



**Verified Carbon
Standard**

NANNING LANDFILL GAS POWER GENERATION PROJECT



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Carbon Asset Management Ltd.

Document Prepared by Swiss Carbon Value Ltd.

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Project Title	Nanning Landfill Gas Power Generation Project
Version	Version 1.0
Date of Issue	23-02-2021
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1 PROJECT DETAILS

1.1 Summary Description of the Project

Nanning Landfill Gas Power Generation Project (hereafter referred to as the project) is located at Pingli Landfill Site in Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, P.R China. The project is owned by Guangxi Ruihong Energy Technology Co., Ltd. (hereafter referred to as the project owner). The project has obtained the approval letter from Nanning City Administrative Approval Bureau in 2018. The total installed capacity will be 5.8MW. The annual feed-in electricity is estimated to be 36,000 MWh.

The Pingli landfill site began operation in 2016, with an aggregate designed capacity of 6,060,000 m³ and an operational lifespan of 10.5 years. It will handle an average of 1,135 tonnes MSW per day which is mainly from the Nanning City.

Before the implementation of the project activity, no gas extraction and utilization systems existed and the LPG was emitted into the atmosphere directly. The electricity is provided by South China Power Grid (SCPG) which is dominated by coal-fired power stations. This is the scenario that existed prior to the implementation of the project activity and is also the baseline scenario.

In absence of the project, equivalent amount of electricity exported to the grid by the project would have otherwise been supplied by SCPG. Greenhouse gas (GHG) emissions will be reduced by avoiding CO₂ emissions from those fossil fuel-based power plants connected to the grid and by avoiding GHG emissions from releasing LFG into atmosphere at the landfill site.

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. Meanwhile, the flare will only be involved when the electricity generation system is not in operation, hence, 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. The expected average annual emission reductions are 231,811 tCO₂e during the fixed 10 years crediting period.

1.2 Sectoral Scope and Project Type

The project falls into sectoral scope 01: energy industries (renewable-/non-renewable sources) and sectoral scope 13: Waste handling and disposal.

The project is not a grouped project.

1.3 Project Eligibility

The project is an LFG power generation project, utilizing landfill gas (LFG), which consists mainly of methane, for electricity generation, which is eligible under the scope of the VCS Program.

1.4 Project Design

The project is not a grouped project.

1.5 Project Proponent

Organization name	Guangxi Ruirong Energy Technology Co., Ltd.
Contact person	Ouyang Yuewen
Title	Carbon Management Department Manager
Address	Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, China
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Email	ouyangyuewen@chinawaterind.com

1.6 Other Entities Involved in the Project

Organization name	Swiss Carbon Value Ltd.
Role in the project	Project developer
Contact person	Renat Heuberger
Title	CEO
Address	Technoparkstr. 1, 8005, Switzerland.
Telephone	+41 43 501 35 50
Email	registration@southpolecarbon.com

1.7 Ownership

The approval for the project and approval of Environmental Impact Assessment (EIA) issued by Nanning City Xingning District Environmental Protection Bureau established the project ownership

to Guangxi Ruirong Energy Technology Co., Ltd. The main contracts¹ established the property and contractual right in the plant and equipment that generate GHG emission reductions.

1.8 Project Start Date

03/04/2020, the commissioning start date.

1.9 Project Crediting Period

This project adopts the fixed crediting period of 10 years, from 03/04/2020 to 02/04/2030 (the start and end dates included).

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	√
Large project	

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
03/04/2020-31/12/2020	176,456
2021	254,289
2022	268,582
2023	279,980
2024	289,291
2025	297,074
2026	262,011
2027	196,560
2028	150,932
2029	118,783
01/01/2030-02/04/2030	24,155
Total estimated ERs	2,318,113

¹ LFG generator contract; construction contract.

Total number of crediting years	10
Average annual ERs	231,811

1.11 Description of the Project Activity

As described in section 1.1., the scenario existing prior to the implementation of the project is the operation of the landfill with uncontrolled emission of the LFG generated to the atmosphere, i.e. the LFG generated due to the decomposition of the organic matter is vented through the vertical wells installed at the landfill's area.

