GLOBAL CARBON COUNCIL

Driving Climate Actions

Project Verification Report

V3.1 - 2020

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CONTENTS

COVER PAGE Project Verification Report Form (PVR)	
BASIC INFORMATION	
Name of approved GCC Project Verifier / Reference No. (also provide weblink of approved GCC Certificate)	Carbon Check (India) Private Limited. /GCCV004/01 http://globalcarboncouncil.com/wp-content/uploads/2021/10/carbon-check-india-private-limited-ccipl.pdf
Type of Accreditation	☐ Individual Track[1] ☒ CDM Accreditation E-0052 Valid from 28/03/2019 until 01/06/2024 https://cdm.unfccc.int/DOE/list/DOE.html?entityCode=E-0052 ☒ ISO 14065 Accreditation https://nabcb.qci.org.in/wp-content/uploads/2023/06/004.html Valid from 28/06/2021 until 27/06/2024
Approved GCC Scopes and GHG Sectoral scopes for Project Verification	**GCC Scope** • Green House Gas (GHG# - ACC) • Environmental No-harm (E+) • Social No-harm (S+) • Sustainable Development Goals (SDG+) **GHG Sectoral Scope** • Energy (renewable/non-renewable sources) • Waste handling and disposal
Validity of GCC approval of Verifier	08/03/2023 to 31/05/2024
Title, completion date, and Version number of the PSF to which this report applies	Title: Zhaoqing Ma'an LFG Power Generation Project Completion date: 19/06/2023 Version: 04
Title of the project activity	Zhaoqing Ma'an LFG Power Generation Project
Project submission reference no. (as provided by GCC Program during GSC)	S00550
Eligible GCC Project Type[2] as per the Project Standard	☒ **Type A:** ☐ Type A1

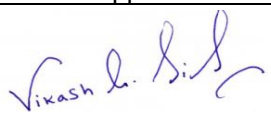
[1] **Note:** GCC Verifier under Individual tack is not eligible to conduct verifications for the GCC project that intends to supply carbon credits (ACCs) for CORSIA requirements.

[2] Project Types defined in Project Standard and Program Definitions on GCC website.

(Tick applicable project type)	☒ Type A2 ☒ Sub-Type 1 ☐ Sub-Type 2 ☐ Sub-Type 3 ☐ Sub-Type 4 ☐ **Type B – De-registered CDM Projects:** ☐ Type B1 ☐ Type[3] B2
Date of completion of Local stakeholder consultation	20/04/2017
Date of completion and period of Global stakeholder consultation. Have the GSC comments been verified. Provide web-link.	26/10/2022 – 09/11/2022 No comments were received during GSC https://www.globalcarboncouncil.com/global-stakeholders-consultation.html
Name of Entity requesting verification service (can be Project Owners themselves or any Entity having authorization of Project Owners)	Chengdu Xiangche Technology Limited
Contact details of the representative of the Entity, requesting verification service (Focal Point assigned for all communications)	LUAN Guodong GUO Longpeng general@xche.tech Chengdu Xiangche Technology Limited
Country where project is located	People's Republic of China
GPS coordinates of the Project site(s)	**Latitude (N)**: 23.007025N (23°0'25.29''N) **Longitude (E)**: 112.417263E (112°25'2.15''E)
Applied methodologies (approved methodologies of GCC or CDM can be used)	ACM0001: Large-scale Consolidated Methodology – Flaring or use of landfill gas (version 19.0)
GHG Sectoral scopes linked to the applied methodologies	GHG-SS #01: Energy (renewable/non-renewable sources) GHG-SS #13: Waste handling and disposal
Project Verification Criteria:	☒ ISO 14064-2, ISO 14064-3 ☒ GCC Rules and Requirements

[3] GCC Project Verifier shall conduct Project Verification for all project types except B_2.

Mandatory requirements to be assessed	☒ Applicable Approved Methodology ☒ Applicable Legal requirements /rules of host country ☒ National Sustainable Development Criteria (if any) ☒ Eligibility of the Project Type ☒ Start date of the Project activity ☒ Meet applicability conditions in the applied methodology ☒ Credible Baseline ☒ Additionality ☒ Emission Reduction calculations ☒ Monitoring Plan ☒ No GHG Double Counting ☒ Local Stakeholder Consultation Process ☒ Global Stakeholder Consultation Process ☒ United Nations Sustainable Development Goals (Goal No 13- Climate Change)
Project Verification Criteria: Optional requirements to be assessed	☒ Environmental Safeguards Standard and do-no-harm criteria ☒ Social Safeguards Standard do-no-harm criteria ☒ United Nations Sustainable Development Goals (in additional to SDG 13) ☒ CORSIA requirements
Project Verifier's Confirmation: The *GCC Project Verifier* has verified the GCC project activity and therefore confirms the following:	The GCC Project Verifier, Carbon Check (India) Private Limited, certifies the following with respect to the GCC Project Activity "Zhaoqing Ma'an LFG Power Generation Project". ☒ The Project Owner has correctly described the Project Activity in the Project Submission Form / (version 04, dated 19/06/2023) including the applicability of the approved methodology [CDM methodology, ACM0001 version 19] and meets the methodology applicability conditions and is expected to achieve the forecasted real, measurable and additional GHG emission reductions, complies with the monitoring methodology, has appropriately conducted local and global stakeholder consultation processes and has calculated emission reductions estimates correctly and conservatively. ☒ The Project Activity is likely to generate GHG emission reductions amounting to the estimated 483,310 tCO_2e for the fixed crediting period of 10 years, as indicated in the PSF, which are additional to the reductions that are likely to occur in absence of the Project Activity and complies with all applicable GCC rules, including ISO 14064-2 and ISO 14064-3. ☒ The Project Activity is not likely to cause any net-harm to the environment and/or society and complies with the Environmental and Social Safeguards Standard, and is likely to achieve the following labels:

	☒ Environmental No-net-harm Label (**E⁺**) ☒ Social No-net-harm Label (**S⁺**) ☒ The Project Activity is likely to contribute to the achievement of United Nations Sustainability Development Goals (SDGs), complies with the Project Sustainability Standard, and contributes to achieving a total of 3 SDGs (SDG 7, 8 and 13), with the following[4] SDG certification label (**SDG⁺**): ☐ Bronze SDG Label ☒ Silver SDG Label ☐ Gold SDG Label ☐ Platinum SDG Label ☐ Diamond SDG Label ☒ The Project Activity complies with all the applicable requirement of the GCC Program and ICAO's requirements on CORSIA Emissions Unit Eligibility Criteria and CORSIA Eligible Emissions Units, as per Clarification No 1., v1.3 paragraph 23-25, and the ACCs expected to be issued during the crediting period is likely to be CORSIA eligible and can be used by International Airlines for offsetting their emissions during all phases of CORSIA and therefore requests GCC Steering Committee to append CORSIA Certification label (C+) to this project ☒ The Project Activity complies with all the applicable GCC rules[5] and therefore recommends GCC Program to register the Project activity with above mentioned labels.
Project Verification Report, reference number and date of approval	Reference number: - CCIPL1574/GCC/VAL/ZMLPGP/20220928 Version: - 03 Date of Approval: - 28/09/2023
Name of the authorised personnel of GCC Project Verifier and his/her signature with date	 Name: - Vikash Kumar Singh, Compliance Officer Date: - 28/09/2023

[4] SDG Certification labels: Bronze label (1 star): by achieving 2 out of 17 SDGs; Silver label (2 star): by achieving 3 out of 17 SDGs; Gold label (3 star): by achieving 4 out of 17 SDGs; Platinum label (4 star): by achieving 5 out of 17 SDGs; and Diamond label (5 star): by achieving more than 5 out of 17 SDGs.

[5] "GCC Rules" are defined in Project Definitions and refers to the rules and requirements set out by the GCC program related to GHG emission reductions and its voluntary certification labels and are available on the GCC Program's public website: https://www.globalcarboncouncil.com/resource-centre.html

1. PROJECT VERIFICATION REPORT

Section A. Executive summary

Chengdu Xiangche Technology Limited has appointed the Project Verifier, Carbon Check (India) Private Ltd., to perform an independent project verification of the Project “Zhaoqing Ma’an LFG Power Generation Project” in People’s Republic of China (hereafter referred to as “Project”). This report summarizes the findings of verification of the project, performed on the basis of GCC rules and requirements as well as criteria given to provide for consistent project operations, monitoring and reporting. This report contains the findings and resolutions from the project verification and a verification opinion.

The project is invested in and operated by Guangdong Sincody Environmental Technology Co. Ltd. /3/ and involves installation of 2 sets of LFG generators with unit capacity of 1,000 kW each (aggregating to 2 MW). It is located in Phase II of Ma’an landfill site, which started operation in October 2014 /26/. The total storage capacity of phase II of Ma’an landfill site reached 1.1 million m^3 and phase II of Ma’an landfill site was closed in April 2020 /26/. There is a clear physical boundary between the first and second phases of the landfill, which are adjacent but not connected. The LFG in the first phase was not recovered and was directly vented to the atmosphere. The expected operational lifespan of the project activity is 15 years /10/ which is based on the agreement with Zhaoqing City Municipal Administration regarding the treatment of LFG in Ma’an Landfill Site, which states that the “Guangdong Sincody Environmental Technology Co., Ltd.” is authorized to use the LFG for electricity generation for 15 years. The project activity will generate emission reductions by generate the clean electricity from the recovered landfill gas and feed the generated electricity to the China South Power Grid (CSPG), which is mainly dominated by thermal / fossil fuel-based power plants.

The project is expected to achieve an annual average emission reduction of 48,331 tCO_2e. The total emission reductions during the fixed 10-year crediting period will be 483,310 tCO_2e.

The project also contributes to Environmental No-net-harm Label (E+), Social No-net-harm Label (S+), and 3 United Nations Sustainable Development Goals (SDG+).

The Project Activity complies with all the applicable requirement of the GCC Program and ICAO’s requirements on CORSIA Emissions Unit Eligibility Criteria and CORSIA Eligible Emissions Units, as per Clarification No 1., v1.3 paragraph 23-25, and the ACCs expected to be issued during the crediting period is likely to be CORSIA eligible and can be used by International Airlines for offsetting their emissions during all phases of CORSIA and therefore requests GCC Steering Committee to append CORSIA Certification label (C+) to this project

The purpose of the project verification is to have a thorough and independent assessment of the proposed Project Activity against the applicable GCC rules and requirements, including those specified in the Project Standard, applied methodology/methodological tools and any other requirements, in particular, the project's baseline, monitoring plan and the host Party criteria. These are verified to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Verification requirement for all GCC projects activity is necessary to provide assurance to stakeholders of the quality of the Project Activity and its intended

generation of Approved Carbon Credits (ACCs).

Location

The Project Activity is implemented at Phase II of Ma'an landfill site, North Side of Ma'an Bridge, X459 County Road, Ma'an Town, Gaoyao District, Zhaoqing City, Guangdong Province, in People's Republic of China. /8/

Scope of the Project Verification

The project verification scope is defined as the independent and objective review of the project submission form (PSF), version 02, dated 11/10/2022 /1-a/ and final PSF, version 04, dated 19/06/2023 /1-b/ and also listed for global stakeholder consultation on GCC website with reference no S00550[6]. The PSF /1/ is reviewed against the relevant criteria and decisions by the GCC, including the CDM approved baseline and monitoring methodology, ACM0001, version 19 /B02/. The verification team has, based on the recommendations in the GCC Project Standard, Version 3.1 /B01-1/ and Project Verification Standard Version 3.1 /B01-2/, Project Sustainability Standard Version 3.1 /B01-5/ and Environment & Social Safeguards Standard Version 3.0 /B01-4/, employed a rule-based approach, focusing on the identification of significant risks for project implementation and the generation of ACCs.

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

While carrying out the verification, CCIPL determines if the PSF complies with the requirements of the applicability conditions of the selected methodology /B02/, guidance issued by the GCC and also assess the claims and assumptions made in the PSF /1-b/ without limitation on the information provided by the project owner.

Verification Process

Strategic risk Analysis and delineation of the Verification and sampling plan:

CCIPL employed the following Project Verification process:

1. Conflict of interest review at the time of contract review;
2. Selection of Audit Team at the time of contract review;
3. Kick-off meeting with the client;
4. Review of the draft PSF listed on GCC website for public consultation;
5. Development of the Verification plan and sampling plan;
6. Desktop review and evaluation of emission reduction calculations;
7. Follow-up interaction with the client; and final statement and report development.

The GCC project verification process has utilized to gain an understanding of the:

- Project's design, GHG emission sources and reductions,
- Baseline determination and additionality,
- GHG monitoring plan,
- Environmental & Social impacts,

[6] https://projects.globalcarboncouncil.com/project/463

- Stakeholder's consultation,
- SD indicators integrated with the project and
- Verify the collection and handling of data, the calculations that lead to the results, and the means for reporting the associated data and results.

Development of the GCC project verification Plan:

The Audit Team formally documented its Verification plan.

The Verification plan was developed based on discussion of key elements of the Verification process during the kick-off meeting and as per the criteria of engagement. Client had the opportunity to comment on key elements of this plan for Verification. Based on items discussed above and agreed upon with the client in the signed contract, the plan identified the CCIPL audit team members based on following:

- Project level of assurance (which is reasonable as per GCC requirements),
- Materiality threshold and
- Standards of evaluation and reporting for the Verification.

It also provides an outline of the Verification process and established project deliverables. The project verification consists of the following four phases:

I. A desk review of the project submission form.
   - A review of the data and information;
   - Cross checks between information provided in the PSF /01//02/ and information from sources with all necessary means without limitations to the information provided by the project owner;

II. Follow-up interviews with project stakeholders
   - Interviews with relevant stakeholders in host country with personnel having knowledge with the project development;
   - Cross checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project owner;

III. Reference to available information relating to projects or technologies similar to project under verification and review, based on the approved methodology /B02/ being applied, of the appropriateness of formulae and accuracy of calculations.

IV. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The Verification team confirms the contractual relationship signed between the Project Verifier, CCIPL and the Project Owner. The team assigned to the Verification meets the CCIPL's internal procedures including the GCC requirements for the team composition and competence. The Verification team has conducted a thorough contract review as per GCC and CCIPL's procedures and requirements.

The report is based on the assessment of the PSF /1/ undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews and stakeholder interviews, review of the applicable/applied methodology /B02/ and their underlying formulae and calculations.

This report contains the findings from the project verification, which are successfully resolved by the PO, to confirm the program design in the documents is sound and reasonable and meets the stated requirements and identified criteria.

Conclusion

Carbon Check (India) Private Ltd. is able to conclude the project verification with a positive opinion that the GCC Project Activity "Zhaoqing Ma'an LFG Power Generation Project**"** in China, as described in the PSF (Version 04, dated 19/06/2023) /1-b/, meets all applicable GCC rules and requirements, including those specified in the Project Standard /B01-1/, applied CDM methodology ACM0001 "Flaring or use of landfill gas" (version 19.0) /B02/, tools and guidelines from GCC.

The review of the PSF /1-b/, supporting documentation and subsequent follow-up actions (remote audit and interviews) have provided CCIPL with sufficient evidence to determine the fulfilment of the voluntary labels E+, S+, and SDG+ with silver rating.

