ensure access to affordable, reliable, sustainable and modern energy for all": the project activity will provide clean and renewable energy source through making use of landfill gas, displacing the power generation of fossil fuel power plants by using renewable energy sources, reducing fossil fuel consumption in NEPG. This contributes to one of the China's actions for promoting sustainable developing, "By 2030, increase the share of non-fossil fuels in primary energy consumption to about 20 percent". During this monitoring period, 36,077.41 MWh of net electricity was generated by utilizing LFG and delivered to SCPG.

- SDG 8 “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”: the project activity increases 12 employment opportunities for the management, operation and maintenance of the power plant. This contributes to one of the China’s actions for promoting sustainable developing, “Increase labor force participation rate through implementation of the classification policy. Vigorously enforce the Law on Promotion of Employment”.

The technical parameters have been verified with the nameplates of the generators /9/ as below:

Technical parameters of the generators

Type	Gas-fired Engine and generator
Manufacturer	Jenbacher
Model	J320 GS
Rated Voltage	400 V
Rated capacity	966kW
Lifetime	15 years

The purpose of the project is to utilize landfill gas (LFG), which consists mainly of methane, for electricity generation. It includes LFG collection system, LFG pre-treatment system, electricity generation system and flare system. LFG collected will be used for electricity generation with internal combustion generators. The flaring system will only be involved when the electricity generation system is not in operation,

By checking the registered PD /3/, validation report /4/ and interviewing with Project Developer during site visit, it is confirmed by the assessment team that the project developer determined that VERs from flare will not be claimed, even if any methane is destroyed by flare during the crediting period. VERs will only be claimed from the methane destroyed by power generation system and the power displacement.

By comparing the actual ER claimed in this monitoring period with the estimate in the registered PD, the actual emission reductions (246,932 tCO₂e) are lower than what is stated in the registered PD (i.e. 302,555 tCO₂e, based on the estimated value of ER indicated in the registered PD) which surely will not lead to the overestimation of VERs.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period.

All required equipments and procedures are available and implemented in an appropriate manner.

All necessary monitoring instruments are installed. All required instruments including standby and operating procedures for the same have been implemented in an appropriate manner.

The project is completely operational and the same has been confirmed on-site. Neither mistakes nor malfunction on main meters have been observed during this monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

By checking the EIA summary and conclusion provided in the registered PD, 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. Also, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during the site visit. The project is LFG power generation project and thus no net harm observed in air or water quality on-site. Furthermore, by checking Staff roster /11/, interviewing stakeholders during site visit, The assessment team confirmed that the implementation of the project activity could increase employment opportunities in the local area.

4.2.2 Local Stakeholder Consultation

By checking the attendance list /43/, the assessment team confirmed a local stakeholder consultation meeting was held on 15/05/2020 by the project owner. Before the stakeholder consultation meeting, the project information with contact information and the stakeholder meeting notice were published on the bulletins at and nearby the project site on 15/04/2020 to invite Local stakeholders.

During the meeting, the project information and the continuous input / grievance mechanism have been introduced to the local stakeholders. The project information with contact information has also been posted on the bulletins at and nearby the project site.

During the meeting, a survey was carried out on the local residents and comments received from the survey are summarized as follows. The survey was conducted through distributing and collecting responses to a questionnaire. In total 30 out of 30 questionnaires were returned with a 100% response rate.

The opinions expressed by the stakeholders were recorded and are available on request. The stakeholder meeting and the survey showed that the project receives no negative comments on its the construction. Communications with Local stakeholders was being carried out at periodic intervals.

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

By checking the filled questionnaires from local stakeholders /32/, it is confirmed by the assessment team that communications with local stakeholders was being carried out in May 2020 by the project owner. There are no negative comments received for the project.

Via checking questionnaires from local stakeholders, interviewing with staff from local environmental protection bureau and local residents during the site visit, it is confirmed by the assessment team that during the implementation stage of this monitoring period, local authority has conducted spot checks on the implementation of the project periodically as per the request from the local governments' regulations. And it is confirmed by the assessment team that there were no negative comments and issues from the local stakeholders during this monitoring period and the project passed all the periodic spot checks by local government.

4.3 AFOLU-Specific Safeguards

Not applicable as non-AFOLU project.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PD /3/.

By checking Monitor System Display Screen during site visit /6/, it is confirm by the assessment team that the parameter $V_{t,wb}$ have been converted automatically into normal condition (0 °C and 101,325 Pa) during the monitoring process, therefore, P_t and T_t are not included as separate parameters according to the registered PD.