Emissions associated with the baseline scenario are the CH₄ emissions due to the atmospheric release of the LFG and CO₂ emissions due to the power generation from fossil-fuel power plants. With the implementation of the project, the LFG previously released will be collected through the installation of pipelines and emission reductions will be achieved through the destruction of the gas collected in the power plant. Additionally, the project will export renewable electricity to the grid, avoiding the dispatch of the same amount of electricity from fossil-fuel based power plants in the SCPG. Therefore, none of the equipment installed in the project activity exists in the baseline scenario.

The project consists of the installation of an LFG collection system, an LFG pre-treatment system, an electricity generation plant, and a flare system.

LFG collection system

The landfill gas collecting system is a gas pipeline network, consisting of gas collecting wells, gas collecting pipelines, and gas collection blower. LFG will be extracted by gas collection blower and transported by pipeline from gas collection wells.

LFG pre-treatment system

Prior to electricity generation, LFG must be pre-treated to remove its impurities and moisture, etc., to prevent corrosion in the generators. According to the EIA, the pre-treatment system consists of six equipment: 1) Impurity Filter to remove the impurity in LFG primarily; 2) Condenser to remove the water in LFG; 3) Gas-liquid Separator to remove the liquid in LFG further; 4) Fan Blower to boost the LFG; 5) Heat Exchanger to cool down the gas; 6) Advanced Impurity Filter to remove the impurity thoroughly.

The LFG pre-treatment procedure and the main equipment are shown as the following chart:

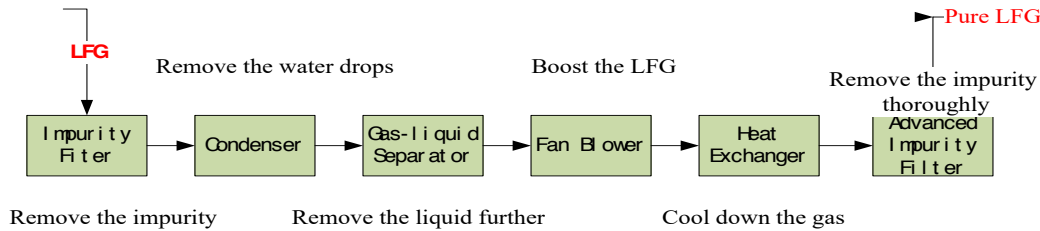


Figure 1 The flow chart of the LFG pre-treatment system

Power generation and grid connection system

A power plant will also be installed in order to generate electricity with the LFG captured. It adopts internal combustion engine generating sets. 6 sets with each capacity of 0.966MW have been installed for power generation. The electricity will be exported to SCPG.

This is a well-known and high reliable technology for biogas utilization. Furthermore, internal combustion engine generating sets have modular design and are available in many different sizes permitting the installation of power plant step by step as the LFG flow increases. High performance and reliability are guaranteed for the equipment.

The detailed information about the technology of the project is shown in the table below.

Table 1 Key technical parameters of internal combustion engine generating set

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

Flaring system

The landfill gas would be sent to be burnt in the flare device when the plant totally stopped. An enclosed flare is installed in the project. Meanwhile, the flare will only be involved when the electricity generation system is not in operation, hence, the project developer determined that VERs from flare will not be claimed, even if any methane is destroyed by flare during the crediting period.

1.12 Project Location

The project is located in Pingli landfill site in Xingning District, Nanning City, Guangxi Zhuang Autonomous Region, P.R China. The geographical location of the project site is shown in Figure