The Project Activity also complies with all the applicable requirement of the GCC Program and ICAO's requirements on CORSIA Emissions Unit Eligibility Criteria and CORSIA Eligible Emissions Units, as per Clarification No 1., v1.3 paragraph 23-25, and the ACCs expected to be issued during the crediting period is likely to be CORSIA eligible and can be used by International Airlines for offsetting their emissions during all phases of CORSIA and therefore requests GCC Steering Committee to append CORSIA Certification label (C+) to this project

Carbon Check (India) Private Ltd. therefore is able to recommend the project to the GCC for registration.

Section B. Project Verification team, technical reviewer and approver

B.1. Project Verification team

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of GCC Project Verifier or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Project Verification findings
1.	Team Leader / Technical Expert / Financial Expert	IR	Agarwalla	Sanjay Kumar	CCIPL	X	-	X	X
2.	Trainee Assessor	IR	Nadkarni	Tanvi	CCIPL	X	-	X	X
3.	Trainee Assessor	IR	Shirke	Rishika Sanjay	CCIPL	X	-	-	X
4.	Local Expert	ER	Shen	Nara	CCIPL	X	-	X	X

B.2. Technical reviewer and approver of the Project Verification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of GCC Project Verifier or outsourced entity)
1.	Technical reviewer	IR	Seshan	Ranganathan	CCIPL
2.	Approver	IR	Singh	Vikash Kumar	CCIPL

Section C. Means of Project Verification

C.1. Desk/document review

The report is based on the assessment of both the initial PSF/1-a/ and final PSF/1-b/ undertaken through verification of information using the source provided by the project owner, stakeholder consultations, application of standard auditing techniques including but not limited to desk review, follow up actions (e.g., remote site visit, interviews) , the review of the applicable approved methodological and relevant tools, guidance and GCC decisions. Additionally, the cross checks were performed for information provided in the PSF using information from sources other than the verification sources, the verification team's sectoral or local expertise and, if necessary, independent background investigations.

List of all documents reviewed or referenced during the project verification is provided in Appendix-3.

C.2. On-site inspection

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	NA			
…				

According to paragraph 49 of the GCC Verification Standard (V3.1),

"It is mandatory for GCC Verifiers to conduct on-site visit and inspections during emission reduction verification for registered GCC Project Activities if:

- *(a) It is the first emission reduction verification performed by the GCC Verifier for the specific Project Activity; or*
- *(b) More than three years have elapsed since the last on-site visit/inspection conducted for emission reduction verification for the Project Activity; or*
- *(c) The Project Activity has achieved more than 300,000 t CO_2eq of GHG emission reductions or net anthropogenic GHG removals since the last emission reduction verification when an on-site visit/inspection was conducted."*

However, according to paragraph 50 of the GCC Verification Standard (V3.1),

"For cases where the stipulations in paragraph 49 are not applicable, on-site visit inspections for emission reduction verification are optional. If an on-site inspection is not performed, the GCC Verifier shall describe the alternative means of verification used and justify that they are sufficient for the emission reduction verification purposes."

Therefore, the project verifier has not performed an on-site inspection. The alternative means used for verification are described below:

1. Cross checks between information provided in the PSF, version 02 dated 11/10/2022 /1-a/ and information from third-party or publicly available sources other than those used; if necessary, independent background investigations.
2. Telephone / Video interviews with relevant stakeholders in the host country, such as personnel with knowledge of the Project design and implementation.
3. Remote interviews on 6th January 2023, with the project owner representatives and project developer, and relevant stakeholders to confirm on the implementation, project details such as installed capacity, location, monitoring, emission reduction calculation, local stakeholder consultation, and environmental impacts.
4. Cross checks between the information provided by interviewed personnel (i.e., by checking sources or other interviews) to ensure that no relevant information has been omitted.
5. Reference to available information relating project verification techniques to assess project technologies similar to the proposed Project under project verification.
6. Review, based on the selected methodologies, the selected standardized baselines, and other applied methodological regulatory documents, of the appropriateness of formulae and accuracy of calculations.
7. Assessment of supporting documents and records by means of remote access synchronously (in real) and asynchronously to confirm the details presented in the PSF.

In addition to the selected alternative approach, VV team has identified the associated risk for non-conduction of physical on-site inspection and taken the mitigation measures as mentioned below:

Sl. No.	Identification of potential risks	Mitigation measures	Risk Mitigated
1.	Project technology and site could not be verified accurately. Due to not conducting the physical on-site visit inspection, there is a possibility that type, and location of the project site cannot be verified accurately.	During the remote audit the VV team has verified the technology by means of video call interview with the project owner representative team based at project site and cross checked all technical parameters. The VV team crossed checked the start date of generation of the project activity with the commissioning certificate of the project and ensures that both the dates are same, and the Type of the project activity is in line with the type mentioned in the PSF. VV team, during the remote audit also confirms that the geo coordinates of location mentioned in the PSF are accurate and location of the project activity is in line with the information mentioned in the PSF.	☒ Yes ☐ No
2.	Risk related to additionality and baseline scenario of the project not appropriately assessed due to site specific information	This risk can be mitigated by conducting remote interview via video call with Project owner representatives and Audit / assessment of documents and records by means of remote access, either	☒ Yes ☐ No

		synchronously (in real time) or asynchronously (when applicable).	
3.	Risk related to assessing the LSC meeting with relevant authorities & with relevant stakeholders	This risk can be mitigated by conducting remote interview via video call with relevant authorities & relevant stakeholders' representatives to validate the LSC procedure.	☒ Yes ☐ No
4.	Risk associated with site specific social & environmental impact assessment.	This risk can be mitigated by conducting remote interview via video call with Project owner representatives and Audit / assessment of documents and records by means of remote access, either synchronously (in real time) or asynchronously (when applicable) to check the legal regulatory requirements and EIA reports. Relevant authorities responsible for approval of EIA may also be interviewed.	☒ Yes ☐ No
5.	Risk related to appropriateness of monitoring plan / equipment and its location at the project site.	During remote interview by means of using video call and real time photographs and accessing the video monitoring of sites at the time of remote inspection, the appropriateness of monitoring plan/equipment and its location at the project site can be checked. This could also be verified from the single line diagram of the plant site.	☒ Yes ☐ No

C.3. Interviews

No.	Interview			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Guangquan	HE	Marketing Manager - Guangdong Sincody Environmental Technology Co.Ltd.	06/01/2023	Discussion on project implementation, monitoring, Environmental impact, Management structure with Roles and Responsibilities, Socio-economic Impacts of the project activity Sustainability aspects of the project, local stakeholders meeting, legal ownership of the project activity	Sanjay Kumar Agarwalla, Tanvi Nadkarni, Nara Shen (remotely)
2.	Di	LU	Project Manager - Chengdu Xiangche Technology Limited			
3.	Zitai	XU	Station master - Zhaoqing Ma'an Waste Landfill Biogas Comprehensive Utilization Power Station			
4.	Zongpei	YE	Project Manager - Climate bridge (Shanghai) Ltd.		Discussion on project description, monitoring, PSF, ER estimation, meth applicability, baseline scenario, additionality, monitoring, Environmental impact, Management structure with Roles and Responsibilities, Socio-economic Impacts of the project activity Sustainability aspects of the project	

5.	Lianghe	MA	Villager – Dingjiang Village		Mode of Invitation for stakeholders, advantages and disadvantages of the project, employment generation, SDG status, Environment and social impacts of the project, etc.	

C.4. Sampling approach

>>

No sampling approach is used for this project verification process.

C.5. Clarification request (CLs), corrective action request (CARs) and forward action request (FARs) raised

Areas of Project Verification findings	Applicable to Project Types	No. of CL	No. of CAR	No. of FAR
Green House Gas (GHG)				
Identification and Eligibility of project type	A_1, A_2, B_1, B_2	01	-	-
General description of project activity	A_1, A_2, B_1, B_2	01	01	-
Application and selection of methodologies and standardized baselines	A_1, A_2, B_1, B_2	-	-	-
- Application of methodologies and standardized baselines	A_1, A_2, B_1, B_2			-
- Deviation from methodology and/or methodological tool	A_1, A_2, B_1, B_2	-	-	-
- Clarification on applicability of methodology, tool and/or standardized baseline	A_1, A_2, B_1, B_2	-	-	-
- Project boundary, sources and GHGs	A_1, A_2, B_1, B_2	-	-	-
- Baseline scenario	A_1, A_2, B_1, B_2	01		
- Demonstration of additionality including the Legal Requirements test	A_1, A_2, B_1, B_2		-	-
- Estimation of emission reductions or net anthropogenic removals	A_1, A_2, B_1, B_2	01	-	-
- Monitoring plan	A_1, A_2, B_1, B_2	01	02	-
Start date, crediting period and duration	A_1, A_2, B_1, B_2	01	-	-
Environmental impacts	A_1, A_2, B_1, B_2	-	-	-
Local stakeholder consultation	A_1, A_2, B_1	-	01	-
Approval & Authorization- Host Country Clearance	A_1, A_2, B_1, B_2	-	01	-
Project Owner- Identification and communication	A_1, A_2, B_1, B_2	-	-	-
Global stakeholder consultation	A_1, A_2, B_1	-	-	-
Others (please specify)	A_1, A_2, B_1, B_2	-	01	-
VOLUNTARY CERTIFICATION LABELS				
Environmental Safeguards (E^+)	A_1, A_2, B_1	01	01	-
Social Safeguards (S^+)	A_1, A_2, B_1			-
Sustainable development Goals (SDG^+)	A_1, A_2, B_1	-		-
Authorization on Double Counting from Host Country (only for CORSIA)	A_1, A_2, B_1		-	-

CORSIA Eligibility (C^+)		-	-	01
Technical Review		-	01	-
Total		07	08	01

Section D. Project Verification findings

D.1. Identification and eligibility of project type

Means of Project Verification	DR, I
Findings	CL 01 was raised and closed satisfactorily. Please refer to Appendix 4 for further details.
Conclusion	The Verification team reviewed the PSF /1-b/ and confirms that the Project Owner determines the type of proposed GCC project activity as Type A2. As per §11 of GCC Project Standard (version 03.1) /B01-1/, "*These types of projects are prompt-start and had already started their operations as of 5 July 2020. Their start date of operations shall be after 1 January 2016 but before 5 July 2022. These types of projects shall submit complete registration requests to the GCC Program no later than 5 July 2022. The start date of the Crediting Period for such GCC Project Activities shall be on or after 1 Jan 2016 but not more than one year after the start date of the operations of the GCC Project Activity*". Furthermore, as per §03 (c), (iv) of GCC Clarification No. 01, V. 1.3, "*The deadline for the submission of A2 projects has been extended. As per the clarification, A2 type project are required to make initial submission to GCC Program, for uploading for global stakeholder consultation, prior to 5 July 2022 (new requirement)*". /B01-6/ The proposed project activity has started its operations on 10/07/2018 /7/, the start date of crediting period is 10/07/2018 and it was published for global stakeholder consultation from 26/10/2022 to 09/11/2022. The start date of the project activity has been duly verified against the project completion report /7/ and found to be acceptable by the verification team. The project activity was submitted to GCC on 07/06/2022. This complies with the requirement of §11 of the GCC Project Standard (version 03.1) including Clarification No. 01 /B01-1/ and § 25 (b) of GCC Project Verification Standard (version 03.1) /B01-2/ and hence the determined project activity type i.e., Type A2 is found to be acceptable by the verification team. Furthermore, the project verification team along with the help of local expert checked the other GHG programmes like, Clean Development Mechanism (CDM) Registry /B05/, VERRA Registry /B06/, and Gold Standard Registry /B07/, for the information regarding the consistency of the title of the project activity, GPS coordinates, Legal Ownership of the Project activity to determine if the project was part of any other GHG Program prior to commencement of this verification. It was confirmed that the project owner has not submitted the said project activity under any other GHG program apart from GCC.

D.2. General description of project activity

Means of Project Verification	DR, I
Findings	CL02 and CAR 07 were raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	The description of the project activity contained in the PSF /1-b/ can be considered transparent, detailed and provides a clear overview of the project. The same was confirmed by means of document review and remote interviews to verify the accuracy and completeness of the project description.

	Zhaoqing Ma'an LFG Power Generation Project is a LFG power generation project, consisting of 2 sets of LFG generators with unit capacity of 1 MW and a total capacity of 2MW. The capacity was confirmed by checking the power purchase agreement /14/ and the grid connection agreement /12/ and is also in accordance with the nameplate capacity of the LFG generators (1 MW each) checked during remote site visit. The purpose of this project activity is to generate electricity by harnessing landfill gas and supply the generated electricity to the connected China South Power Grid (CSPG). The electricity generated by the is transmitted to the 110kV Ma'an substation of CSPG through 10kV transmission line. The verification team confirmed the same by cross verifying the Grid connection agreement /12/, power purchase agreement /14/ and remote verification of project site. 2 sets of LFG generators with unit capacity of 1,000 kW are involved in the project produce the total project capacity of 2 MW with an expected lifetime of 15 years. The same has also been confirmed from the technical specifications provided by the manufacturer /9/. The project activity consists of installing a comprehensive system for LFG recovery and utilization at the landfillsite involving: • LFG collection • LFG pre-treatment • Electricity generation. The Project aims at reducing GHG emissions from two sources: a) Methane (CH_4) emissions from the previously vented landfill gas which will be captured and destroyed by the project; b) CO_2 emissions from the production of electricity by the Project which would otherwise have been generated by the fossil fuel fired power plants of China South Power Grid (CSPG). The project is implemented in Phase II of Ma'an landfill site in North Side of Ma'an Bridge, X459 County Road, Ma'an Town, Gaoyao District, Zhaoqing,City Guangdong Province, in People's Republic of China. The geographic co-ordinates for the project activity are 23.007025N (23°0'25.29''N) Latitude and 112.417264E (112°25'2.15''E) Longitude. The same was confirmed by the measurement of GPS co-ordinates in real-time via Google Maps and checking the same through on-going remote audit via audio & video call. The authorized project owner is Chengdu Xiangche Technology Limited, while the project is invested and operated (legal owner) by Guangdong Sincody Environmental Technology Co.Ltd. as evidenced by the letter of authorization of project owners and project representatives provided by the PO /31/. The legal ownership is also confirmed by the equipment purchase contract /6/ and power purchase agreement /14/. The project is expected to supply an average of 11,489 MWh electricity to CSPG annually with annual operational time of 7600 hours, during the 10 years fixed crediting period. The same was confirmed by the assessment of the feasibility study report and was found to be acceptable by the verification team /4/. As stated in the PSF /1-b/, the project activity also voluntarily contributes to Environmental No-net-harm Label (E+), Social No-net-harm Label (S+) and 3 United Nations Sustainable Development Goals (SDG+).

	As per the PSF /1-b/, start date of the Project Activity is 10/07/2018 (Start date of operation of the Project) /7/. The same is in accordance with requirements of §38 of Project Standard (version 03.1) /B01-1/. The crediting period is a fixed crediting period for the Project Activity, from 10/07/2018 to 09/07/2028 i.e., of 10 years. This is cross checked with the PSF /1-b/ and conforms with the requirement of §39 and §40 of Project Standard Version 03.1 /B01-1/. CCIPL verification team is therefore able to confirm that the description of the proposed Project Activity in the PSF is accurate and complete and it provides a clear understanding of the Project Activity. The same is found to be acceptable.