For all rest parameters, including Management of SWDS, $Op_{j,h}$, $EG_{PJ,y}$, $TDL_{k,y}$, $EC_{PJ,y}$, $TDL_{j,y}$, f , $V_{i,t,wb}$, $V_{t,wb}$, CAPEX and OPEX, Tariff of electricity exported were monitored and determined as per the monitoring plan which is listed in below table.

Data / Parameter:	Management of SWDS
Data unit:	/
Description:	Management of SWDS
Purpose of the data:	Calculation of baseline emissions
Parameter value:	/
Source of data used:	Original design of the landfill
Information flow:	/
Monitoring method, frequency and equipments:	This parameter was monitored annually by the project owner through following up with any changes in the management of Pingli Landfill Site. Through interview with staff from Pingli Landfill Site and by checking the Operation Management Manual of Pingli Landfill site /23/, 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:	/
QA/QC procedure:	/
Means of verification:	Staff from Pingli Landfill Site was interviewed, the Operation Management Manual of Pingli Landfill site was checked, and on-site inspection was conducted by the assessment team, all monitoring method and frequency meets the description in the PD.

Data / Parameter:	Op _{j,h}												
Data unit:	/												
Description:	Operation of the electricity generators that consume the LFG												
Purpose of the data:	Calculation of baseline emissions												
Parameter value:	The methane was destructed through using for electricity generation. The project activity was in normal operational condition, while the operation hours of generators were monitored by the project owner. The operational hours of generators in this monitoring period were: <table border="1"> <tr> <td>generator 1#</td><td>5,685 h</td></tr> <tr> <td>generator 2#</td><td>9,101 h</td></tr> <tr> <td>generator 3#</td><td>4,520 h</td></tr> <tr> <td>generator 4#</td><td>9,881 h</td></tr> <tr> <td>generator 5#</td><td>9,987 h</td></tr> <tr> <td>generator 6#</td><td>5,829 h</td></tr> </table>	generator 1#	5,685 h	generator 2#	9,101 h	generator 3#	4,520 h	generator 4#	9,881 h	generator 5#	9,987 h	generator 6#	5,829 h
generator 1#	5,685 h												
generator 2#	9,101 h												
generator 3#	4,520 h												
generator 4#	9,881 h												
generator 5#	9,987 h												
generator 6#	5,829 h												
Source of data used:	The operational hours are all sourced from Operating Time Statistics of Generator Units /17/ issued by the project owner.												
Information flow:	By checking Monitor System Display Screen during site visit /6/, the assessment team confirmed that the operating hours of each gas engine are automatically monitored and recorded every hour by an integrated												

	monitoring device in the engine system, which is consistent with methodology and registered PD. The Operating Time Statistics of Generator Units /17/ was generated by the project owner regularly. The data has been sent to the project participants for reporting of GHG emission reduction.
Monitoring method, frequency and equipments:	The parameter was monitored continuously by an integrated monitoring device in the engine system, recorded every hour automatically.
Calibration:	/
QA/QC procedure:	/
Means of verification:	Information flow was verified by checking the Operating Time Statistics of Generator Units /17/, and all information are consistent; The operating hours was manually recorded in Power generation operation data sheet /14/ by project owner. The unit downtime is recorded in the Maintenance Record /33/. Data recorded in the Operating Time Statistics of Generator Units /17/ was crosschecked with that in Power Generation Operation Data Sheet /14/, it is confirmed by the assessment team that all information are consistent; Monitoring method was verified by site visit, checking the relevant records, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.

Data / Parameter:	EG _{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:	36,174.47
Source of data used:	Monthly Electricity Meter Reading Records /10/ and Electricity Transaction Notes (ETNs) /24/ covering monitoring period.
Information flow:	One main electricity meter and its backup meter were installed by local grid company at the transformer substation located at the project site to monitor