2. The central coordinates of the project location are longitude of 108°38'11" E and latitude of 23°00'43" N.

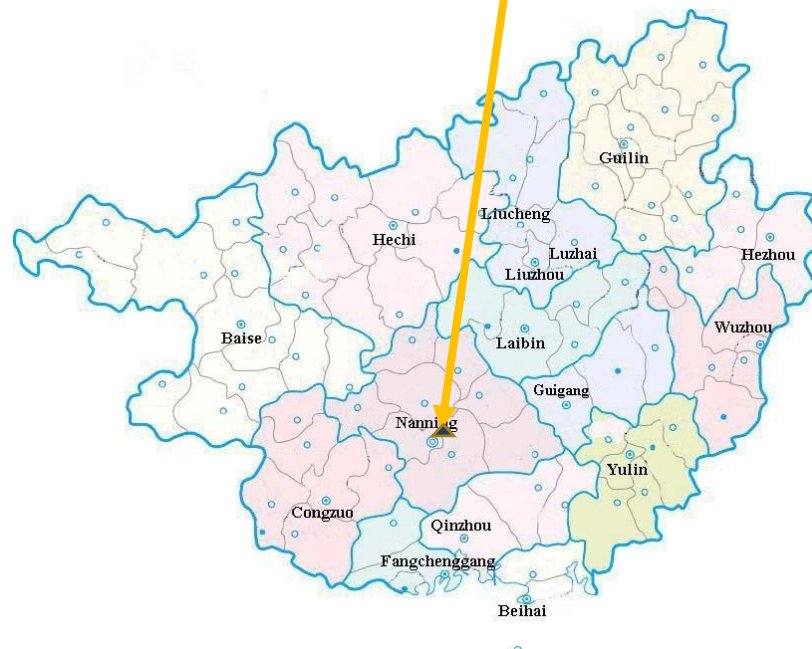


Figure 2 The location of the Project

1.13 Conditions Prior to Project Initiation

The scenario existing prior to the start of the implementation of the project activity is:

Before the project activity, LFG generated by the landfill site was released directly into the atmosphere. In addition, the quantity of electricity produced using LFG would have been produced by power plants connected to the grid.

The baseline scenario is the same as the scenario existing prior to the start of implementation of the project activity. Please refer to Section 3.3 (Baseline Scenario) for details.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

The project is in the field of waste handling and disposal and meets the relevant provisions of the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste. The generation of power to SCPG will meet the requirement of national laws and regulations, also financially viable.

The project also obtained the approval letters from local governmental authorities: Administrative Approval Bureau (AAB), as well as Environment Protection Agency (EPA). The two approvals well demonstrate that local governments permit the construction of the project. Hence, the project is in compliance with laws, status and other regulatory frameworks.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The project has not been registered or is seeking registration under any other GHG programs.

1.15.2 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG programs.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading.

1.16.2 Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit or renewable energy certificates.

1.17 Additional Information Relevant to the Project

Leakage Management

According to the methodology, no leakage effects are accounted for.

Commercially Sensitive Information

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

Sustainable Development

The project's goal is not only renewable energy generation, but also an environmental, social, and financial solution to avoid landfill gas release into the atmosphere.

- The project makes use of landfill gas to generate electricity, which is socially desirable.
- It aims to treat methane that would be released to the atmosphere. That means not only the project will reduce GHG emissions to local environment, but also provide an environmentally sound solution to minimize explosion risks and odour at the landfill site.
- The project will create employment opportunities related to the management, operation and maintenance of the power plant.

Further Information

N/A

2 SAFEGUARDS

2.1 No Net Harm

The Environmental Impact Assessment (EIA) Report for the project was compiled by Guangxi Bohuan Environmental Consultancy Service Co., Ltd. The EIA Report for the project has been approved by Nanning City Xingning District Environmental Protection Bureau on 21/05/2019. According to the approval comments of the EIA Report by Nanning City Xingning District Environmental Protection Bureau, the environmental impacts likely to be caused by the project are considered insignificant and conforming to the laws and regulations; therefore, there is no net harm.

2.2 Local Stakeholder Consultation

Tbc.

2.3 Environmental Impact

According to the Environmental Impact Assessment, environmental impacts possibly caused by the project and protection and guard measures adopted by the project owner are analysed as follows:

Water Quality

The amount of wastewater which is produced by the project is very small. The condensate water during the process of landfill gas collection will be treated by the landfill leachate treatment system. The domestic wastewater from onsite employees will be treated in the septic tank and then treated by the landfill leachate treatment system.

Air Quality

This project uses LFG which is collected from Pingli landfill site to generate electricity, and it avoids uncontrolled releasing of LFG. Therefore, it reduces greenhouse gas and effluvium emitting to air, and mitigates the possible danger of fire or explosion.

The emission of NO_x, SO₂ and NH₃ for this project is less than the emission standards, that is because prior to electricity generation, LFG has been pre-treated to remove its impurities and moisture. After that, LFG is sent to gas-fired engines. And the exhaust gas would be emitted to atmosphere which is far away from sensitive targets. Therefore, the emission of exhaust gas has little impact on surrounding environment.

Noise

The project is surrounded by landfill site and mountains, the only building which is next to the project is Pingli landfill site office building. The EIA has said that under the influence of distance attenuation, air absorption and trees blocking, the noise of the project has no impact on surrounding residential areas.