D.3. Application and selection of methodologies and standardized baselines

D.3.1 Application of methodology and standardized baselines

<table>
<tr><td>Means of Project Verification</td><td>DR, I</td></tr>
<tr><td>Findings</td><td>No findings were raised.</td></tr>
<tr><td>Conclusion</td><td>The CDM methodology applied is ACM0001, version 19.0 /B02/. It is applicable to Flaring or use of landfill gas. Applicability of the methodology was confirmed by means of interviews with the PO representatives and document review.

The applied methodology is correctly quoted and is identical to the version available on the CDM website. The applied version of the baseline and monitoring methodology /B02/ is valid at the time of submission of the PSF for global stakeholder consultation and request for registration. All applicability criteria in the methodology are assessed in the below table:

<table>
<tr><th>Applicability criteria of the methodology (ACM0001, Version 19)</th><th>Justification in the PSF</th><th>Project Verifier assessment</th></tr>
<tr><td>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 rateor 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</td><td>For condition (a): Applicable

There was no existing LFG capture system at Ma’an landfill site prior to the implementation of the project activity.

This project is a greenfield project.

For condition (b): Irrelevant

Before the implementation of the project activity, there was no existing pre-project LFG power station at Ma’an landfill site.

For condition (c): Applicable.</td><td>It is confirmed during the remote site visit and interviews with PO representatives, that there was no existing pre-project LFG capture system at Ma’an landfill site prior to the implementation of the project activity. Additionally, PO has also provided signed declaration /37/ from the landfill site, confirming the same.
Hence (a) is applicable.

It is confirmed that prior to</td></tr>
</table>
</td></tr>
</table>

	(ii) In the case of an existing active LFG capture system for which the amount of LFGcannot be collected separately from the project system after the implementation of the project activity and its efficiency is not impacted on by the project system: historical data on the amount of LFG capture andflared 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 organicwaste that would be recycled in the absenceof the project activity	The project uses the captured LFG to generate electricity, therefore, the project is applicable to condition (c)(i). **For condition (d): Applicable**. Ma'an landfill site handles municipal solid wastes (MSW) from Ruizhou, Dinghu and Gaoyao district of Zhaoqing City. The prevailing waste management practices pertinent to organic waste in these areas is landfill. No existing facility that recycles the organic fraction of the MSW was identified in these areas. Therefore, the project does not reduce the amount of organic waste that would be recycled in the absence of the project, the project is applicable to condition (d). In conclusion, the project is applicable to condition (a), (c)(i) and (d).	implementation of the project activity, the captured LFG was vented and not used thereby complying paragraph (b) (i). It is confirmed that the project uses the captured LFG to generate electricity and hence meeting the requirements of paragraph (c)(i). It is also confirmed that the project activity does not reduce the amount of organic waste that would be recycled in the absence of the project, the project is applicable to condition (d).
	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	Applicable. Based on the analysis in Section B.4, the most feasible baseline scenario of the project is as follows: Atmospheric release of the LFG that not captured and utilized prior to the implementation of the project; and the electricity would be generated in the grid.	Based on the information provided in the PSF /1-b/, the verification team confirms that the most feasible baseline scenario of the project is atmospheric release of the LFG that was not captured and utilized prior to the implementation of the project; and the electricity would be

	(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		generated in the grid.
	This methodology is not applicable: (a) In combination with other approved methodologies. For instance, ACM0001 cannot be used to claim emission reductions for the displacement of fossil fuels in a kiln or glass melting furnace, where the purpose of the CDM project activity is to implement energy efficiency measures at a kiln or glass melting furnace;	N.A. (a) Only ACM0001 (version 19.0) is applied by the project. (b) The management of the SWDS in the project activity will not be deliberately changed during the crediting in order to increase methane generation compared to the situation prior to the implementation of the project activity. Ma'an landfill site is managed by	The project does not apply any other methodology in combination with ACM0001. It is also confirmed that the management of the SWDS in the project activity will not be deliberately changed during the crediting period in order to increase methane generation compared to the

	(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.	Zhaoqing Municipal Administration. Ma'an landfill site is managed and operated as per the rules and regulations set by Urban Management Bureau of Zhaoqing City. The project has no impact on the management and operation of Ma'an landfill site and this landfill site was closed completely in April 2020. Thus, Ma'an Landfill Site has no incentive to change the management of the SWDS.	situation prior to the implementation of the project activity.

TOOL04: "Emissions from solid waste disposal sites" (version 08.1)		
Applicability criteria	**Justification in the PSF**	**Project Verifier assessment**
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	Application A applies: the project activity mitigates methane emissions from Ma'an Landfill Site by capturing and utilizing the methane for power generation. This tool is only applied for ex ante estimation of the emissions in the PSF.	The project verifier confirms by reviewing General information of Maan landfill site /26/, landfill cooperation agreement /10/, and remote interviews that the project activity mitigates methane emissions from Phase II of Ma'an Landfill Site which is an existing SWDS. By the review of the PSF /01-b/ and ER calculation spreadsheet /02/, it can be confirmed that this tool is only applied for an ex-ante estimation of emissions.

	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.		
	TOOL05: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 03.0)		
	Applicability criteria	**Justification in the PSF**	**DOE assessment**
	If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer; (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not	Applicable. Scenario A: electricity consumption from the grid is applicable to the electricity consumption sources.	By the means of reviewing the Grid connection agreement /12/, review of ER Spreadsheet /02/ and remote interviews, it is confirmed that project emissions are calculated for electricity consumption from the grid.

	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.		
	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 electricity generated by the Project supplies CSPG, which is in line with Scenario I.	Scenario I is applicable to the project activity as the electricity which is generated by the project activity is supplied to the grid. This is confirmed by the verification team by reviewing the Power Purchase Agreement /14/
	This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO_2 emissions.	No captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage.	The project verification team by the means of remote site inspection confirms that no captive renewable power generation technologies are installed at site to provide electricity.
	TOOL07: "Tool to calculate the emission factor for an electricity system" (version07.0)		
	Applicability criteria	**Justification in the PSF**	**DOE assessment**
	This tool may be applied to estimate the OM, BM and/or CM when calculating	Applicable	The project activity involves electricity generation by

	baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g., demand-side energy efficiency projects).	The project activity utilizes recovered LFG to export electricity to the grid, and thus substitutes grid electricity. Therefore, this tool is applied to estimate the OM, BM and CM for baseline emissions.	harnessing landfill gas which is then supplied to the China South Power Grid. In the absence of this project activity, same amount of electricity would have been generated by the operation of existing/proposed grid connected power plants, predominantly fossil fuel based. Hence this condition is applicable to the project activity.
	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 II a and option II b. If option II a 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 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.	As off-grid power generation is an insignificant part of the national energy mix in China, the emission factor for the project electricity system is calculated only for the grid power plants, which satisfies this applicability condition.	The project activity has chosen the option to calculate the emission factor for grid power plants only which is found to be acceptable by the project verification team.

	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.	Not Applicable. The project electricity system is totally located in China, a non-Annex I country.	The project activity is situated in China, which is not Annex I country, hence the condition is not applicable.
	Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	The calculation of the emission factor considers the emission factor of biofuels as zero.	The project is a landfill gas recovery and utilisation project and not uses any biofuels. Hence, this tool is applicable
	TOOL08: "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 03.0)		
	Applicability criteria	**Justification in the PSF**	**DOE assessment**
	Typical applications of this tool are methodologies where the flow and composition of residual or flared gases or exhaust gases are measured for the determination of baseline or project emissions.	Applicable. For the Project, the volumetric flow of the gaseous stream LFG and the volumetric fraction of CH_4 are measured for the determination of baseline emissions.	The methodological tool: "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (Version 03.0) /B04-4/, has been appropriately applied for the project activity for the determination of the flow and composition of residual or flared gases for the determination of baseline or project emissions.
	Methodologies where CO_2 is the particular and only gas of interest should continue to adopt material balances as the means of flow determination and may not adopt this tool as material balances are the cost-effective way of monitoring flow of CO_2.	For the Project and the applied methodology ACM0001, both CH_4 and CO_2 are involved, but CH_4 instead of CO_2 is the particular gas of interest.	
	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)	The applied methodology ACM0001 specifies all the required information from (a) to (d).	
	TOOL32: "Positive lists of technologies" (Version 04.0)		
	The use of this methodological tool is not mandatory for the project	Applicable.	This tool is applicable to the project activity and is

	participants of a CDM project activity or CDM PoA for demonstrating their additionality.		applied in conjunction with methodology ACM001 (version 19.0) /B02/ which refers to it for determination of the most plausible baseline scenario and demonstration of additionality.
	This methodological tool shall be applied in conjunction with a small-scale or large-scale methodology which refers to this tool.	The Project applies this methodological tool in conjunction with the large-scale methodology ACM0001 (version 19.0).	This tool is applied in conjunction with large scale CDM approved methodology, ACM0001 (version 19.0)
	The positive lists as contained in section 5 of this tool are valid up to 10 March 2025. Notwithstanding the provisions on the validity of new, revised and previous versions of methodologies and methodological tools in the "Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools", there will be no grace period for the application of this tool and the validity of the positive list after this date, including in cases where further technologies are added to the positive list through revisions of this tool before this date.	The positive lists are valid at the time of the PSF writing.	The applicability of this tool is still valid to apply for this project activity.

D.3.2 Clarification on applicability of methodology, tool and/or standardized baseline

Means of Project Verification	DR, I
Findings	-
Conclusion	No further clarifications were sought as the applicability criteria of methodology and the associated tools was found to be fulfilled.

D.3.3 Project boundary, sources and GHGs

Means of Project Verification	DR, I
Findings	-

Conclusion	As per §16 of the applied methodology ACM0001, Version 19.0 /B02/, "*The project boundary of the project activity shall include the site where the LFG is captured, as applicable:* *(a) Sites where the LFG is flared or used (e.g. flare, power plant, boiler, air heater, glass melting furnace, kiln, natural gas distribution network, dedicated pipeline or biogas processing facility);* *(b) Captive power plant(s) (including emergency diesel generators) or power generation sources connected to the grid, which are supplying electricity to the project activity;* *(c) Captive power plant(s) (including emergency diesel generators) or power generation sources connected to the grid, which are supplying electricity in the baseline that is displaced by electricity generated by captured LFG in the project activity;* *(d) Heat generation equipment or sources which are supplying heat in the baseline that is displaced by heat generated by captured LFG in the project activity; and* *(e) The transportation of the compressed/liquefied LFG from the biogas processing facility to consumers."* /B02/. Section B.3 of the PSF /1-b/ clearly depicts the project boundary along with a pictorial representation. The project activity comprises the whole LFG related system (e.g., LFG collection system, LFG pre-treatment system, LFG power generation system, etc.) and all grid-connected power plants in CSPG. This is in line with the applied methodology, ACM0001, version 19 /B02/. The verification team conducted desk review of the implemented project to confirm the appropriateness of the project boundary identified and the same was found to be in conformity with the applied methodology. Furthermore, the physical boundary of the project activity identified by the project owner has been cross verified during remote site visit. The same was found to be appropriate and acceptable. The verification team also confirmed that all GHG sources required by the methodology have been included within the project boundary. It was assessed that no emission sources related to project activity will cause any deviation from the applicability of the methodology or accuracy of the emission reductions. The verification team therefore confirms that the identified boundary and the selected emissions sources are justified for the project activity.

D.3.4 Baseline scenario

Means of Project Verification	DR, I
Findings	CL 04 was raised and closed successfully. Please refer Appendix 4 for further details.
Conclusion	PO has appropriately identified baseline scenario in section B.4. of the PSF, applying the simplified approach of section 5.3.1 of the applied methodology ACM0001, version 19.0 /B02/. In accordance with paragraph 23 of ACM0001 /B02/, the baseline scenario for LFG is the atmospheric release of the LFG and in accordance with paragraph 24, the baseline scenario for the electricity exported to the grid is electricity generation in existing and/or new grid-connected power plants. The baseline scenario applied in the PSF was compared with the requirements of the baseline described in the applied methodology and found to be consistent. Therefore, the verification team also concludes that the identified baseline scenario

	reasonably represents what would occur in the absence of the project activity and is found to be acceptable.

D.3.5 Demonstration of additionality

Means of Project Verification	DR, I
Findings	CL 04 was raised and closed successfully. Please refer Appendix 4 for further details.
Conclusion	Project Owner has described the Demonstration of additionality according to the GCC Project Standard Version 03.1 and the applied methodology ACM0001, version 19 and relevant methodological tools. In section B.5 of the PSF /1-b/, two components are applied for the demonstration of additionality: - A Legal Requirement Test - Additionality Test Legal Requirement: As per national regulation (Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB16889-2008) /34/), Ma'an landfill site is required to install LFG capture and utilization system. According to information from the Ministry of Ecology and Environment of China (https://www.mee.gov.cn/xxgk2018/xxgk/xxgk06/202203/t20220301_970201.html), GB16889-2022 is currently seeking public comments. Therefore, GB16889-2008 is still the latest and the applicable regulation. However, as per the latest survey report of Guangdong Provincial Environmental Protection Industry Association published on 07/12/2021 /35/, there are a total of 1871 landfill sites in cities across China and only around 15% of the landfill sites are equipped with LFG recovery and utilization facilities and landfill gas from the rest 85% sites is released directly without recovery. This shows widespread noncompliance of the regulation and hence the project can be considered as a voluntary action by the PO. The project verification team, based on the interviews with the PO representatives during remote site visit had also confirmed that the site has not received any notice on non-compliance to the regulation. Therefore, the proposed project passes the legal requirement test. Additionality Test: Additionality of the project is demonstrated by using the approved CDM TOOL32 (version 04.0) "Positive lists of technologies" /B04-5/. The project owner had applied the simplified procedures in Section 5.3.1 of the methodology ACM0001 (version 19.0), according to which, the methodological tool "TOOL32: Positive lists of technologies" (version 04.0) shall be referenced. Section 5.1.1 of CDM TOOL32 states that *"The project activities and PoAs at new or existing landfills (greenfield or brownfield) are deemed automatically additional, if it is demonstrated that prior to the implementation of the project activities and PoAs the landfill gas (LFG) was only vented and/or flared (in the case of brownfield projects) or would have been only vented and/or flared (in the case of greenfield projects) but not utilized for energy generation, and that under the project activities and PoAs any of the following conditions are met:* *(a) The LFG is used to generate electricity in one or several power plants with a total nameplate capacity that equals or is below 10 MW;*

	(b) The LFG is used to generate heat for internal or external consumption; *(c) The LFG is flared."* The project activity exclusively applies the technology listed in Section 5.1.1 (landfill gas recovery and its gainful use) of TOOL32 (version 04.0) and it fulfils the related condition in paragraph 11(a) of the tool /B04-5/ Therefore, the project activity is deemed automatically additional. The project verification team based on the review of power purchase contract /14/ and remote site visit confirms that the total nameplate capacity of the project activity is 2MW, which is below 10MW, complying point (a) for section 5.1.1 of CDM TOOL32 (version 4.0) /B04-5/. Therefore, the project activity is deemed automatically additional.