	continuously and the meter reading was recorded monthly. At 24:00 hr of last day of each month, the staff from project owner will record the electricity meter readings and generate Monthly Electricity Meter Reading Records. At the same cut-off time, main meter readings will be recorded remotely and digitally by local power grid company and the data will be downloaded and transcribed into Electricity Transaction Notes (ETNs) /24/. The data for Monthly Electricity Meter Reading Records and ETNs has been sent to the project participant for reporting of GHG emission reduction. The conservative one would be used for ER calculation.												
Monitoring method, frequency and equipments:	The parameter was monitor continuously, recorded monthly by the electricity meter installed by local grid company at the transformer substation located at the project site. See below for the information of the electricity meter verified by site visit and checking calibration certificates /12/: <table><tr><th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>Electricity meter (main)</td><td>DSSD718</td><td>001700006603</td><td>0.5S</td></tr><tr><td>Electricity meter (backup)</td><td>DSSD718</td><td>001700007636</td><td>0.5S</td></tr></table> The type, serial number and accuracy have been confirmed by site visit /26/.	Meter	Type	Serial Number	Accuracy	Electricity meter (main)	DSSD718	001700006603	0.5S	Electricity meter (backup)	DSSD718	001700007636	0.5S
Meter	Type	Serial Number	Accuracy										
Electricity meter (main)	DSSD718	001700006603	0.5S										
Electricity meter (backup)	DSSD718	001700007636	0.5S										
Calibration:	The calibration information is shown as below /12/: <table><tr><th>Meter</th><th>Calibration date</th><th>Valid until</th></tr><tr><td rowspan="2">Electricity meter (main and backup)</td><td>16/03/2020</td><td>15/03/2021</td></tr><tr><td>15/03/2021</td><td>14/03/2022</td></tr></table> The calibration was conducted by a qualified third party, Guangxi Electric Energy Measurement and Testing Center /13/.	Meter	Calibration date	Valid until	Electricity meter (main and backup)	16/03/2020	15/03/2021	15/03/2021	14/03/2022				
Meter	Calibration date	Valid until											
Electricity meter (main and backup)	16/03/2020	15/03/2021											
	15/03/2021	14/03/2022											
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 Monthly Electricity Meter Reading Records and ETNs. All data is in line with Monthly Electricity Meter Reading Records and ETNs; Information flow was verified by checking Monthly Electricity Meter Reading Records and ETNs, and all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate, all calibration of												

	monitoring equipment meets the requirement indicated in the PD.
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Data / Parameter:	TDL _{k,y}
Data unit:	-
Description:	Average technical transmission and distribution losses for providing electricity to source k in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	3%
Source of data used:	Default value from methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"
Information flow:	/
Monitoring method, frequency and equipments:	The default value from methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" was adopted to calculate the baseline emissions.
Calibration:	/
QA/QC procedure:	/
Means of verification:	The default value from methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" was adopted to calculate the baseline emissions, which is consistent with the registered PD.

Data / Parameter:	EC _{PJ,y}
Data unit:	MWh
Description:	Amount of electricity consumed by the project activity in year y
Purpose of the data:	Calculation of project emissions
Parameter value:	97.06
Source of data used:	Monthly Electricity Meter Reading Records /10/, ETNs /35/ of electricity consumed from the grid issued by the power grid company covering monitoring period.
Information flow:	One main electricity meter and its backup meter were installed by local grid

	company at the transformer substation located at the project site to monitor continuously and the meter reading was recorded monthly. At 24:00 hr of last day of each month, the staff from project owner will record the electricity meter readings and generate Monthly Electricity Meter Reading Records. At the same cut-off time, main meter readings will be recorded remotely and digitally by local power grid company and the data will be downloaded and transcribed into Electricity Transaction Notes (ETNs) /35/. The data for Monthly Electricity Meter Reading Records and ETNs has been sent to the project participant for reporting of GHG emission reduction. The conservative one would be used for ER calculation.												
Monitoring method, frequency and equipments:	The parameter was monitor continuously, recorded monthly by the electricity meter installed by local grid company at the transformer substation located at the project site. See below for the information of the electricity meter verified by site visit and checking calibration certificates /12/: <table><tr><th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>Electricity meter (main)</td><td>DSSD718</td><td>001700006603</td><td>0.5S</td></tr><tr><td>Electricity meter (backup)</td><td>DSSD718</td><td>001700007636</td><td>0.5S</td></tr></table> The type, serial number and accuracy have been confirmed by site visit /26/.	Meter	Type	Serial Number	Accuracy	Electricity meter (main)	DSSD718	001700006603	0.5S	Electricity meter (backup)	DSSD718	001700007636	0.5S
Meter	Type	Serial Number	Accuracy										
Electricity meter (main)	DSSD718	001700006603	0.5S										
Electricity meter (backup)	DSSD718	001700007636	0.5S										
Calibration:	The calibration information is shown as below /12/: <table><tr><th>Meter</th><th>Calibration date</th><th>Valid until</th></tr><tr><td rowspan="2">Electricity meter (main and backup)</td><td>16/03/2020</td><td>15/03/2021</td></tr><tr><td>15/03/2021</td><td>14/03/2022</td></tr></table> The calibration was conducted by a qualified third party, Guangxi Electric Energy Measurement and Testing Center /13/.	Meter	Calibration date	Valid until	Electricity meter (main and backup)	16/03/2020	15/03/2021	15/03/2021	14/03/2022				
Meter	Calibration date	Valid until											
Electricity meter (main and backup)	16/03/2020	15/03/2021											
	15/03/2021	14/03/2022											
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 Monthly Electricity Meter Reading Records and ETNs of Electricity consumed from the grid. All data is in line with Monthly Electricity Meter Reading Records and ETNs; Information flow was verified by checking Monthly Electricity Meter Reading Records and ETNs, and all information are consistent; Monitoring method was verified by site visit, checking calibration												

	certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.
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Data / Parameter:	TDL _{j,y}
Data unit:	/
Description:	Average technical transmission and distribution losses for providing electricity to source j in year y
Purpose of the data:	Calculation of project emissions
Parameter value:	20%
Source of data used:	Default value from methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"
Information flow:	/
Monitoring method, frequency and equipments:	The default value from methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" was adopted to calculate the project emissions.
Calibration:	/
QA/QC procedure:	/
Means of verification:	The default value from methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" was adopted to calculate the project emissions, which is consistent with the registered PD.

Data / Parameter:	f
Data unit:	/
Description:	Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	0

Source of data used:	Historic data from SWDS
Information flow:	/
Monitoring method, frequency and equipments:	The parameter was followed up by the project owner and was determined once for the crediting period. In the absence of the project, LFG from Pingli Landfill site is emitted directly into atmosphere. Through interview with staff from Pingli Landfill Site and by checking the Operation Management Manual of Pingli Landfill site /23/, the assessment team confirmed that the methane was not captured at SWDS or not flare, combusted. And no other measures that prevents the emissions of methane to the atmosphere are taken.
Calibration:	/
QA/QC procedure:	/
Means of verification:	By interviewing with staff from Pingli Landfill Site, the assessment team confirmed that in the absence of the project, the methane was not captured at SWDS or not flare, combusted. And no other measures that prevents the emissions of methane to the atmosphere are taken. The baseline scenario or monitoring plan will not change accordingly.

Data / Parameter:	$V_{i,t,wb}$
Data unit:	$m^3 \text{ gas } i / m^3 \text{ wet gas}$
Description:	Volumetric fraction of greenhouse gas i in the gaseous stream in time interval t on a wet basis
Purpose of the data:	Calculation of baseline emissions
Parameter value:	52.39% (hourly average value for this monitoring period)
Source of data used:	Pretreatment Monitoring Records /19/ issued by the project owner
Information flow:	The volumetric fraction of methane in the gaseous stream was measured by an continuous in-situ gas analyzer. By checking Monitor System Display Screen during site visit /6/, the assessment team confirmed that the readings of the gas analyzer was continuously monitored and hourly recorded /19/ by Online Monitoring System through recordable electronic signal, which is consistent with methodology and registered PD. The data has been sent to the project participants for reporting of GHG emission reduction.

Monitoring method, frequency and equipments:	The parameter was monitored continuously and recorded hourly automatically by Online Monitoring System through recordable electronic signal. <table><tr><th>Equipment</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>Gas analyzer</td><td>GTR 196</td><td>63523/5</td><td>2%</td></tr></table> The type, serial number and accuracy have been confirmed by site visit /26/.	Equipment	Type	Serial Number	Accuracy	Gas analyzer	GTR 196	63523/5	2%
Equipment	Type	Serial Number	Accuracy						
Gas analyzer	GTR 196	63523/5	2%						
Calibration:	The calibration information is shown as below /21/: <table><tr><th>Equipment</th><th>Calibration date</th><th>Valid until</th></tr><tr><td rowspan="2">Gas analyzer</td><td>07/02/2020</td><td>06/02/2021</td></tr><tr><td>06/02/2021</td><td>05/02/2022</td></tr></table> The calibration was conducted by a qualified third party, Shenzhen Academy of Metrology and Quality Inspection/42/. As per the calibration certificate /21/, the zero verification with an inert gas (N₂) and one reading verification with a standard gas (single calibration gas, CH₄) was included. All calibration gases have been certified and were under their validity period.	Equipment	Calibration date	Valid until	Gas analyzer	07/02/2020	06/02/2021	06/02/2021	05/02/2022
Equipment	Calibration date	Valid until							
Gas analyzer	07/02/2020	06/02/2021							
	06/02/2021	05/02/2022							
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:	Information flow was verified by checking Pretreatment Monitoring Records /19/, and all information are consistent; Data recorded in Pretreatment Monitoring Records /19/ was crosschecked with that in daily monitoring data of LFG Volumetric fraction and flow recorded in Daily Operation Report /46/. It is confirmed by the assessment team that all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.								