Solid Waste

This project produces small amounts of solid waste. The general industrial solid waste is dust. All solid waste will be sent to the landfill site, which could not only ensure the safety of disposal, but also has little impact on surrounding environment.

As mentioned above, the project was not considered that it would bring out negative environmental impacts. On the Contrary, this project will promote local environment by reducing emission of greenhouse gas.

2.4 Public Comments

N/A

2.5 AFOLU-Specific Safeguards

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

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

ACM0001 Large-scale Consolidated Methodology: Flaring or use of landfill gas, Version 19.0

The methodology also refers to:

Emissions from solid waste disposal sites;

Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation;

Tool to calculate the emission factor for an electricity system;

Tool to determine the mass flow of a greenhouse gas in a gaseous stream;

Positive lists of technologies.

For more detail information about the methodology and tools, please reference to the following link:

[https://cdm.unfccc.int/methodologies/DB/JPYB4DYQUXQPZLBDVPHA87479EMY9MAApplicability of Methodology](https://cdm.unfccc.int/methodologies/DB/JPYB4DYQUXQPZLBDVPHA87479EMY9MAApplicability%20of%20Methodology)

According to the EIA of the project, the project meets all applicability conditions of ACM0001 as follows:

No.	Applicability conditions in ACM0001	The project	Applicable to the project or not?
1	The methodology is applicable under the following conditions: (a) Install a new LFG capture system in an existing or new (Greenfield) SWDS where no LFG capture system was or would have been installed prior to the implementation of the project activity; or (b) Make an investment into an existing LFG capture system to increase the recovery rate or change the use of the captured LFG, provided that: (i) The captured LFG was vented or flared and not used prior to the implementation of the project activity; and (ii) In the case of an existing active LFG capture system for which the amount of LFG cannot be collected separately from the project system after the	In the absence of the project, LFG from Pingli landfill site is emitted directly into atmosphere. The project will capture and use LFG for power generation. Electricity generated by LFG will be exported to South China Power Grid, which could reduce a certain amount of fossil fuels consumption in the grid. The project does not reduce the amount of organic waste that would	Applicable

	implementation of the project activity and its efficiency is not impacted on by the project system: historical data on the amount of LFG capture and flared is available; (c) Flare the LFG and/or use the captured LFG in any (combination) of the following ways: (i) Generating electricity; (ii) Generating heat in a boiler, air heater or kiln (brick firing only) or glass melting furnace; and/or (iii) Supplying the LFG to consumers through a natural gas distribution network; (iv) Supplying compressed/liquefied LFG to consumers using trucks; (v) Supplying the LFG to consumers through a dedicated pipeline; (d) Do not reduce the amount of organic waste that would be recycled in the absence of the project activity.	be recycled in the absence of the project activity.	
2	The methodology is only applicable if the application of the procedure to identify the baseline scenario confirms that the most plausible baseline scenario is: (a) Atmospheric release of the LFG or capture of LFG and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons; and (b) In the case that the LFG is used in the project activity for generating electricity and/or generating heat in a boiler, air heater, glass melting furnace or kiln: (i) For electricity generation: that electricity would be generated in the grid or in captive fossil fuel fired power plants; and/or (ii) For heat generation: that heat would be generated using fossil fuels in equipment located within the project boundary; (c) In the case of LFG supplied to the end-user(s) through natural gas distribution network, trucks or the dedicated pipeline, the baseline scenario is assumed to be displacement of natural gas. (d) In the case of LFG from a Greenfield SWDS, the identified baseline scenario is atmospheric release of the LFG or capture of LFG in a managed SWDS and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons.	Based on the analysis in Section 3.3, the most feasible baseline scenario of the project is as follows: Atmospheric release of the LFG; and For electricity generation: that electricity would be generated in the grid.	Applicable
3	This methodology is not applicable: (a) In combination with other approved methodologies. For instance, ACM0001 cannot be used to claim emission reductions for the displacement of fossil fuels in a kiln or glass melting furnace, where the purpose of the CDM	Only ACM0001 is applied in the project. The management of the SWDS in the project activity will not be deliberately changed	N/A

	project activity is to implement energy efficiency measures at a kiln or glass melting furnace; (b) If the management of the SWDS in the project activity is deliberately changed during the crediting in order to increase methane generation compared to the situation prior to the implementation of the project activity.	during the crediting in order to increase methane generation compared to the situation prior to the implementation of the project activity.	
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In addition, the applicability conditions of tools referred in the methodology ACM0001 has been demonstrated as follows:

Applicability conditions in tool “ Emissions from solid waste disposal sites ”	The project	Applicable to the project or not?
The tool can be used to determine emissions for the following types of applications: (a) Application A: The CDM project activity mitigates methane emissions from a specific existing SWDS. Methane emissions are mitigated by capturing and flaring or combusting the methane (e.g. “ACM0001: Flaring or use of landfill gas”). The methane is generated from waste disposed in the past, including prior to the start of the CDM project activity. In these cases, the tool is only applied for an ex ante estimation of emissions in the project design document (CDM-PDD). The emissions will then be monitored during the crediting period using the applicable approaches in the relevant methodologies (e.g. measuring the amount of methane captured from the SWDS); (b) Application B: The CDM project activity avoids or involves the disposal of waste at a SWDS. An example of this application of the tool is ACM0022, in which municipal solid waste (MSW) is treated with an alternative option, such as composting or anaerobic digestion, and is then prevented from being disposed of in a SWDS. The methane is generated from waste disposed or avoided from disposal during the crediting period. In these cases, the tool can be applied for both ex ante and ex post estimation of emissions. These project activities may apply the simplified approach detailed in 0 when calculating baseline emissions.	In the absence of the project, LFG from Pingli landfill site is emitted directly into atmosphere. The project will capture and use LFG for power generation. Therefore, the project is Application A. ACM0001 is adopted for the project. This tool will only be applied for an ex ante estimation of emissions in the project description.	Applicable
These two types of applications are referred to in the tool for determining parameters.	Parameters are determined per Application A.	Applicable
In the case that: (a) different types of residual waste are disposed or prevented from disposal; or that (b) both MSW and residual waste(s) are prevented from disposal, then the tool should be applied separately to each residual waste and to the MSW.	Only MSW are disposed in the project.	N/A

Applicability conditions in tool “ Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation ”	The project	Applicable to the Project or not?
If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no	The source of electricity consumption of the project is Scenario A: Electricity	Applicable

captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer; (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid; or (c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer can be provided with electricity from the captive power plant(s) and the grid.	consumption from the grid.	
This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated: (a) Scenario I: Electricity is supplied to the grid; (b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or (c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.	The recipient of the electricity generated by the project is SCPG, which is the Scenario I: Electricity is supplied to the grid.	Applicable
This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO₂ emissions.	No captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage.	N/A

Applicability conditions in tool “Tool to calculate the emission factor for an electricity system”	The project	Applicable to the Project or not?
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	OM, BM and CM are estimated using the tool for calculating baseline emissions for the project. The project supply electricity to SCPG.	Applicable
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in “Appendix 1: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power	The project supply electricity to SCPG. The emission factor is calculated for grid power plants only.	Applicable

plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.		
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project is located in China, a non-Annex I country.	N/A
Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	No biofuel is involved in the Project.	N/A

Applicability conditions in tool “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”	The project	Applicable to the project or not?
Typical applications of this tool are methodologies where the flow and composition of residual or flared gases or exhaust gases are measured for the determination of baseline or project emissions.	The project is LFG power plant. For ex post emission reduction estimation, this tool will be applied.	Applicable
Methodologies where CO ₂ is the particular and only gas of interest should continue to adopt material balances as the means of flow determination and may not adopt this tool as material balances are the cost effective way of monitoring flow of CO ₂ .	ACM0001 is applied in the project, and CO ₂ is not the particular and only gas of interest. Therefore, this tool is applied.	Applicable
The underlying methodology should specify: (a) The gaseous stream the tool should be applied to; (b) For which greenhouse gases the mass flow should be determined; (c) In which time intervals the flow of the gaseous stream should be measured; and (d) Situations where the simplification offered for calculating the molecular mass of the gaseous stream (equations (3) or (17)) is not valid (such as the gaseous stream is predominantly composed of a gas other than N ₂).	ACM0001 has specified: (a) F _{CH₄,EL,y} is determined using the tool; (b) CH ₄ is the greenhouse gas for which the mass flow should be determined; (c) The mass flow should be calculated on an hourly basis for each hour h in year y; (d) The simplification offered for calculating the molecular mass of the gaseous stream is valid (equations (3) or (17) in the tool).	Applicable