D.3.6 Estimation of emission reductions or net anthropogenic removal

Means of Project Verification	DR, I
Findings	CL 05 was raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	The equations and choices provided in the applied methodology, ACM0001, Version 19.0 /B02/ are correctly quoted in the PSF /1-b/. The emission reductions of the Project Activity are be calculated using the formulae mentioned in the applied methodology ACM0001 (Version 19.0) /B02/. **<u>Baseline emissions</u>** As per section 5.4 of the applied methodology, ACM0001 (version 19.0), the baseline emissions are determined according to Equation (1) and comprise the following sources: a) Methane emissions from the SWDS in the absence of the project activity; b) Electricity generation using fossil fuels or supplied by the grid in the absence of the project activity; c) Heat generation using fossil fuels in the absence of the project activity; and d) Natural gas used from the natural gas network in the absence of the project activity. $$BE_y = BE_{CH4,y} + BE_{EC,y} + BE_{HG,y} + BE_{NG,y}$$ Where: BE_y = Baseline emissions in year y (tCO_2e/yr) $BE_{CH4,y}$ = Baseline emissions of methane from the SWDS in year y (tCO_2e/yr) $BE_{EC,y}$ = Baseline emissions associated with electricity generation in year y (tCO_2/yr) $BE_{HG,y}$ = Baseline emissions associated with heat generation in year y (tCO_2/yr)

	$BE_{NG,y}$ = Baseline emissions associated with natural gas use in year y (tCO_2/yr) The Project does not involve heat generation or natural gas use. Therefore, $BE_{HG,y}$= 0 and $BE_{NG,y}$= 0. $$BE_y = BE_{CH4,y} + BE_{EC,y}$$ **Baseline emissions of methane from the SWDS ($BE_{CH4,y}$)** Baseline emissions of methane from the SWDS are determined in accordance with section 5.4.1 and equation (2) of ACM0001 (version 19.0), based on the amount of methane that is captured under the project activity and the amount that would be captured and destroyed in the baseline (such as due to regulations). In addition, the effect of methane oxidation that is present in the baseline and absent in the project is taken into account: $$BE_{CH4} = \left(\left(1 - OX_{top\_layer}\right) \times F_{CH4,PJ,y} - F_{CH,BL,y}\right) \times GWP_{CH4}$$ Where: $BE_{CH4,y}$ = Baseline emissions of methane from the SWDS in year y (tCO_2e/yr) OX_{top_layer} = Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless) $F_{CH4,PJ,y}$ = Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH_4/yr) $F_{CH4,BL,y}$ = Amount of methane in the LFG that would be flared in the baseline in year y (tCH_4/yr) GWP_{CH4} = Global warming potential of CH_4 (t CO_2e/tCH_4) **Ex post determination of $F_{CH4,PJ,y}$** In accordance with section 5.4.1.1 and equation (3), during the crediting period, $F_{CH4,PJ,y}$ is determined as the sum of the quantities of methane flared and used in power plant(s), boiler(s), air heater(s), kiln(s) and natural gas distribution network, as follows: $$F_{CH4,PJ,y} = F_{CH4,flared,y} + F_{CH4,EL,y} + F_{CH4,HG,y} + F_{CH4,NG,y}$$ Where: $F_{CH4,PJ,y}$ = Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH_4/yr) $F_{CH4,flared,y}$ = Amount of methane in the LFG which is destroyed by flaring in year y (tCH_4/yr) $F_{CH4,EL,y}$ = Amount of methane in the LFG which is used for electricity generation in year y (tCH_4/yr)

	$F_{CH4,HG,y}$ = Amount of methane in the LFG which is used for heat generation in year y (tCH_4/yr) $F_{CH4,NG,y}$ = Amount of methane in the LFG which is sent to the natural gas distribution network and/or dedicated pipeline and/or to the trucks in year y (tCH_4/yr) The Project utilizes the LFG only for power generation. Therefore, $F_{CH4,flared,y}$ = 0, $F_{CH4,HG,y}$ = 0, and $F_{CH4,NG,y}$ = 0. Therefore, $$F_{CH4,PJ,y} = F_{CH4,EL,y}$$ $F_{CH4,EL,y}$ is determined using the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream", i.e., TOOL08 (version 03.0). TOOL08 (version 03.0) shows 6 different ways to measure and calculate the mass flow of a greenhouse gas i in a gaseous stream ($F_{i,t}$), as shown below.

Option	Flow of gaseous stream	Volumetric Fraction
A	Volume flow-dry basis	Dry or wet basis
B	Volume flow-wet basis	Dry basis
C	Volume flow-wet basis	Wet basis
D	Mass flow- dry basis	Dry or wet basis
E	Mass flow-wet basis	Dry basis
F	Mass flow-wet basis	Wet basis

Option C is applicable to the project activity.

CH_4 is the greenhouse gas for which the mass flow should be determined. Therefore, $F_{CH4,EL,y}$ is determined in accordance with section 5.1.2.3 and equation (9) of TOOL 08.

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

With:

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

Where:

$F_{i,t}$ = Mass flow of greenhouse gas i in the gaseous stream in the interval t (kg gas/h)

$V_{t,wb,n}$ = Volumetric flow of the gaseous stream in time interval t on a wet basis at normal conditions (m^3 wet gas/h)

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

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

$$V_{t,wb,n} = V_{t,wb} \times \frac{T_n}{T_t} \times \frac{P_t}{P_n}$$

Where:

$V_{t,wb,n}$	=	Volumetric flow of the gaseous stream in time interval t on a wet basis at normal conditions (m^3 wet gas/h)
$V_{t,wb}$	=	Volumetric flow of the gaseous stream in time interval t on a wet basis (m3 wet gas/h)
P_t	=	Pressure of the gaseous stream in time interval t (Pa)
T_t	=	Temperature of the gaseous stream in time interval t (K)
P_n	=	Absolute pressure at normal conditions (Pa)
T_n	=	Temperature at normal conditions (K)

A flow meter and a methane content analyser have been installed by the project owner to monitor the volumetric flow of the LFG stream ($V_{t,wb}$) and the volumetric fraction of CH_4 in the LFG ($v_{i,t,wb}$), respectively. In addition to $V_{t,wb}$ measuring, the flow meter also records the temperature and the pressure of the LFG stream (T_t and P_t), and automatically converts the flow into values at normal conditions ($V_{t,wb,n}$).

Ex ante determination of $F_{CH4,PJ,y}$

It is determined according to section 5.4.1.2 and equation (5) of the applied methodology, ACM0001 (version 19.0), as follows:

$$F_{CH4,PJ,y} = \eta_{PJ} \times BE_{CH4,SWDS,y}/GWP_{CH4}$$

Where:

$F_{CH4,PJ,y}$	=	Amount of methane in the LFG which is flared and/or used in the project activity in year y (t CH_4/yr)
$BE_{CH4,SWDS,y}$	=	Amount of methane in the LFG that is generated from the SWDS in the baseline scenario in year y (t CO_2e/yr)

	η_{PJ}	=	Efficiency of the LFG capture system that will be installed in the project activity
	GWP_{CH4}	=	Global warming potential of CH_4 (t CO_2e/t CH_4)
	$BE_{CH4,SWDS,y}$ is determined using the methodological tool "Emissions from solid waste disposal sites", i.e., TOOL04 (version 08.1).		
	As per TOOL04 (version 08.1), $BE_{CH4,SWDS,y}$ is calculated as follows: $$BE_{CH_4,SWDS,y} = \varphi_y \times (1 - f_y) \times GWP_{CH_4} \times (1 - OX) \times \frac{16}{12} \times F \times DOC_{f,y} \times MCF_y \times \sum_{x=1}^{y} \sum_j W_{j,x} \cdot DOC_j \cdot e^{-k_j(y-x)} \cdot (1 - e^{-k_j})$$		
	Where:		
	$BE_{CH_4,SWDS,y}$	=	Baseline methane emissions occurring in year y generated from waste disposal at a SWDS during a time period ending in year y (t CO_2e/yr)
	φ_y	=	Model correction factor to account for model uncertainties for year y
	f_y	=	Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emission of methane to the atmosphere in year y
	GWP_{CH4}	=	Global Warming Potential of methane
	OX	=	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
	F	=	Fraction of the methane in the SWDS gas (volume fraction)
	$DOC_{f,y}$	=	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year y (weight fraction)
	MCF_y	=	Methane correction factor for year y
	$W_{j,x}$	=	Amount of organic waste type j disposed in the SWDS in the year x (t)
	DOC_j	=	Fraction of degradable organic carbon in the waste type j (weight fraction)
	k	=	Decay rate for the waste type (1/yr)
	j	=	Type of residual waste or types of waste in the MSW
	x	=	Years of the crediting period for which waste is disposed at the SWDS, extending from the first year in the time period (x=1) to year y (x=y)
	y	=	Years of the crediting period for which methane emissions are calculated

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

The methodology ACM0001 (version 19.0), section 5.4.1.3, provides a procedure to determine the amount of methane that would have been captured and destroyed (by flaring) in the baseline due to regulatory or contractual requirements, to address safety and odour concerns, or for other reasons.

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

As per national regulation (Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB16889-2008) /20/), Ma'an landfill site is required to install LFG capture and utilization system. However, as per the latest survey report of Guangdong Provincial Environmental Protection Industry Association /35/, only around 15% of the landfill sites are equipped with LFG recovery and utilization facilities which shows widespread noncompliance of the regulation. There is no existing LFG capture and destruction system on-site. Therefore, the Project is in line with Case 2and therefore, in accordance with paragraph 41 of ACM0001 (version 19.0):

$$F_{CH4,BL,y} = F_{CH4,BL,R,y}$$

Where:

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

According to paragraph 42 of ACM0001 (version 19.0), $F_{CH4,BL,R,y}$ should be determined based on the information contained in the requirement to destroy methane, as follows:

(a) If the requirement specifies the amount of methane that must be flared then that amount is $F_{CH4,BL,R,y}$;

(b) If the requirement specifies a percentage of the captured LFG that is required to be flared, the amount shall be calculated as follows:

$$F_{CH4,BL,R,y} = p_{reg,y} \; x \; F_{CH4,PJ,capt,y}$$

Where:

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

$p_{reg,y}$ = Fraction of LFG that is required to be flared due to a requirement in year *y*

$F_{CH4,PJ,capt}$ = Amount of methane in the LFG which is captured in the project activity in year *y* (t CH_4/yr)

In accordance with paragraph 43 of ACM0001 (version 19.0), PO has chosen option 2 to calculate $F_{CH4,PJ,capt,y}$. The requirement does not specify any amount or percentage of LFG that should be destroyed but requires the installation of a system

to capture and flare the LFG. Therefore, a typical destruction rate of 20 per cent is assumed:

$$F_{CH4,BL,R,y} = 0.2\ x\ F_{CH4,PJ,capt,y}$$

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

According to section 5.4.2 of ACM0001 (version 19.0), the baseline emissions associated with electricity generation in year y ($BE_{EC,y}$) shall be calculated using the methodological tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, i.e., TOOL05 (version 03.0).

Baseline emissions associated with electricity generation is calculated using equation (2) of TOOL 05 as follows:

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

Where :

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

The determination of the emission factor for electricity generation $EF_{EF,k,y}$ depends on which scenario (A, B or C) in TOOL05 (version 03.0) applies to the source of electricity consumption that would be displaced in the baseline by electricity generated in the project.

In accordance with section 6.2.1.1.1 of TOOL 05, “Scenario A: Electricity consumption from the grid” is applicable to the project activity and Option A1 is selected where $EF_{EF,k,y}$ is equivalent to the combined margin emission factor of the applicable electricity system ($EF_{EF,k,y}$ = $EF_{grid,CM,y}$) and is calculated using the procedures in the latest approved version of the “Tool to calculate the emission factor for an electricity system”, i.e., TOOL07 (version 07.0).

Combined margin CO_2 emission factor for grid (CSPG) connected power generation is calculated using TOOL07 (version 07.0). The value for OM is 0.8042 tCO_2e/MWh and for BM is 0.2135 tCO_2e/MWh. These values are based on *“2019 baseline emission factor for regional power grids in China”* published by Ministry of Ecology and Environment of the China /32/. According to the Ministry of Ecology and Environment of the People’s Republic of China website, this is the latest data available and was published on 29/12/2020 /38/. This complies with the requirement stated in paragraph 9 of GCC Clarification no. 3 (version 1.0) /B01-7/, which states that *"if the project owner applies options 8(c) to 8(e) above, the latest available emission factor shall not be older than 3 years, at the time of submission of the project documentation for starting Global Stakeholder Consultation (GSC)”.*

The combined margin emission factor is then calculated in accordance with equation (16) of TOOL 07 (version 07.0) as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,OM,y}$	=	operating margin emission factor of CCPG (tCO_2e/MWh)
$EF_{grid,BM,y}$	=	build margin CO_2 emission factor of CCPG (tCO_2e/MWh)
w_{OM}	=	the weighting of operating margin emission factor (%)
w_{BM}	=	the weighting of build margin emission factor (%)

According to paragraph 86 (b) the tool, w_{OM} = 0.50 and w_{BM} = 0.50

$EF_{grid,CM,,y}$ = 0.8042 * 0.50 + 0.2135 * 0.50 = 0.50885 tCO_2e/MWh

In accordance with data/parameter table 3 in section 7.2 of TOOL 05, option 3 for baseline electricity consumption sources is selected and a default value of 3% is applied for $TDL_{k,y}$.