Data / Parameter:	V _{t,wb}
Data unit:	m ³ wet gas/h
Description:	Volumetric flow of the gaseous stream in time interval t on a wet basis

Purpose of the data:	Calculation of baseline emissions											
Parameter value:	2,296.11 (average value for this monitoring period at normal conditions)											
Source of data used:	Pretreatment Monitoring Records /19/ issued by the project owner											
Information flow:	The volumetric flow of methane in the gaseous stream was measured by a continuous flow meter. By checking Monitor System Display Screen during site visit /6/, the assessment team confirmed that the readings of the flow meter was continuously monitored and hourly recorded /19/ by Online Monitoring System through recordable electronic signal, which is consistent with the registered PD. The data has been sent to the project participants for reporting of GHG emission reduction.											
Monitoring method, frequency and equipments:	The parameter was monitored continuously and recorded hourly automatically by Online Monitoring System through recordable electronic signal. <table><tr><th>Equipment</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>Flow meter</td><td>KZV</td><td>19122401</td><td>0.5%</td></tr></table> The type, serial number and accuracy have been confirmed by site visit /26/.				Equipment	Type	Serial Number	Accuracy	Flow meter	KZV	19122401	0.5%
Equipment	Type	Serial Number	Accuracy									
Flow meter	KZV	19122401	0.5%									
Calibration:	The calibration information is shown as below /22/: <table><tr><th>Equipment</th><th>Calibration date</th><th>Valid until</th></tr><tr><td rowspan="2">Flow meter</td><td>09/12/2019</td><td>08/12/2020</td></tr><tr><td>08/12/2020</td><td>07/12/2021</td></tr></table> The calibration was conducted by a qualified third party, Aviation Industry Corporation of China Beijing Great Wall Metrology and Testing Technology Research Institute /44/. By checking Monitor System Display Screen during site visit /6/, It is confirm by the assessment team that the parameter $V_{t,wb}$ have been converted automatically into normal condition (0 °C and 101,325Pa) during the monitoring process. The readings of temperature transducer and pressure transducer measuring T_t and P_t was monitored automatically by Online Monitoring System through recordable electronic signal. The calibration information of Temperature transducer and Pressure transducer is shown below:				Equipment	Calibration date	Valid until	Flow meter	09/12/2019	08/12/2020	08/12/2020	07/12/2021
Equipment	Calibration date	Valid until										
Flow meter	09/12/2019	08/12/2020										
	08/12/2020	07/12/2021										

	Equipment	Type	Serial number	Accuracy	Calibration date	Valid until
	Temperature transducer	KZW/P-240E	19120776	0.2	09/12/2019	08/12/2020
					08/12/2020	07/12/2021
	Equipment	Type	Serial number	Accuracy	Calibration date	Valid until
	Pressure transducer	KZY-KB-P	19120342	0.25	09/03/2020	08/04/2020
					09/04/2020	08/05/2020
					09/05/2020	08/06/2020
					09/06/2020	08/07/2020
					09/07/2020	08/08/2020
					09/08/2020	08/09/2020
					09/09/2020	08/10/2020
					09/10/2020	08/11/2020
					09/11/2020	08/12/2020
					09/12/2020	08/01/2021
					09/01/2021	08/02/2021
					09/02/2021	08/03/2021
					09/03/2021	08/04/2021
					09/04/2021	08/05/2021
					09/05/2021	08/06/2021
09/06/2021	08/07/2021					
The type, serial number and accuracy have been confirmed by site visit /26/.						
The calibration of Temperature transducer and Pressure transducer /25/ was conducted by a qualified third party, Aviation Industry Corporation of China Beijing Great Wall Metrology and Testing Technology Research Institute /44/.						
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:	Information flow was verified by checking Pretreatment Monitoring Records					