Applicability conditions in tool “Positive lists of technologies”	The project	Applicable to the project or not?
The use of this methodological tool is not mandatory for the project participants of a CDM project activity or CDM PoA for demonstrating their additionality.	The tool is applied in the project.	Applicable
This methodological tool shall be applied in conjunction with a small-scale or large-scale methodology which refers to this tool.	The tool is applied in conjunction with ACM0001.	Applicable
The positive lists as contained in section 5 of this tool are valid up to 28 November 2021. Notwithstanding the provisions on the validity of new, revised and previous versions of methodologies and methodological tools in the “Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools”, there will be no grace period for the application of this tool and the validity of the positive	The positive lists as contained in section 5 of this tool are valid.	Applicable

list after this date, including in cases where further technologies are added to the positive list through revisions of this tool before this date.		
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3.2 Project Boundary

According to the methodology ACM0001, the project boundary is the site of the project activity where the LFG is captured and destroyed/used, Pingli landfill site.

Referring to the methodology,

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

In the project case, the electricity for the project is sourced from SCPG and electricity generated by the LFG captured would have been generated by power generation sources connected to SCPG. Therefore, the project boundary includes the whole LFG related system (e.g. LFG collection, LFG pre-treatment system, LFG power generation system, flare system, etc.) and all grid-connected power plants in SCPG.

According to authoritative documents provided by China DNA², SCPG covers Guangdong Province, Guangxi Zhuang Autonomous Region, Yunnan Province, Guizhou Province and Hainan Province.

The project boundary is shown in Figure 3 below.

² <http://www.mee.gov.cn/ywgz/xdqhbh/wsqtzk/202012/W020201229610353340851.pdf>

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Source		Gas	Included?	Justification/Explanation
Project	Emissions from fossil fuel consumption for purposes other than electricity generation or transportation due to the project activity	CO ₂	No	Excluded for no fossil fuel is used by the project activity.
		CH ₄	No	Excluded for simplification. This emission source is assumed to be very small
		N ₂ O	No	Excluded for simplification. This emission source is assumed to be very small
	Emissions from electricity consumption due to the project activity	CO ₂	Yes	May be an important emission source
		CH ₄	No	Excluded for simplification. This emission source is assumed to be very small
		N ₂ O	No	Excluded for simplification. This emission source is assumed to be very small
	Emissions from flaring	CO ₂	No	Emissions are considered negligible
		CH ₄	No	Excluded for simplification.
		N ₂ O	No	Emissions are considered negligible
	Emissions from distribution of LFG using trucks and dedicated pipelines	CO ₂	No	No distribution of LFG using trucks and dedicated pipelines
		CH ₄	No	No distribution of LFG using trucks and dedicated pipelines
		N ₂ O	No	Emissions are considered negligible

3.3 Baseline Scenario

The project is in the field of waste handling and disposal and meets the relevant provisions of the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste. The generation of power to SCPG also meets the requirement of national laws and regulations.

The project also obtained the approval letters from local governmental authority. The two approvals well demonstrate that local governments permit the construction of the project. Hence, the project is in compliance with laws, status and other regulatory frameworks.

The simplified procedures in the methodology is applied in the project to select the most plausible baseline scenario and demonstrate additionality.

According to the methodology, the baseline scenario for LFG is assumed to be the atmospheric release of the LFG; with all the electricity generated by the project activity is exported to the grid, the baseline scenario for all the electricity exported to the grid is assumed to be electricity generation in existing and/or new grid-connected power plants.

If all or part of the electricity generated by the project activity is exported to the grid, the baseline scenario for all or the part of the electricity exported to the grid is assumed to be electricity generation in existing and/or new grid-connected power plants.

3.4 Additionality

For the simplified procedure to demonstrate additionality, the methodological tool “TOOL32: Positive lists of technologies” is applied in the project.

According to the descriptions above, it is demonstrated that prior to the implementation of the project, the LFG was only vented, and the LFG is used to generate electricity in the project plant with a total nameplate capacity of 5.8 MW, i.e. below 10 MW, which is consistent with the project EIA Report compiled by Guangxi Bohuan Environmental Consultancy Service Co., Ltd. and approved by Nanning City Xingning District Environmental Protection Bureau on 21/05/2019. Therefore, the project is deemed automatically additional.