The equation is thus modifying to:

$$BE_{EC,y} = EG_{PJ,y} \times EF_{grid,CM,y} \times (1 + TDL_{k,y})$$

Where:

$BE_{EC,y}$	=	Baseline emission from electricity consumption in year y (tCO_2/yr)
$EG_{PJ,y}$	=	Net amount of electricity generated using LFG by the project activity in year y (MWh/y)
$EF_{EF,k,y}$	=	Combined margin emission factor for the grid in year y (tCO_2/MWh)
$TDL_{k,y}$	=	Average technical transmission and distribution losses for providing electricity to source k in year y

Project Emissions

According to section 5.5 and equation (22) of ACM0001 (version 19.0), project emissions are calculated as follows:

$$PE_y = PE_{EC,y} + PE_{FC,y} + PE_{DT,y} + PE_{SP,y}$$

Where:

PE_y	=	Project emissions in year y (tCO_2/yr)
$PE_{EC,y}$	=	Emissions from consumption of electricity due to the project activity in year y (tCO_2/yr)
$PE_{FC,y}$	=	Emissions from consumption of fossil fuels due to the project activity, for purpose other than electricity generation, in year y (tCO_2/yr)

	$PE_{DT,y}$ = Emissions from the distribution of compressed/liquefied LFG using trucks, in year y (tCO_2/yr) $PE_{SP,y}$ = Emissions from the supply of LFG to consumers through a dedicated pipeline, in year y (tCO_2/yr) The project does not involve consumption of fossil fuels, distribution of compressed/liquefied LFG using trucks or supply of LFG to consumers through a dedicated pipeline, which means that $PE_{FC,y}$ = 0, $PE_{DT,y}$ = 0 and $PE_{SP,y}$ = 0. Project emissions from consumption of electricity due to the project activity ($PE_{EC,y}$) is calculated using equation (1) of TOOL05 (version 03.0). $$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$$ Where: $PE_{EC,y}$ = Project emission from electricity consumption in year y (tCO_2/yr) $EC_{PJ,j,y}$ = Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/y) $EF_{EL,j,y}$ = Emission factor for electricity generation for source j in year y (tCO_2/MWh) $TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to source j in year y j = Sources of electricity consumption in the project $EC_{PJ,j,y}$ in the tool is equivalent to the amount of electricity consumed by the project activity in year y ($EG_{EC,y}$). In accordance with data/parameter table 3 in section 7.2 of TOOL 05, option 2 for project electricity consumption sources is selected and a default value of 20% is applied for $TDL_{j,y}$. Therefore, the above equation takes the following form: $$PE_{EC,y} = EG_{EC,y} \times EF_{grid,CM,y} \times (1 + TDL_{j,y})$$ For simplification, $EG_{EC,y}$ is assumed to be 0 in the ex-ante estimate and it is measured during the project implementation as part of the monitoring plan. **Leakage Emissions** According to section 5.6 and paragraph 71 of the applied methodology, ACM0001 (version 19.0), *"No leakage effects are accounted for under this methodology".*

Emission Reductions

According to section 5.7 and equation (26) of the applied methodology, ACM0001 (version 19.0),

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO_2e/yr)

BE_y = Baseline emissions in year y (tCO_2e/yr)

PE_y = Project emissions in year y (tCO_2e/yr)

Data and parameters fixed ex-ante:

Ex-ante parameters provided under section B.6.2 of the PSF /1-b/ are found to be appropriate and in line with the applied methodology ACM0001 (version 19.0) /B02/. Ex-ante parameters of the project activity would be as follows:

Parameter	Description	Verified Value	Verified 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 4 "Emissions from solid waste disposal sites", (version 8.1) /B04-1/
GWP_{CH4}	Global warming potential of CH_4	28 tCO_{2e}/tCH_4	IPCC AR5
NCV_{CH4}	Net calorific value of methane at reference conditions	0.0504 TJ/t CH_4	ACM0001 (version 19.0) /B02/
η_{PJ}	Efficiency of the LFG capture system that will be installed in the project activity	85%	Feasibility Study Report (FSR) of the project Landfill Gas Collection System Design Scheme of the project /4/ According to "Landfill Gas Collection System

				Design Scheme of the project" /39/, the efficiency is not lower than 85%. The value applied in other registered projects in carbon mechanism are as follows: VCS 3901: 85% VCS 3696: 85% VCS 3649: 85% VCS2957:85% VCS2525:95% VCS2503:90% VCS2464:90% GS 11538: 85% Therefore, the applied value of 85% for the proposed project activity is deemed acceptable to the project verification team.
	φ_y	Default value for the model correction factor to account for model uncertainties	0.75 (Application A, Humid/wet conditions)	Methodological Tool 04 “Emissions from solid waste disposal sites” (version 8.1) /B04-2/
	OX	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)	0.1	- Methodological Tool 04 “Emissions from solid waste disposal sites” (version 8.1) /B04-2/ - IPCC 2006 Guidelines for National

				Greenhouse Gas Inventories
	F	Fraction of methane in the SWDS gas	0.5	- Methodological Tool 04 "Emissions from solid waste disposal sites" (version 8.1) /B04-2/ - IPCC 2006 Guidelines for National Greenhouse Gas Inventories
	$DOC_{default}$	Default value for the fraction of degradable organic carbon (DOC) in MSW that decomposes in the SWDS	0.5	- Methodological Tool 04 "Emissions from solid waste disposal sites" (version 8.1) /B04-2/ - IPCC 2006 Guidelines for National Greenhouse Gas Inventories
	$MCF_{default}$	Methane correction factor	1.0	- Methodological Tool 04 "Emissions from solid waste disposal sites" (version 8.1) /B04-2/ - IPCC 2006 Guidelines for National Greenhouse Gas Inventories - The proposed project activity corresponds to Application A described in the applicable methodological

<table>
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<td>tool “Emissions from solid waste disposal sites” /B04-2/. Therefore, in accordance with the requirements set out by tool, the default value was chosen. The Landfill meets the criteria of managed SWDS. Hence, the value corresponding to anaerobic managed solid waste disposal sites is chosen. The choice chosen by PO was confirmed during the remote site visit.</td>
</tr>
<tr>
<td></td>
<td>$W_{j,x}$</td>
<td>Amount of solid waste type j disposed or prevented from disposal in the SWDS in the year x</td>
<td>
<table>
<tr><td>Year</td><td>W_j (waste amount) (t/x)</td></tr>
<tr><td>2014</td><td>83,536</td></tr>
<tr><td>2015</td><td>333,975</td></tr>
<tr><td>2016</td><td>323,025</td></tr>
<tr><td>2017</td><td>329,230</td></tr>
<tr><td>2018</td><td>328,500</td></tr>
<tr><td>2019</td><td>324,850</td></tr>
<tr><td>2020</td><td>81,991</td></tr>
</table>
<table>
<tr><td>Waste type of</td><td>Weight fraction (%)</td></tr>
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</td>
<td>- Methodological Tool 04 “Emissions from solid waste disposal sites” (version 8.1) /B04-2/
- General information of Maan landfill site /26/ specifies the actual average daily landfill volume of phase II as follows:
2014- 908 tons
2015 - 915 tons
2016 - 885 tons
2017 - 902 tons</td>
</tr>
</table>

			Landfill site		2018 - 900 tons 2019 - 890 tons 2020 - 901 tons
			Pulp, paper and cardboard	13.52 %	
			Textiles	9.20%	
			Food, food waste, beverages and tobacco	56.00 %	
			Wood and wood products	3.17%	
			Garden, yard and park waste	2%	
			Rubber, plastic, Glass, metal and other inert	16.11 %	
			Total	100%	
	DOC_j	Fraction of degradable organic carbon in the waste type j (weight fraction)	Waste classification	*DOC_j (% wet waste)*	- Methodological Tool 04 "Emissions from solid waste disposal sites" (version 8.1) /B04-2/ - IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Tables 2.4 and 2.5)
			Wood and wood product	43	
			Pulp, paper and cardboard (other than sludge)	40	
			Food, food waste, beverage and	15	

			tobacco (other than sludge)	
			Textiles	24
			Gardens, yard and park was	20
			Glass, metal and other inert waste	0
	k_j	Decay rate for the waste type j	Pulp, paper, cardboard (other than sludge), textiles	0.07
			Wood, wood products & straw	0.035
			Other (non-food) organic putrescible garden and park waste	0.17
			Food, food waste, sewage, sludge, beverages & tobacco	0.40

- Methodological Tool 04 “Emissions from solid waste disposal sites” (version 8.1) /B04-2/
- IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Table 3.3)
- According to Zhaoqing Climate Bulletin 2019 /42/, the average temperature of the city is 22.2℃ and the annual mean precipitation is 1716.5 mm. Therefore, the climate is classed as Tropical (MAT>20℃),

				Wet (MAP>1000mm). Accordingly, the values for k_j are applied to the calculations.
	$EF_{grid,OM,y}$	Operating margin CO_2 emission factor in year y	0.8042 tCO_2/MWh	2019 Baseline Emission Factors for Regional Power Grids in China published by DNA of China /32/
	$EF_{grid,BM,y}$	Build margin CO2 emission factor in year y	0.2135 tCO_2/MWh	2019 Baseline Emission Factors for Regional Power Grids in China published by DNA of China /32/
	$EF_{grid,CM,y}$	Combined margin CO2 emission factor of CSPG	0.50885 tCO_2/MWh	2019 Baseline Emission Factors for Regional Power Grids in China published by DNA of China /32/
	R_u	Universal ideal gases constant	8,314 $Pa.m^3/kmol.K$	CDM TOOL 08: “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, (version 3.0) /B04-4/
	MM_i	Molecular mass of greenhouse gas CH_4	16.04 kg/kmol	CDM TOOL 08: “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, (version 3.0) /B04-4/
	P_n	Total pressure at normal conditions	101,325 Pa	CDM TOOL 08: “Tool to determine the mass flow of a greenhouse gas in

				a gaseous stream", (version 3.0) /B04-4/
	T_n	Temperature at normal conditions	273.15 K	CDM TOOL 08: "Tool to determine the mass flow of a greenhouse gas in a gaseous stream", (version 3.0) /B04-4/
	$\rho_{i,n}$	Density of greenhouse gas CH_4 in the gaseous stream at normal conditions	0.71566 kg gas i/m³ wet gas i	CDM TOOL 08: "Tool to determine the mass flow of a greenhouse gas in a gaseous stream", (version 3.0) /B04-4/
	$TDL_{j,y}$ and $TDL_{k,y}$	Average technical transmission and distribution losses for providing electricity to source j or k in year y	$TDL_{j,y}$: 20% $TDL_{k,y}$: 3%	CDM TOOL 05: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 3.0) /B04-2/ In accordance with data/parameter table 3 in section 7.2 of TOOL 05, option 3 for baseline electricity consumption sources is selected and a default value of 3% is applied for $TDL_{k,y}$. In accordance with data/parameter

				table 3 in section 7.2 of TOOL 05, option 2 for project electricity consumption sources is selected and a default value of 20% is applied for $TDL_{j,y}$.

The parameters and equations presented in the PSF /1-b/ and ER spreadsheet /2-b/ have been compared with the information and requirements presented in the methodology /B02/. Project verification team based on the review of PSF /1-b/ and the ER spread sheet /2-b/ and other supporting documents, confirms that the formula are correctly presented for the determination of emission reductions and the values of the input parameters used are accurate, appropriate, and consistent.

D.3.7 Monitoring plan

Means of Project Verification	DR, I
Findings	CL 06, CAR 03, and CAR 04 were raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	The monitoring plan presented in the PSF /1-b/ complies with the requirements of the applied monitoring methodology /B02/. The verification team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found. The verification team through a document review and interviews with the relevant stakeholders has reviewed the procedures. The information provided has allowed the verification team to confirm that the proposed monitoring plan is feasible within the project design. The parameters that are to be monitored ex-post are:

Parameter	Unit	Frequency	Assessment
Management of SWDS	-	Annual	The data source for this parameter is the original design of the landfill which is described in General information of Ma'an landfill site /26/. According to data/parameter table 8 of the applied methodology, ACM0001 (version 19.0) /B02/, any change in the management of the SWDS after the implementation of the project activity should be justified by referring to technical or regulatory specifications. This will be monitored by the project owner and the project verification team must check the same during emission reduction

				verification.
	f_y (Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y)	-	Once for the crediting period (for application A)	According to paragraph 38 (a) of the applied methodology, ACM0001 (version 19.0), f_y used for calculation of $BE_{CH4,SWDS,y}$ using TOOL 04, shall be assigned a value of 0 because the amount of LFG that would have been captured and destroyed is already accounted for in equation (2) of ACM0001 (version 19.0) /B02/.
	$V_{t,wb,n}$ (Volumetric flow of the gaseous stream in time interval t on a wet basis at normal conditions)	m³ wet gas/h	Monthly	The parameter is continuously measured and recorded monthly with the help of meter reading taken by representative of PO. In cases of the on-site meter not working, the emission reductions for that period will not be claimed. The Project owner has provided photos and serial number /13/ for meter and are checked and found consistent with the information provided in the PSF. In accordance with applied methodology /B02/, the calibration of meters, including the frequency of calibration will be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The accuracy of electricity meters shall follow the requirements of "JJG 640-2016 Verification Regulations for Differential Pressure Flowmeters"/40/. The accuracy of meters will be of no less than 0.5S and shall be calibrated on an annual basis.
	$v_{i,t,wb}$ (Volumetric fraction of greenhouse gas CH4 in a time interval t on a wet basis)	m³ gas CH4/m³ wet gas	Monthly	The parameter is continuously measured and recorded monthly with the help of meter reading taken by representative of PO. In cases of the on-site meter not working, the emission reductions for that period will not be claimed. The Project owner has provided photos and serial number /13/ for meter and are checked and found consistent with the information

				provided in the PSF. In accordance with applied methodology /B02/, the calibration of meters, including the frequency of calibration will be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The accuracy of electricity meters shall follow the requirements of "JJG677-2006 Verification Regulations for Optical Interference Methane Detector"/41/. The accuracy of meters will be of no less than 0.5S and shall be calibrated on an annual basis.
	$Op_{j,h}$ (Operation of the equipment that consumes the LFG)	h	Hourly	According to data/parameter table 12 of the applied methodology, ACM0001 (version 19.0), the value is 0 when No products (electricity) are generated in the hour h. Otherwise its value is 1. The value applied for calculations is 1 for 7600 operating hours, which is based on the FSR /4/.
	$EG_{PJ,y}$ (Amount of electricity generated using LFG by the project activity in year y)	MWh	Monthly	The parameter is monitored continuously and recorded monthly on through meter reading taken by representative of PO. The reading will be crosschecked with the sale receipt and the lower value will be used for ER calculation for conservativeness. In cases of the on-site meter failure, the emission reductions for that period will not be claimed as the information on the grid meter is not available with the PO. The Project owner has provided photos and serial number /13/ for meter and are checked and found consistent with the information provided in the PSF. In accordance with applied methodology /B02/, the calibration of meters, including the frequency of calibration will be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The

				accuracy of electricity meters shall follow the requirements of "DL/T448-2016 Technical Administrative Code of Electric Energy Metering"/29/. The accuracy of meters will be of no less than 0.5S and shall be calibrated on an annual basis. In cases of meter on-site not working, the emission reductions for that period will not be claimed.
	$EG_{EC,y}$ (Amount of electricity consumed by the project activity in year y)	MWh	Monthly	The parameter is monitored continuously and recorded monthly on through meter reading taken by representative of PO. The reading will be crosschecked with the sale receipt and the lower value will be used for ER calculation for conservativeness. In cases of the on-site meter failure, the emission reductions for that period will not be claimed as the information on the grid meter is not available with the PO. The Project owner has provided photos and serial number /13/ for meter and are checked and found consistent with the information provided in the PSF. In accordance with applied methodology /B02/, the calibration of meters, including the frequency of calibration will be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The accuracy of electricity meters shall follow the requirements of "DL/T448-2016 Technical Administrative Code of Electric Energy Metering"/29/. The accuracy of meters will be of no less than 0.5S and shall be calibrated on an annual basis.
	CAPEX and OPEX (Total investment to implement the project and total cost to operate the project)	CNY	At the first issuance request after each phase of the project is fully implemente	The project owner shall keep records for the monitoring parameter and can be checked at the time of ER verification stage