	/19/, and all information are consistent; Data recorded in Pretreatment Monitoring Records /19/ was crosschecked with that in Daily Operation Report /46/. It is confirmed by the assessment team that all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.
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Data / Parameter:	CAPEX and OPEX												
Data unit:	CNY												
Description:	Total investment to implement the project and total cost to operate the project												
Purpose of the data:	For projects applying the simplified procedures to identify the baseline scenario and demonstrate additionality												
Parameter value:	CAPEX: 61 million OPEX: 11.2 million												
Source of data used:	Engineering, procurement and construction contracts /28/~31/ and operation contracts /36/~40/												
Information flow:	The Engineering, procurement and construction contracts /28/~31/ and operation contracts /36/~40/ and contract lists /16/ /18/ have been sent to the project participants for reporting of GHG emission reduction.												
Monitoring method, frequency and equipments:	In this monitoring period, the project activity was fully implemented. The Engineering, procurement and construction contracts /28/~31/ have been signed by the project owner and audited by an independent financial audit company /27/, which were: <table border="1"> <thead> <tr> <th>Contract</th><th>Amount (CNY)</th></tr> </thead> <tbody> <tr> <td>Lightning rod tower installation contract/28/</td><td>0.096036 million</td></tr> <tr> <td>Power distribution construction contract /29/</td><td>8.635 million</td></tr> <tr> <td>Engineering construction contract /30/</td><td>0.561 million</td></tr> <tr> <td>Generator Unit Financing Lease Contract /31/</td><td>36.42 million</td></tr> <tr> <td>Total</td><td>45.712 million</td></tr> </tbody> </table> Total investment to implement the project was CNY 61 million as per the list	Contract	Amount (CNY)	Lightning rod tower installation contract/28/	0.096036 million	Power distribution construction contract /29/	8.635 million	Engineering construction contract /30/	0.561 million	Generator Unit Financing Lease Contract /31/	36.42 million	Total	45.712 million
Contract	Amount (CNY)												
Lightning rod tower installation contract/28/	0.096036 million												
Power distribution construction contract /29/	8.635 million												
Engineering construction contract /30/	0.561 million												
Generator Unit Financing Lease Contract /31/	36.42 million												
Total	45.712 million												

	of construction contracts /16/, which have been audited by an independent financial audit company /27/.																
	The operation contracts /36/~40/ have been audited by an independent financial audit company /27/, which were:																
	<table><tr><th>Contract</th><th>Amount (CNY)</th></tr><tr><td>PE Water Supply Pipe and Fittings Procurement Contract /36/</td><td>1.29897 million</td></tr><tr><td>Engine Oil Purchase Contract/37/</td><td>0.89261 million</td></tr><tr><td>Purchase Contract of Jenbach Generator Unit Accessories /38/</td><td>0.11767 million</td></tr><tr><td>Geomembrane Procurement Contract/39/</td><td>0.56 million</td></tr><tr><td>Turbocharger repair service contract /40/</td><td>0.308728 million</td></tr><tr><td>Labor Contract /41/</td><td>1.428 million</td></tr><tr><td>Total</td><td>4.606 million</td></tr></table>	Contract	Amount (CNY)	PE Water Supply Pipe and Fittings Procurement Contract /36/	1.29897 million	Engine Oil Purchase Contract/37/	0.89261 million	Purchase Contract of Jenbach Generator Unit Accessories /38/	0.11767 million	Geomembrane Procurement Contract/39/	0.56 million	Turbocharger repair service contract /40/	0.308728 million	Labor Contract /41/	1.428 million	Total	4.606 million
	Contract	Amount (CNY)															
	PE Water Supply Pipe and Fittings Procurement Contract /36/	1.29897 million															
	Engine Oil Purchase Contract/37/	0.89261 million															
	Purchase Contract of Jenbach Generator Unit Accessories /38/	0.11767 million															
	Geomembrane Procurement Contract/39/	0.56 million															
	Turbocharger repair service contract /40/	0.308728 million															
	Labor Contract /41/	1.428 million															
Total	4.606 million																
The total cost to operate the project was CNY 11.2 million as per the list of operation contracts /18/, which have been audited by an independent financial audit company /27/.																	
Calibration:	/																
QA/QC procedure:	All the contracts and financial reports will be archived for a period of 2 years after the crediting period to which the records pertain.																
Means of verification:	The Engineering, procurement and construction contracts /28/~31/, the operation contracts /36/~40/, contract lists /16/ /18/, Financial Audit Report /27/ issued by independent Financial Auditing Company have been checked by the assessment team. All information are consistent with that in the MR;																
	The Engineering, procurement and construction contracts /28/~31/, the operation contracts /36/~40/ have been confirmed to be consistent with that in the Financial Audit Report /27/;																
	All monitoring method meets the requirement indicated in the registered PD.																