3.5 Methodology Deviations

No methodology deviation is applied in the project.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Describe the procedure for quantification of baseline emissions and/or removals in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).

4.2 Project Emissions

Describe the procedure for quantification of project emissions and/or removals in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).

4.3 Leakage

Describe the procedure for quantification of leakage emissions in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).

4.4 Net GHG Emission Reductions and Removals

Describe the procedure for quantification of net GHG emission reductions and removals. Include all relevant equations. For AFOLU projects, include equations for the quantification of net change in carbon stocks.

Provide the ex-ante calculation (estimate) of baseline emissions/removals, project emissions/removals, leakage emissions and net GHG emission reductions and removals in the table below.

For data and parameters monitored, use estimates. Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Provide example calculations for all key equations, to allow the reader to reproduce the calculation of estimated net GHG emission reductions or removals.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year A				
Year B				
Year C				
Year...				
Total				

5 MONITORING

5.1 Data and Parameters Available at Validation

Complete the table below for all data and parameters that are determined or available at validation, and remain fixed throughout the project crediting period (copy the table as necessary for each data/parameter). Data and parameters monitored during the operation of the project are included in Section 5.2 (Data and Parameters Monitored) below.

Data / Parameter	
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Data unit	Indicate the unit of measure
Description	Provide a brief description of the data/parameter
Source of data	Indicate the source(s) of data
Value applied	Provide the value applied
Justification of choice of data or description of measurement methods and procedures applied	Justify the choice of data source, providing references where applicable. Where values are based on measurement, include a description of the measurement methods and procedures applied (e.g., what standards or protocols have been followed), indicate the responsible person/entity that undertook the measurement, the date of the measurement and the measurement results. More detailed information may be provided in an appendix.
Purpose of Data	Indicate one of the following: - Determination of baseline scenario (AFOLU projects only) - Calculation of baseline emissions - Calculation of project emissions - Calculation of leakage
Comments	Provide any additional comments

5.2 Data and Parameters Monitored

Complete the table below for all data and parameters that will be monitored during the project crediting period (copy the table as necessary for each data/parameter). Data and parameters determined or available at validation are included in Section 5.1 (Data and Parameters Available at Validation) above.

Data / Parameter	
Data unit	Indicate the unit of measure
Description	Provide a brief description of the data/parameter
Source of data	Indicate the source(s) of data
Description of measurement methods and procedures to be applied	Specify the measurement methods and procedures, any standards or protocols to be followed, and the person/entity responsible for the measurement. Include any relevant information regarding the accuracy of the measurements (e.g., accuracy associated with meter equipment or laboratory tests).

Frequency of monitoring/recording	<i>Specify measurement and recording frequency</i>
Value applied	<i>Provide an estimated value for the data/parameter</i>
Monitoring equipment	<i>Identify equipment used to monitor the data/parameter including type, accuracy class, and serial number of equipment, as appropriate.</i>
QA/QC procedures to be applied	<i>Describe the quality assurance and quality control (QA/QC) procedures to be applied, including the calibration procedures where applicable.</i>
Purpose of data	<i>Indicate one of the following:</i> <i>Calculation of baseline emissions</i> <i>Calculation of project emissions</i> <i>Calculation of leakage</i>
Calculation method	<i>Where relevant, provide the calculation method, including any equations, used to establish the data/parameter.</i>
Comments	<i>Provide any additional comments</i>

5.3 Monitoring Plan

Describe the process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters set out in Section 5.2 (Data and Parameters Monitored) above. Include details on the following:

- The methods for measuring, recording, storing, aggregating, collating and reporting data and parameters. Where relevant, include the procedures for calibrating monitoring equipment.
- The organizational structure, responsibilities and competencies of the personnel that will be carrying out monitoring activities.
- The policies for oversight and accountability of monitoring activities.
- The procedures for internal auditing and QA/QC.
- The procedures for handling non-conformances with the validated monitoring plan.
- Any sampling approaches used, including target precision levels, sample sizes, sample site locations, stratification, frequency of measurement and QA/QC procedures.

Where appropriate, include line diagrams to display the GHG data collection and management system.

APPENDIX

Use appendices for supporting information. Delete this appendix (title and instructions) where no appendix is required.