			d	
	Tariff of electricity exported	CNY	At the first issuance request after each phase of the project is fully implemented	The project owner shall keep records for the monitoring parameter and can be checked at the time of ER verification stage
	The following parameters will be monitored for environmental/social impacts that are identified to be positive in nature			
	CO_2 emission	tCO_{2e}	Continuously measured and monthly recorded	This parameter will have a positive impact on the environment by means of reduction in the CO_2 emissions. Reduction of CO_2 emissions due to implementation of project activity that would otherwise be emitted by the grid connected power plants will be monitored. The monitoring of this parameter will be done in each verification based on calculation from the continuously monitored electricity generation. The calculation procedures for the reduction in CO_2 emissions are correctly defined in the PSF. The parameter is being monitored to assess to contribution SDG goal - 13 Climate Change and also the positive environmental impact. Adequate details for monitoring/reporting/recording are defined in the PSF. The CO_2 emission reduction is validated from the ER calculation sheet /02/ and found appropriate.
	Methane emission	tCO_{2e}	Continuously measured and monthly recorded	This parameter will have a positive impact on the environment by means of reduction in the methane emissions. Reduction of methane emissions due to implementation of project activity that would otherwise be vented from landfills will be monitored. The monitoring of this parameter will be done in each verification based on calculation from the continuously monitored electricity generation. The calculation procedures for the reduction in methane emissions are correctly defined in the PSF. Adequate details for

				monitoring/reporting/recording are defined in the PSF. The methane emission reduction is validated from the ER calculation sheet /02/ and found appropriate.
	Electricity supplied to the power grid by the LFG generators	MWh	Continuously measured and monthly recorded	The parameter is monitored continuously and recorded monthly on through meter reading taken by representative of PO. The reading will be crosschecked with the sale receipt. The Project owner has provided photos and serial numbers for meters and are checked and found consistent with the information provided in the PSF. In accordance with applied methodology, the calibration of meters, including the frequency of calibration will be done in accordance with national standards or requirements set by the manufacturer. The accuracy of electricity meters shall follow the requirements of "DL/T448-2016 Technical Administrative Code of Electric Energy Metering"/29/. The accuracy of meters will be of no less than 0.5S and shall be calibrated on an annual basis.
	Number of people/women employed by the project	-	Once per year	The project activity has claimed created of on-site long-term jobs. At the time of project verification project activity is expected to 10 numbers of long-term jobs at site, giving equal opportunities to men and women. The Number of people employed by the project will be monitored through checking payroll records or the social insurance payment records of the project owner.
	Number of Job-related Trainings	-	Regular Monitoring, Aggregation annually	The project owner has claimed under S+ section that regular job-related training will be provided to the employees for their skill development and safety. It is confirmed that the project activity does regular training to its employees for skill development and there is a system in place to monitor the same. This parameter will be continuously monitored by means of training records and adequate details for monitoring/reporting/recording are

				defined in the PSF.
	The following parameters will be monitored for environmental/social impacts that are identified to be negative in nature (regardless of being harmful or harmless)			
	SO_x emission	mg/m^3	Once per year	The LFG generators release exhaust gas which contains SOx and NOx. The content of SOx and NOx in the exhaust gas will be monitored once per year to demonstrate regulatory compliance. The project owner regularly entrusts a third-party agency to conduct sampling and testing to monitor the SO_x and NO_x content in the exhaust gas which is confirmed by reviewing a sample third party report (Report ID: ZXHB-R21A05611, dated 23/12/2021) /18/ The project owner shall keep records for the monitoring parameter and can be checked at the time of ER verification stage to ensure the compliance.
	NO_x emission			
	Noise pollution	dB	Once per year	The LFG generators result in noise pollution. The levels of noise will be monitored once per year to demonstrate regulatory compliance. The project owner regularly entrusts a third-party agency to conduct sampling and testing to monitor the noise levels which is confirmed by reviewing a sample third party report (Report ID: ZXHB-R21A05611, dated 23/12/2021) /18/ As per the mitigation measures suggested in the EIA report /25/, PO has ensured that all production equipment is placed in the steel container and the operating noise is effectively attenuated after being blocked by the solid wall. This was confirmed by the verification team during remote audit. The project owner shall keep records for the monitoring parameter and can be checked at the time of ER verification stage to ensure the compliance.
	Hazardous waste	Tonnes	Once per year	Hazardous waste will be properly collected, temporarily stored in the specific storage facility at the project site and then transferred to

				a qualified entity for treatment at periodic intervals. The same is confirmed by the project verification team by reviewing the Hazardous waste disposal contract /17/ and sample hazardous waste transfer form /24/
	Accidents occurred at project site	-	Once per year	The PO has claimed that the staff will be provided with regular Health and safety training about accident hazards and risk related. A sample training record of training conducted in the month of May 2022 is also provided by the project owner and is deemed acceptable to the project verification team /23/. The monitoring parameter will be continuously monitored through accident records maintained by the PO. PO has provided sample accident records /20/ which have been checked by the verification team.
	Solid waste pollution from end-of-life equipment	Tonnes	Once per year	Any solid waste generated by End-of-life equipment will be sent to recycler like waste recycling company and non-recyclable parts will be collected and sent to Sanitation department for treatment. Project owner shall maintain regulatory compliance with respect to the same. The project owner shall keep records for the monitoring parameter and can be checked at the time of ER verification stage to ensure the compliance.
	Generation of wastewater	litres	Once per year	According to the PSF, condensed water will be produced in the pretreatment system of the project which is discharged into the sewage treatment plant through the conduit. The domestic sewage generated by people on-site is treated in a septic tank and is discharged into the integrated domestic sewage treatment facility for further treatment. PO has provided sample wastewater treatment record form /30/ which is checked by the project verification team.
	Exploitation of Child labour	-	Once per year	According to http://www.gov.cn/gongbao/content/2002/content_61798.htm, child

				labour is absolutely prohibited in China and no related negative impact is being created by the project. However, PO will monitor the employment list to ensure that no child labor is employed.

In summary, the parameters to be monitored have been presented correctly according to requirements and are considered in accordance with the applied methodology /B02/. This is in conformance with the requirements of GCC Verification Standard (version 3.1) /B01-2/.

D.4. Start date, crediting period and duration

Means of Project Verification	DR, I
Findings	CL 03 was raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	The start date of the project is 10/07/2018, which is the commissioning of the project activity /7/. The same has been duly verified against the project completion report /7/ and found to be acceptable by the verification team. Crediting period has been chosen as fixed 10 years from 10/07/2018 to 09/07/2028. The start date of the crediting period is stated as 10/07/2018, which is appropriate as per §40(b) of the Project Standard version 03.1 /B01-1/. The expected operational lifetime of the project activity is 15 years which is based on the agreement with Zhaoqing City Municipal Administration regarding the treatment of LFG in Ma'an Landfill Site /10/. It states that the "Guangdong Sincody Environmental Technology Co., Ltd." is authorized to use the LFG for electricity generation for 15 years. The project verification team therefore concludes that the duration of the proposed project activity is in conformance with the requirements of §38, §39 and §40 of GCC Project Standard, version 03.1 /B01-1/.

D.5. Environmental impacts

Means of Project Verification	DR, I
Findings	-
Conclusion	The EIA was conducted by Shenzhen Zongxing Environmental Protection Technology Co., Ltd. in 2017 /25/. The EIA report dated April 2017 has been evaluated and approved by Environment Protection Bureau of Gaoyao District of Zhaoqing City and the approval was issued on 03/05/2018 /25/. The EIA report identifies all possible environmental impacts by the project activity and their proper mitigation measures. The EIA report identifies and analyses the following impacts: 1. Air pollution: 2. Water pollution 3. Noise pollution 4. Solid waste pollution including hazardous waste

	These impacts are adequately described in section D.1 of the PSF /01-b/ along with the mitigation measures in line with the EIA report /25/, which is acceptable to the project verification team. The report does not identify any impacts on the surrounding environment of habitation as project location is not under any such identified forest, protected sanctuary, or bird migratory routes. Assessment team feels the EIA analysis covers all possible impacts from the project and the same has been appropriately considered by the project owner in PSF analysis.

D.6. Local stakeholder consultation

Means of Project Verification	DR, I
Findings	CAR 06 was raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	The local stakeholder consultation was conducted for the project activity on 20/04/2017 as per GCC requirements. The verification team confirms that the local stakeholder consultation process was performed by the project owner before the submission of the project activity for global stakeholder consultation. The relevant local stakeholders were invited through announcements posted on bulletin boards of nearby villages. The meeting notification dated 15/04/2017 was provided to the project verification team /21/. The assessment team has reviewed the documentation in order to validate the inclusion of relevant stakeholders. The verification team confirms that the communication method used to invite the stakeholders is found to be appropriate. The summary of comments presented in the PSF has been verified with the documentation of the stakeholder consultation as well as remote interviews with various stakeholders and has been found to be complete. No negative feedback was received. Therefore, the verification team concludes that the local stakeholder consultation process was adequately conducted by the project participant considering the ongoing pandemic to receive unbiased comments from the all the relevant stakeholders. The verification team confirms that the local stakeholder consultation process performed for the project activity fulfils the GCC requirements and all the LSC documents /21/ are verified and found acceptable.

D.7. Approval and Authorization- Host Country Clearance

Means of Project Verification	DR, I
Findings	CAR 02 was raised and closed successfully. FAR 01 has been raised in this respect. Please refer to Appendix 4 for further details.
Conclusion	As per the GCC requirements as well the email thread with GCC provided by the PO, there is no need for the PO to provide Host Country Attestation during the project verification. However, since the crediting period falls between 10/07/2018 to 09/07/2028 (as per the PSF, Section C.3.2.), this will have to be checked during the first or subsequent ER Verification of the project (for the period beyond 2020). FAR 01 has been raised in this reference.

D.8. Project Owner- Identification and communication

Means of Project Verification	DR, I
Findings	-

Conclusion	**Organization name**	Chengdu Xiangche Technology Limited
	Country	China
	Address	No.216, 2nd floor, Unit 2, Building 1,1616 Nanhua Road, Gaoxin District, Chengdu,Sichuan Province in People's Republic of China
	Telephone	+86 139 2602 2993
	Fax	-
	E-mail	general@xche.tech
	Website	-
	Contact person	LUAN Guodong, GUO Longpeng

This is in compliance with the § 10-i of the Project Standard Version 3.1 /B01-1/. The information and contact details of the representation of the project owner and project owners themselves has been appropriately incorporated in Appendix 1 of the PSF which was checked and verified by the verification team from Authorization letter signed by the project owners. All information was consistent between these documents.
The project verification team has reviewed the Business License /3/ of Guangdong Sincody Environmental Technology Co.Ltd having date of incorporation as 13/07/2006 and validated the legal ownership of the project.
The project verification team thus confirms the legal ownership of the project activity.
The project verification team has checked the LOA /31/ submitted by the client and confirms Chengdu Xiangche Technology Limited is the authorized representative of proposed project activity developed by Guangdong Sincody Environmental Technology Co. Ltd.

D.9. Global stakeholder consultation

Means of Project Verification	DR, I
Findings	-
Conclusion	The PSF was published for global stakeholder consultation from 26/10/2022 till 09/11/2022. The PSF was made public for receiving stakeholder feedback and no comments were raised during the GSC process. The verification team therefore concludes that the process for global stakeholder consultation was conducted in accordance with the requirements of paragraphs 25 and 26 of the GCC Project Standard (version 3.1) /B01-1.

D.10. Environmental Safeguards (E+)

Means of Project Verification	DR, I
Findings	CL 07 and CAR 05 were raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	

Impact of Project Activity on Environmental Safeguards	Project Owner's Conclusion	Score	Assessment

	SO_x emissions	LFG Pre-treatment system has been installed and properly operated to ensure the complies with regulations	+1	This is covered to monitor impacts from SO_x content from exhaust gas generated by the project activity. The impacts are being monitored through parameters 'SO_x emission' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	NO_x emissions	Most of nitrogen-containing impurities are removed by the pretreatment system and ensure the gas concentration in exhaust gas complies with the regulation.	+1	This is covered to monitor impacts from NO_x content from exhaust gas generated by the project activity. The impacts are being monitored through parameters 'NO_x emission' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	CO_2 emissions	The project is expected to result in lower CO_2 emission than the baseline throughout the crediting period	+1	The project activity being renewable power generation that avoids CO_2 emissions that would have occurred in baseline scenario due to the electricity generation in thermal power plants. The impacts is being monitored through parameter 'CO_2 emission' and is verified under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for

				the impact, hence the scoring has found acceptable by the team.
	Non-Methane Volatile Organic Compounds (NMVOCs)	No monitoring activity will be performed. To be conservative, this parameter is not scored.	0	The project reduces NMVOCs emission by combustion of previously atmospheric released landfill gas. PO has considered zero score for this parameter and, it is verified as harmless.
	Odor emissions	No monitoring activity will be performed. To be conservative, this parameter is not scored.	0	The project reduces odor emission by recovery of landfill gas followed by purification and destruction. PO has considered zero score for this parameter and, it is verified as harmless.
	Noise Pollution	The noise outside the project facility is lower than 55dB at nighttime and 65dB at daytime, which complies with national regulation.	+1	This is covered to monitor impacts from noise generated by the project activity. The impacts are being monitored through parameters 'Noise Pollution' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Methane emissions	The project will result in lower methane emissions than the baseline.	+1	The project activity includes capture of landfill gas and hence avoids methane emissions that would have occurred in baseline scenario due to venting of landfill gas. The impacts is being monitored through parameter 'Methane emission' and is verified under section D.3.7 of this report.

				An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Solid waste Pollution from Hazardous wastes	Solid waste Pollution from Hazardous wastes is properly disposed as per regulations, hence the project is deemed Harmless	+1	This is covered to monitor impacts from waste mineral oil generated by the project activity. The impacts are being monitored through parameters 'Hazardous waste' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Solid waste Pollution from end-of-life products/ equipment	Solid waste from end-of-life equipment were recycled by waste recycling company. Non-recyclable parts will be collected and sent to Sanitation department for treatment.	+1	This is covered to monitor impacts from end-of-life equipment generated by the project activity. The impacts are being monitored through parameter 'Solid waste pollution from end-of-life equipment' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Generation of wastewater	The generated condensed water is discharged into the sewage treatment plant through the conduit, so the wastewater generated by the project will not affect the environment.	+1	This is covered to monitor impacts from condensed water generated by the project activity. The impacts are being monitored through parameters 'Generation of wastewater' and discussed under section D.3.7 of this report.

				An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Pollution of leachate	The leachate is properly treated in the leachate treatment station of the land fill site to comply with the standard of "Pollutant Control Standard for Domestic Waste Landfill" (GB16889-2008). To be conservative, this parameter is not scored.	0	The leachate is not generated by the project activity which was confirmed during remote site visit. The leachate generated by the landfill is treated by the leachate treatment station present at the landfill site. PO has considered zero score for this parameter and, it is verified as harmless.
	Replacing fossil fuels with renewable sources of energy	The project is expected to supply an average of 11,489 MWh renewable electricity to CSPG annually	+1	The impact is self-evidentiary as project being a renewable energy power plant and baseline is fossil fuel dominated grid. The impact is being monitored through parameter '$EG_{PJ,y}$' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.

Verification team confirms that the project at a minimum, has conducted assessment and reporting of the potential aspects which are identified for each project type as per appendix 1 of the GCC Environment and Social Safeguards Standard (version 3.0) /B01-4/ and the Project activity will not cause any net harm to the environment and net score for project activity comes out to be +9, hence, is eligible to achieve additional E+ certifications. The detailed matrix has been included in appendix 5 of the report.

The GCC Verifier certifies that the Project Activity is not likely to cause any net harm to environment.