Data / Parameter:	Tariff of electricity exported
Data unit:	CNY/kWh
Description:	Tariff of the electricity exported
Purpose of the data:	For projects applying the simplified procedures to identify the baseline scenario and demonstrate additionality

Parameter value:	0.4207
Source of data used:	The Power Purchase Agreement (PPA) /20/ and Notice of feed-in tariffs of the project activity - “Notice on Matters Concerning Reasonable Adjustment of Electricity Price Structure” issued by Guangxi Zhuang Autonomous Region Price Bureau /34/
Information flow:	The Power Purchase Agreement (PPA) /20/ and Notice of feed-in tariffs of the project activity /34/ have been sent to the project participants for reporting of GHG emission reduction.
Monitoring method, frequency and equipments:	As per Notice of feed-in tariffs of the project activity and PPA of the project activity, tariffs of the project activity is 0.4207 CNY/kWh.
Calibration:	/
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:	The tariff of the project activity in PPA /20/ was crosscheck with that in the independent third party Financial Audit Report /27/. it is confirmed by the assessment team that the electricity tariff of the project activity was 0.4207 CNY/kWh; The tariff of the project activity was verified by checking Notice of feed-in tariffs of the project activity, PPA and independent third party Financial Audit Report. All information are consistent with that in the MR; All monitoring method meets the requirement indicated in the PD.

Parameters available at validation stage:

The parameter $BE_{CH_4,SWDS,y}$ - methane generation from the landfill in the absence of the project activity, is only used for ex-ante estimation the parameter $F_{CH_4,PJ,y}$. In this monitoring period, the parameter $F_{CH_4,PJ,y}$ was ex post determined through monitoring parameters, which is consistent with the approved methodology ACM0001. Thus, the parameters, including ϕ_y , OX , F , DOC_f , MCF_y , k_j , $W_{j,x}$, DOC_j , f_y , η_{PJ} , which determined $BE_{CH_4,SWDS}$ and $F_{CH_4,PJ,y}$ ex-ante are not included in this report.

Below data has been verified against the data sources and the registered PD.

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	0.8042	t CO_2 /MWh	2019 Baseline Emission Factors for Regional Power Grids in China dated 29/12/2020 published by China DNA /15/.
$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y	0.2135	t CO_2 /MWh	2019 Baseline Emission Factors for Regional Power Grids in China dated 29/12/2020 published by China DNA /15/.
$EF_{grid,CM,y}$	Combined margin CO_2 emission factor in year y	0.50885	t CO_2 /MWh	Calculated as per “Tool to calculate the emission factor for an electricity system”
R_u	Universal ideal gases constant	8,314	Pa.m ³ /kmol.K	Tool to determine the mass flow of a greenhouse gas in a gaseous stream
MM_i	Molecular mass of greenhouse gas i	16.04	kg/kmol	Tool to determine the mass flow of a greenhouse gas in a gaseous stream
P_n	Total pressure at normal conditions	101,325	Pa	Tool to determine the mass flow of a greenhouse gas in a gaseous stream
T_n	Temperature at normal conditions	273.15	K	Tool to determine the mass flow of a greenhouse gas in a gaseous stream

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PD /3/ version 1.1 dated 22/04/2021.

As a result of verification of the ER calculation process, the assessment team confirmed that all the parameters required for the determination of the emission reductions have been included in the Monitoring Report /1/ and ER Calculation Spreadsheet /2/ and are consistent with the applied methodology ACM0001: Flaring or use of landfill gas Version 19.0 and the monitoring plan contained in the registered PD. The parameters are complete in this monitoring period.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the ER Calculation Spreadsheet and the MR Report. The verification process for the same has been clearly described above in section 4.4 of the report.

4.6 Non-Permanence Risk Analysis

Not applicable as a renewable project.

5 VERIFICATION CONCLUSION

Applus+ Certification has been commissioned by Swiss Carbon Value Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Nanning Landfill Gas Power Generation Project” (VCS Ref. No. 2464).

The management of Guangxi Ruirong Energy Technology Co., Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the registered PD /3/, version 1.1 dated 22/04/2021.

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

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

In our opinion, the GHG emission reductions for “Nanning Landfill Gas Power Generation Project” during the monitoring period 03/04/2020 to 30/06/2021 as reported in Monitoring Report, prepared on the basis of the project’s Monitoring Plan are fairly stated. Based on the information we have seen and evaluated, we confirm the following statement:

Verification period: From 03/04/2020 to 30/06/2021 (divided into 2 vintage periods).