D.11. Social Safeguards (S+)

<table>
<tr><td>Means of Project Verification</td><td>DR, I</td></tr>
<tr><td>Findings</td><td>CL 07 and CAR 05 were raised and closed successfully. Please refer to Appendix 4 for further details.</td></tr>
<tr><td>Conclusion</td><td>
<table>
<tr><th>Impact of Project Activity on Social Safeguards</th><th>Project Owner's Conclusion</th><th>Score</th><th>Assessment</th></tr>
<tr><td>Long-term jobs (> 1 year) created/ lost</td><td>The social impact is expected to increase employment, which can be confirmed by payroll records or the social insurance payment records of the project owner</td><td>+1</td><td>The impacts being monitored throughout crediting period by parameter 'Long-term jobs (> 1 year) created/ lost (SJ01)' and is verified under section D.3.7 of this report.

The employment was verified during the audit /39/ and by interviews and it was accepted by the VVB team that appropriate monitoring plan is going to be implemented.</td></tr>
<tr><td>Reducing / increasing accidents/incidents/ fatality</td><td>Project proponent will provide regular safety training to their workers about the accident hazards and risk related to specific works and preventive measures for avoiding accidents at site Therefore this parameter will not be scored</td><td>+1</td><td>The impact is being monitored throughout the crediting period by parameter 'Accidents occurred at project site' and is verified under section D.3.7 of the report.

The project owner shall provide the job-related Health and safety trainings to its employees on regular interval, and the number of accidents occurred can be verified at the time on emission reduction verification</td></tr>
</table>
</td></tr>
</table>

	Reducing / increasing fire/explosion and risk to human life	The owner holds regular safety training and ensure no fire or explosion is expected to happen throughout the crediting period. To be conservative, this parameter is not scored.	0	The project owner conducts regular safety training which is verified by reviewing the training records /23/. PO has considered zero score for this parameter and, it is verified as harmless.
	specialized training / education to local personnel	Job related training can be confirmed by training records	+1	The impact is being monitored throughout the crediting period by parameter 'Number of Job-related Trainings' and is verified under section D.3.7 of the report. The project owner shall provide the job-related Health and safety trainings to its employees on regular interval, and the number of trainings can be verified at the time on emission reduction verification.
	Women's empowerment	-	N/A	The project owner will employ female employees with equal pay which will be confirmed from the payroll records or social insurance payment records. However, PO will not score this parameter as the monitoring approach is already covered under Long-term jobs (> 1 year) created/ lost.
	Exploitation of Child labour (Human rights)	This project continuously monitors the employment list to ensure that no child labor is employed, child labour is	0	According to "Promulgation of the State Council of the China Prohibiting the Use of Child Labor" /36/, employment of children under the age of 16 is prohibited in China.

		absolutely prohibited in China and no related positive or negative impact is being created by the project. Thus, it will not be scored.		The employment was verified during the audit and by interviews and it was accepted by the verification team that an appropriate monitoring plan is going to be implemented. However, PO has considered zero score for this parameter and, it is verified as harmless.

Verification team confirms that the project at a minimum, has conducted assessment and reporting of the potential aspects which are identified for each project type as per appendix 1 of the GCC Environment and Social Safeguards Standard (version 3.0) /B01-4/ and the Project activity will not cause any net harm to the society and net score for project activity comes out to be +3, hence, is eligible to achieve additional S+ certifications. The detailed matrix has been included in appendix 6 of the report.

The GCC Verifier certifies that the Project Activity is not likely to cause any net harm to society.

D.12. Sustainable development Goals (SDG+)

Means of Project Verification	DR 1
Findings	CAR 05 was raised and closed successfully. Please refer to Appendix 4 for further details.
Conclusion	

UN-level SDGs	Contribution of Project-level Actions to SDG Targets	Monitoring Procedure	Assessment
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	The project increases the renewable energy share in energy production mix. It provides 11,489 MWh annual clean energy to the grid	Monitoring the supplied electricity to CSPG by the project. Please refer to ENR07 in section B.7.1	The project activity contributes towards this goal by replacing the generation of fossil fuel dominated grid in baseline by power generation through LFG capture and utilization. The contribution towards SDG goal is being monitored by the parameter '$EG_{PJ,y}$', quantity of net electricity generation supplied by the project plant / unit to the grid in the monitoring plan and

				is found adequate. This has been discussed under section D.3.7 of this report.
	Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	The project created job opportunity for both construction and operation period. It created long term employment for 10 people who are directly working at the site.	Check employment records or payroll of employees. Please refer to SJ01in section B.7.1	The contribution towards SDG goal is by providing employment by creating 10 long term jobs for the project activity. This is being monitored by the parameter 'Long-term jobs (> 10 year) created/ lost (SJ01)' in the monitoring plan and is found adequate. This has been discussed under section D.3.7 of this report.
	Goal 13. Take urgent action to combat climate change and its impacts	The project recovers LFG for power generation. The LFG was vented to atmosphere without recovery. The project avoids 48,331 tCO_2e GHG emission annually	Calculate avoided GHG emissions every year. Please refer to EA 03 and ENR07 in section B.7.1	The contribution towards SDG goal is being monitored by the parameter 'CO_2 emission' in the monitoring plan and is found adequate. This has been discussed under section D.3.7 of this report.
	The Project Owner has provided complete information in the PSF to demonstrate that the chosen SDG goals positively contribute to the UN SDGs as required by paragraph 19, 20 and 21 of Project Sustainability Standard /B01-5/. Based on the documentation review, the verification team can confirm that Project Activity is likely to contribute to the 3 United Nations Sustainable Development Goals (7, 8 and 13) and would have a positive impact, hence, is eligible to achieve additional SDG+ (silver) certifications. The detailed matrix has been included in appendix 7 of the report.			

D.13. Authorization on Double Counting from Host Country (for CORSIA)

Means of Project Verification	DR 1
Findings	CAR 02 was raised and closed successfully. FAR 01 has been raised in this respect. Please refer to Appendix 4 for further details.
Conclusion	Referring to Section 5.1, GCC Project Standard, Submission of Host Country Attestation on Double Counting is mandatory requirement for projects that intend to use ACCs for CORSIA. As per GCC PSF, Project Owner intends to use ACCs issued form the proposed project for CORSIA. However, in Section H of PSF, it is stated "As per the guideline available in this regard, submission of Host Country Attestation

	(HCA) on Double Counting as and when required by CORSIA. For carbon credits generated during 01/01/2016 to 31/12/2020, HCA is not required for CORSIA labeled credits."

D.14. CORSIA Eligibility (C+)

Means of Project Verification	DR 1
Findings	CAR 02 was raised and closed successfully. FAR 01 has been raised in this respect. Please refer to Appendix 4 for further details.
Conclusion	The project activity meets the CORSIA Eligibility as the crediting period is after 01/01/2016 and the project is applying for registration under GCC, which is one of the approved programmes for eligibility. It was also confirmed that the project activity does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes. Furthermore, the Project Activity does not cause any net harm to the environment and/or society and therefore achieves Environmental No-net-harm Label (E+) as well as Social No-net-harm Label (S+) in accordance with the Environmental and Social Safeguards Standard, version 3.0. The project activity also contributes towards achieving United Nations Sustainability Development Goals (SDGs) by achieving 03 SDGs as per Project Sustainability Standard, version 3.0 to achieve SDG+ Label. The verification team therefore concludes that "The Project Activity complies with all the applicable requirement of the GCC Program and ICAO's requirements on CORSIA Emissions Unit Eligibility Criteria and CORSIA Eligible Emissions Units, as per Clarification No 1., v 1.3 paragraph 23-25 /B01-6/, and the ACCs expected to be issued during the crediting period is likely to be CORSIA eligible and can be used by International Airlines for offsetting their emissions during all phases of CORSIA and therefore requests GCC Steering Committee to append CORSIA Certification label (C+) to this project". As per Clarification No.1 version 1.3 /B01-6/, for carbon credits generated during 01/01/2016 to 31/12/2020, Host Country Attestation is not required for CORSIA labelled credits. For carbon credits generated since 01/01/2021, HCA will be submitted by PO prior to submission of requesting issuance for emission reductions to the GCC Program. Therefore, a FAR has been raised in this respect.

Section E. Internal quality control

The Verification report has undergone a technical review and quality review before being submitted for registration. A technical reviewer qualified in accordance with CCIPL's qualification scheme for GCC verification performed the technical review.

Section F. Project Verification opinion

The GCC Project Verifier, Carbon Check (India) Private Ltd, verifies and certifies that the GCC Project Activity "Zhaoqing Ma'an LFG Power Generation Project":

(a) has correctly described the Project Activity in the Project Submission Form (version 04, dated 19/06/2023) including the applicability of the approved CDM methodology, ACM0001, version 19 /B02/

and meets the methodology applicability conditions, is additional and is expected to achieve the forecasted real and additional GHG emission reductions, complies with the monitoring methodology, has appropriately conducted local and global stakeholder consultation processes and has calculated emission reduction estimates correctly and conservatively;

(b) is likely to generate GHG emission reductions amounting to the estimated 483,310 t CO_2eq (for the fixed 10 years crediting period), as indicated in the PSF, which are additional to the reductions that are likely to occur in absence of the Project Activity and complies with all applicable GCC rules and therefore requests the GCC Program to register the Project Activity;

(c) is not likely to cause any net-harm to the environment and/or society and complies with the Environmental and Social Safeguards Standard (version 3.0) /B01-4/, and therefore requests the GCC Program to register the Project Activity, which is likely to achieve the requirements of the Environmental No-net-harm Label (E+) and the Social No-net harm Label (S+); and

(d) is likely to contribute to the achievement of United Nations Sustainability Development Goals (SDGs), comply with the Project Sustainability Standard (version 3.0) /B01-5/, and contribute to achieving a total of 3 SDGs, which is likely to achieve the Silver SDG certification label (SDG+).

(e) Complies with all the applicable requirement of the GCC Program and ICAO's requirements on CORSIA Emissions Unit Eligibility Criteria and CORSIA Eligible Emissions Units, as per Clarification No 1., v 1.3 paragraph 23-25, /B01-6/ and the ACCs expected to be issued during the crediting period is likely to be CORSIA eligible and can be used by International Airlines for offsetting their emissions during all phases of CORSIA and therefore requests GCC Steering Committee to append CORSIA Certification label (C+) to this project.

The Verification report describes a total of 16 findings, which include:

- 01 Forward Action Request (FAR);
- 08 Corrective Action Requests (CARs);
- 07 Clarification Requests (CLs);

All findings have been resolved by the project owner (except the FAR which needs to be resolved during emission reduction verification).

Appendix 1. Abbreviations

Abbreviations	Full texts
ACC	Approved Carbon Credits
ACC+	Approved Carbo Credit Label
CAR	Corrective Action Required
CDM	Clean Development Mechanism
CL	Clarification Request
CCIPL	Carbon Check (India) Private Limited
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CSPG	China South Power Grid
DR	Document Review
E+	Environmental No net harm Label
EIA	Environmental Impact Assessment
FAR	Forward Action Request
GCC	Global Carbon Council
GHG	Greenhouse Gas
GORD	Gulf Organization for Research and Development
GV	GCC Verifier
GWP	Global Warming Potential
I	Interview
ICAO	International Civil Aviation Organization
IPCC	Intergovernmental Panel on Climate Change
MENA	Middle East & North Africa
PO	Project Owner
PPA	Power Purchase Agreement
PSF	Project Submission Form
PVR	Project Verification Report
RFR	Request for registration
S+	Social No- net harm Label
SDG	Sustainable development goals
SDG+	United Nation Sustainable Development Goal Label
UNFCCC	United Nations Framework Convention on Climate Change
VB	Verification Body

Appendix 2. Competence of team members and technical reviewers

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Sanjay Agarwalla

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☐ CCB Expert
☒ Financial Expert	☒ Local Expert for India and Bangladesh		

in the following Technical Areas:

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

Issue Date

1st January 2023

Expiry Date

31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Ms. Nara Shen Yan

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☐ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ SDG+	☐ Social no-harm(S+)	☐ Environment no-harm(E+)	☐ CCB Expert
☐ Financial Expert	☒ Local Expert for China		

in the following Technical Areas:

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

Issue Date

1st January 2023

Expiry Date

31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. S. Ranganathan

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☐ CCB Expert
☒ Financial Expert	☒ Local Expert for India		

in the following Technical Areas:

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

Issue Date

1st January 2023

Expiry Date

31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Appendix 3. Document reviewed or referenced

No.	Author	Title	References to the document	Provider
/1-a/	PO	Initial PSF webhosted for GSC	version 02, dated, 11/10/2022	PO
/1-b/		Final PSF being submitted for Rfr	version 04, dated, 19/06/2023	
/2-a/	PO	Emission reduction calculation spread sheet corresponding to /1-a/	version 02, dated, 11/10/2022	PO
/2-b/		Emission reduction calculation spread sheet corresponding to /1-b/	version 04, dated, 19/06/2023	
/3/	PO	Business license of the legal owner (Guangdong Sincody Environmental Technology Co., Ltd.)	Dated 22/10/2020	PO
/4/	North China Municipal Engineering Design & Research Institute Co.	Feasibility study report (FSR)	Dated February 2017	PO
/5/	DRC and Price Bureau	Project Registration Form	Dated 28/02/2017	PO
/6/	CNPC Jichai Power Plant	Equipment Purchase Contract	Dated 11/02/2018	PO
/7/	Guangdong Xinde Power Construction Co., Ltd.	Proof of start date of project activity on 10/07/2018 - Completion Report of power generation and transmission system	Dated 10/07/2018	PO
/8/		Evidence for the project location	-	PO
/9/		Technical specifications of all the equipment installed at the project site including monitoring equipment	-	PO
/10/	Zhaoqing City Municipal Administration	Landfill Cooperation Agreement with Zhaoqing City Municipal Administration	Dated 22/05/2018	PO
/11/	Guangdong Sincody Environmental Technology Co.Ltd and Guangdong Power Grid Co., Ltd. Zhaoqing Power Supply Bureau	Project Commencement Report	Dated 25/04/2017	PO
/12/	Guangdong Power Grid Co., Ltd. Zhaoqing Power Supply Bureau	Grid Connection Agreement between the PO and Guangdong Power Grid Co., Ltd. Zhaoqing Power Supply Bureau	Dated 26/12/2017	PO
/13/	PO	Photos of monitoring instruments	-	PO
/14/	Guangdong Power Grid Co., Ltd. Zhaoqing Power Supply Bureau	Power Purchase Agreement between Guangdong Sincody Environmental Technology Co.Ltd and Guangdong Power Grid Co., Ltd. Zhaoqing Power Supply Bureau		PO