Verified GHG emission reductions or removals in the above reporting period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
03/04/2020-31/12/2020	117,334	59	0	117,275
01/01/2021 - 30/06/2021	129,659	2	0	129,657
Total	246,993	61	0	246,932

APPENDIX 1: REFERENCE LIST

1. Monitoring report, Version 01 dated 02/07/2021; Version 01.1 dated 16/07/2021
2. ER calculation spreadsheet
3. Registered VCS PD, version 1.1 dated 22/04/2021
4. Validation report, Version 01.0, completed on 28/04/2021 by Applus+ Certification
5. VCS Standard version 4.1, dated on 22/04/2021
6. Photo of Monitoring System Display Screen
7. Approved methodology ACM0001: Flaring or use of landfill gas, Version 19.0, dated 14/06/2019
8. VCS Monitoring procedure
9. Nameplate of the generators
10. Monthly Electricity Meter Reading Records covering the monitoring period
11. Staff roster provided by the project owner
12. Calibration certificates of electricity meter covering the whole monitoring period issued by Guangxi Electric Energy Measurement and Testing Center
13. Metrological Authorization Certification of Guangxi Electric Energy Measurement and Testing Center, issued by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, valid from 06/11/2017 to 05/11/2022
14. Power generation operation data sheet covering the monitoring period, issued by the project owner
15. 2019 Baseline Emission Factors for Regional Power Grids in China dated 29/12/2020 published by China DNA
16. The list of construction contracts provided by the project owner
17. Operating Time Statistics of Generator Units covering the monitoring period, issued by the

project owner

- 18 The list of operation contracts provided by the project owner
- 19 Pretreatment Monitoring Records covering the monitoring period, issued by the project owner
- 20 Power purchase agreement (PPA), signed between the power grid company and the project owner
- 21 Calibration certificates of gas analyzer covering the whole monitoring period issued by Shenzhen Academy of Metrology and Quality Inspection
- 22 Calibration certificates of flow meter covering the whole monitoring period issued by Aviation Industry Corporation of China Beijing Great Wall Metrology and Testing Technology Research Institute.
- 23 Operation Management Manual of Pingli Landfill site, issued on 01/01/2021
- 24 Electricity Transaction Notes (ETNs) of electricity generated using LFG by the project activity, issued by power grid company and covering the whole monitoring period.
- 25 Calibration certificates of Temperature transducer and Pressure transducer covering the whole monitoring period issued by Changcheng Institute of Metrology & Measurement
- 26 Photos of electricity meter, gas analyzer, flow meter, Temperature transducer and Pressure transducer
- 27 Financial Audit Report issued by independent Financial Auditing Company commissioned by the project owner
- 28 Lightning rod tower installation contract signed between the project owner and Nanning Xietian Lightning Protection Engineering Co., Ltd.
- 29 Power distribution construction contract signed between the project owner and Guangdong Nanchao Power Construction Co., Ltd.
- 30 Engineering construction contract signed between the project owner and Guangxi Fengjie Construction Co., Ltd.
- 31 Generator Unit Financing Lease Contract signed between the project owner and Hitachi (Leasing) China Co., Ltd.
- 32 Questionnaires from local stakeholders
- 33 Maintenance Record provided by the project owner
- 34 Notice of feed-in tariffs of the project activity - "Notice on Matters Concerning Reasonable Adjustment of Electricity Price Structure" issued by Guangxi Zhuang Autonomous Region Price Bureau
- 35 Electricity Transaction Notes (ETNs) of electricity consumed from the grid issued by the power

- grid company issued by power grid company and covering the monitoring period
- 36 PE water supply pipe and fittings procurement contract signed between the project owner and Guangzhou Lianhong Pipe Industry Co., Ltd.
 - 37 Engine oil purchase contract signed between the project owner and Guangzhou Nuoyi Trading Co., Ltd.
 - 38 Purchase Contract of Jenbach Generator Unit Accessories signed between the project owner and Guangzhou Shenfa Electromechanical Industry Development Co., Ltd.
 - 39 Geomembrane Procurement Contract signed between the project owner and Jiangsu Chuangxin Geotechnical Material Co., Ltd.
 - 40 Turbocharger repair service contract signed between the project owner and Chongqing Subin Mechanical and Electrical Equipment Co., Ltd.
 - 41 Labor Contract signed between the project owner and employees
 - 42 Metrological Authorization Certification of Shenzhen Academy of Metrology and Quality Inspection, issued by Guangdong Provincial Market Supervision Administration, valid from 30/07/2019 to 29/07/2024
 - 43 Attendance list of stakeholder consultation meeting
 - 44 Metrological Authorization Certification of Aviation Industry Corporation of China Beijing Great Wall Metrology and Testing Technology Research Institute, valid from 29/12/2015 to 28/12/2020, from 29/12/2020 to 29/12/2025
 - 45 Opinions on Completion Inspection of Power-receiving Projects issued by local power grid company
 - 46 Daily Operation Report covering the monitoring period issued by the project owner
 - 47 Environmental Impact Assessment Report compiled by Guangxi Bohuan Environmental Consultancy Service Co., Ltd. In May 2019 and approved by Nanning City Xingning District Environmental Protection Bureau on 21/05/2019