/15/	uangdong Power Grid Co., Ltd. Zhaoqing Power Supply Bureau.	Proof of electricity price	Dated 11/10/2017	PO
/16/	PO	Single line diagram of the project activity	-	PO
/17/	Dongguan Yufeng Environmental Technology Co., Ltd	Hazardous Waste Disposal Contract	Dated 01/10/2018	PO
/18/	Zongxing Huanbao	Testing report for Odor, PM, SO_2, NO_x, and Noise	Approval Date 23/12/2021	PO
/19/	PO	Labour Contract	Dated 01/01/2021	PO
/20/	PO	Sample Accident Records	Dated 10/07/2019 20/07/2019 10/12/2019 13/01/2020 06/05/2020 05/11/2020	PO
/21/	PO	Evidence related to the Local stakeholders meeting conducted on 20/04/2017 - Minutes of Meeting - Questionnaires - Stakeholder meeting invitation, dated 15/04/2017 - LSC Report	Dated 20/04/2017	PO
/22/	South China National Center Of Metrology Guangdong Institute of Metrology (SCM)	Sample Calibration certificates for: - Electricity meter (serial no. 222111001221) - Flow meter (serial no. WLZ-S350-F1-1-0A) - Gas Analyser (serial no. 61863/4)	Dated 25/06/2020	PO
/23/	PO	Sample Safety Training record	Dated 22/05/2022	PO
/24/	PO	Sample Hazardous waste transfer form	Dated 08/11/2022	PO
/25/	Shenzhen Zongxin Environmental Protection Co., Ltd Approved by EPB of Gaoyao District of Zhaoqing City	Environment Impact Assessment (EIA) report dated April 2017 along with its approval on 03/05/2018	EIA Report Dated 04/2017, and approval dated 03/05/2018	PO
/26/	PO	General Information on Maan Landfill Site	-	PO
/27/	PO	Sample Social Security Payment Records	Dated 03/02/2023	
/28/	Government of P.R. China	2016 Statistical Yearbook http://www.stats.gov.cn/tjsj/ndsj/2016/indexch.htm 2017 Statistical Yearbook http://www.stats.gov.cn/tjsj/ndsj/2017/indexch.htm	-	PO

		2018 Statistical Yearbook http://www.stats.gov.cn/tjsj/ndsj/2018/indexch.htm		
/29/	Government of P.R. China	DL/T448-2016 Technical administrative Code of Electric Energy Metering	2016	PO
/30/	PO	Sample wastewater treatment records	Dated 10/05/2019 20/07/2019 20/12/2019 23/01/2020 05/06/2020 20/11/2020	PO
/31/	PO	Letter of Authorization issued by Guangdong Sincody Environmental Technology Co.Ltd.	Dated 29/05/2022	PO
/32/	Ministry of Ecology and Environment	2019 Baseline Emission Factors for Regional Power Grids in China, published by Chinese DNA http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml	Dated 29/12/2020	PO
/33/	GCC	Comments raised by GCC before GSC for the project activity		PO
/34/	MEEPRC	Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution and Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB 16889-2008)	-	PO
/35/	GDAEPI	Survey report by Guangdong Association of Environmental Protection Industry demonstrating non-systemic enforcement and widespread non-compliance with relevant national standard for pollution control on the landfill site of municipal solid waste (GB16889-2008)	07/12/2021	PO
/36/	Department of Justice website	Promulgation of the State Council of the China Prohibiting the Use of Child Labor: http://www.gov.cn/zhengce/2020-12/26/content_5573524.htm	Effective on 01/12/2002	Others
/37/	Ma'an Landfill Site	Declaration confirming the operation of only 2MW Zhaoqing Ma'an LFG Power Generation Project in association with the landfill site.	Dated 19/06/2023	PO
/38/	Ministry of Ecology and Environment	Greenhouse Gas Control - Ministry of Ecology and Environment https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/index_4.shtml	Dated 29/12/2020	PO
/39/	Shengshi Energy	Landfill Gas Collection System Design Scheme of the project	-	PO

/40/	Government of P.R. China	JJG 640-2016 Verification Regulations for Differential Pressure Flowmeters https://www.docin.com/p-2016027973.html	2016	PO
/41/	Government of P.R. China	JJG677-2006 Verification Regulations for Optical Interference Methane Detector https://www.doc88.com/p-9935633100256.html	2006	PO
/42/	Zhaoqing Meteorological Bureau	Zhaoqing Climate Bulletin 2019 http://gd.cma.gov.cn/zqsqxj/zwgk_3106/202004/P020200401599855681970.pdf	March 2020	PO
B01	GCC	1. GCC Project Standard, version 3.1 2. GCC Verification Standard, version 3.1 3. GCC Program Manual, version 3.1 4. Environment-and-Social-Safeguards-Standard, version 3 5. Project-Sustainability-Standard, version 3.1 6. Clarification no. 1, version 1.3 7. Clarification no. 3, version 1.0	-	Others
B02	UNFCCC	CDM Methodology: ACM0001 Flaring or use of landfill gas (version 19.0).	-	Others
B03	GCC	PSF template	-	Others
B04	UNFCCC	1. TOOL04: Emissions from solid waste disposal sites, version 8.1 2. TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, version 3.0 3. TOOL07: Tool to calculate the emission factor for an electricity system, version 7.0 4. TOOL08: Tool to determine the mass flow of a greenhouse gas in a gaseous stream, version 3.0 5. TOOL32: Positive lists of technologies, version 4.0	-	Others
B05	UNFCCC	Clean Development Mechanism (CDM) Registry: https://cdm.unfccc.int/Projects/projsearch.html	-	Others

B06	VERRA	VERRA Registry: https://registry.verra.org/app/search/VCS/All%20Projects	-	Others
B07	Gold Standard	Gold Standard Impact Registry: https://www.goldstandard.org/resources/impact-registry	-	Others

Appendix 4. Clarification request, corrective action request and forward action request

Table 1. CLs from this Project Verification

CL ID	01	**Section no.**	D.1	**Date:** 07/01/2023
Description of CL				
Following clarifications are being raised with respect to the cover page of the PSF: a. Under '*Declaration by the 'Authorized Project Owner and focal point*', PO has checked the following statement "*If the project activity has been issued with carbon credits or environmental attributes of compensating nature by any other GHG/ non-GHG program, either for compliance or voluntary purposes, the ACCs will be claimed only for the remaining crediting period (subject to a maximum of 10 years of crediting period including the periods under other programs and GCC program) for which carbon credits/ environmental attributes of compensating nature have not been issued by any other GHG/ non-GHG program."* PO needs to justify the applicability of the same to the proposed project activity of Type 2 and Sub type 1. b. Referring to '*Requirements to avoid double counting'*, under '*Declaration by the 'Authorized Project Owner and focal point*', PO has checked all 3 criteria for HCLOA. However, HCLOA was not provided during initial submission for GSC. c. Referring to '*CORSIA specific requirements'*, under '*Declaration by the 'Authorized Project Owner and focal point*', PO has checked the following statement, "*We confirm that bundled projects or grouped projects shall have registered crediting period starting on or after 1 Jan 2016 for the grouped/aggregated project as a whole."* PO needs to justify the applicability of the same for the proposed project activity.			
Project Owner's response				**Date:** 31/01/2023
a. No carbon credits generated by Zhaoqing Ma'an LFG Power Generation Project will be or have been claimed as carbon credits in any other GHG program anywhere in the world, either for compliance or voluntary purposes, for the entire 10-year GCC crediting period. A declaration from PO has been provided. b. HCLOA will be provided along with the submission for a request for the first or subsequent issuance of ACCs. Other 2 criteria have been de-selected. c. This option has been de-selected. The project is not a bundle or grouped project.				
Documentation provided by Project Owner				
A declaration from PO *Project-Submission-Form-Zhaoqing LFG-v03*				
Project verifier assessment				**Date:** 02/03/2023
a. The stated criterion is not applicable to the proposed project activity and the PO has deselected the option. Therefore, this part of the CL is closed. b. PO has clarified that the HCLOA will be provided along with the submission for a request for the first or subsequent issuance of ACCs and has made the necessary revision on the cover page of the PSF. Therefore, this part of the CL is closed. c. PO has clarified that the proposed project is not a bundled or a grouped project and has made the necessary revision on the cover page. Therefore, this part of the CL is closed.				

CL ID	02	**Section no.**	D.2	**Date:** 07/01/2023
Description of CL				
The PSF states that the project activity's total installed capacity is 2 MW, which differs from the FSR's 5.98 MW figure. Therefore, PO needs to justify this discrepancy.				
Project Owner's response				**Date:** 31/01/2023

When the third-party agency was preparing the FSR, based on the daily landfill capacity of 900 tons at that time, the theoretical installed capacity would reach 5.98MW in the seventh year of operation, and the gas at the beginning of the project operation was not enough. Therefore, 2MW was installed first, and as a result, the second phase of the landfill was closed in 2020, so the gas volume was not enough to provide 5.98MW generator for subsequent operation, so 2MW has been maintained.
Documentation provided by Project Owner
-
Project verifier assessment **Date:** 02/03/2023
The PO has satisfactorily explained the existing capacity of 2MW which is deemed acceptable to the project verification team. Therefore, this CL is closed.

CL ID	03	**Section no.**	D.4	**Date:** 07/01/2023
Description of CL				
In sections A.3 and C.2 of the PSF, the expected lifetime is stated as 10 years. However, in Table 1 under section A.3, the expected lifetime is stated as 20 years. PO needs to justify this discrepancy and provide evidence for the considered project lifetime.				
Project Owner's response				**Date:** 31/01/2023
According to the technical specification of generator, the expected lifetime is 15 years, which is identified as project lifetime. The technical specification has been provided.				
Documentation provided by Project Owner				
Technical specification of generator				
Project verifier assessment				**Date:** 02/03/2023
PO has clarified that the expected lifetime is 15 years which was confirmed from the technical specification of the generator and the agreement with Zhaoqing City Municipal Administration regarding the treatment of LFG in Ma'an Landfill Site dated 22/05/2018, which states that the "Guangdong Sincody Environmental Technology Co., Ltd." is authorized to use the LFG for electricity generation for 15 years. Therefore, this CL is closed.				

CL ID	04	**Section no.**	D.3.4, D.4.5	**Date:** 07/01/2023
Description of CL				
In section B.4 of the PSF, it is stated that *"The latest available regulation for landfill site is Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB16889-2008). Clause 5.15 of GB16889-2008 stipulates that for landfill site with capacity of over 2.5 million tonnes and depth of over 20 meters, LFG capture and utilization system or flare shall be built. And for landfill sites under that scale, landfill processes that can effectively reduce methane production and emissions shall be adopted, or a flare combustion facility shall be used to treat methane-containing landfill gas. Therefore, Ma'an landfill site is required to capture and utilize or flare the LFG by national standard GB16889-2008."* Therefore, Project owner is requested to provide supporting evidence on the Capacity and Depth of the landfill site.				
Project Owner's response				**Date:** 31/01/2023
According to "General information of Maan landfill site", the capacity of landfill site is around 3 million tonnes and depth of 7 meters.				
Documentation provided by Project Owner				
General information of Maan landfill site				
Project verifier assessment				**Date:** 02/03/2023
For Section B.4 of PSF, PO has provided requested information in regards with the national laws and regulations and their prevalent non-compliance. Although as per host country regulation, LFG capture and utilization system or flare shall be built. But as per latest survey report of Guangdong Provincial Environmental Protection Industry Association, there is large scale noncompliance of this regulation in China. Hence it is deemed that the PO has voluntarily adopted the LFG capture and utilization at the project site. Therefore, this CL is closed.				

CL ID	05	Section no.	D.3.6	Date: 07/01/2023
Description of CL				
Following clarifications are raised with respect to emission reduction calculations: a. PO needs to clarify the usage of constant waste deposition value of 900 tons/day in ER estimation from 2014 till 2020 when actual data is available in the project for this timeframe. b. PO needs to clarify on how the calculation has been done considering that waste deposited in 2014 starts generating biogas in 2014 itself. c. PO needs to clarify the choice of collection efficiency of 85% in the project specifically in light of selection of default factors in the methodology in line with assumption of 50% collection efficiency. d. Project owner is requested to provide the evidence for the calculation of grid emission factor in line with the methodological Tool 07, version 07.				
Project Owner's response				**Date:** 31/01/2023
a. According to the " General information of Maan landfill site", The actual average daily landfill volume of the second phase from 2014 to 2020 is: 2014: 908 tons, 2015: 915 tons, 2016: 885 tons, 2017: 902 tons, 2018: 900 tons, 2019: 890 tons, 2020: 901 tons. b. Phase II of Ma'an landfill site started operation since October in 2014, therefore, the amount of waste entering the landfill site in 2014 has been discounted according to the number of operating days. c. According to the" General information of Maan landfill site", the landfill gas collection rate is over 85%. d. https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml the above weblink is the Calculation Process of the Baseline Emission Factors of China's Regional Power Grids for 2019 Emission Reduction Projects, which is public available.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-v03 *General information of Maan landfill site*				
Project verifier assessment				**Date:** 02/03/2023
a. PO has revised the calculation to use the actual average landfill volume from 2014 to 2020 for ER estimation which is deemed acceptable to the project verification team. Therefore, this part of the CL is closed. b. PO has satisfactorily clarified how the calculation has been done considering that waste deposited in 2014 starts generating biogas in 2014 itself, which is deemed acceptable to the project verification team. Therefore, this part of the CL is closed. c. The collection efficiency of 85% is in accordance with" General information of Maan landfill site", which is deemed acceptable to the project verification team. Therefore, this CL is closed. d. PO has provided evidence for the calculation of grid emission factor in line with the methodological Tool 07, version 07. Therefore, this part of the CL is closed.				

CL ID	06	Section no.	D.3.7	Date: 07/01/2023
Description of CL				
In section B.7.2 of the PSF, PO needs to clarify how the parameter *"$Op_{j,h}$"* will be monitored as no information on the monitoring equipment is provided.				
Project Owner's response				**Date:** 31/01/2023
As per ACM0001, the monitoring equipment and QA/QC procedures of this parameter are not available and not required. According to the on-line operation system onsite, the operating hours of each gas engine are automatically monitored and recorded every hour by on-line operation system, which is in compliance with methodology.				
Documentation provided by Project Owner				
-				
Project verifier assessment				**Date:** 02/03/2023
The operating hours are automatically monitored by on-line operating system on-site, which was confirmed by the project verification team during remote inspection. It is determined by monitoring the product generated i.e., electricity which is in line with the methodology and is deemed acceptable. Therefore, this CL is closed.				

CL ID	07	Section no.	D.10, D.11	Date: 07/01/2023
Description of CL				
Under Section E (for Environment and Social safeguards) of the PSF following clarifications are raised: a. In section E.1, for parameter *'Pollution of leachate'*, it is stated that that there is no leachate generated by the project activity. However, the gas collection network generally has a leachate collection chamber to take care of moisture carry over with the gas and condensation in the piping network and the in the project the gas is classified as "wet" gas which is moisture in the gas stream. Therefore, PO needs to justify the statement made in this case. b. In section E.2, for parameter *'Reducing / increasing accidents/Incidents/fatality',* it is stated that regular safety trainings will be provided to the workers and the number of accidents will be monitored. However, this parameter is not scored. Therefore, PO needs to elaborate and clearly justify the non-scoring of the same. Also, PO needs to justify the non-consideration of fire or explosions due to the flammable gas on site.				
Project Owner's response				**Date:** 31/01/2023
a. The leachate is generated by the landfill site, not by the project activity and the leachate is treated by the leachate treatment station of the landfill site, hence there is no difference between the project scenario and baseline scenario. Therefore, this impact is not applicable. b. The parameter "Reducing / increasing accidents/Incidents/fatality" has been scored in revised PSF. And also the parameter "Reducing / increasing fire/explosion and risk to human life" has been re-considered in revised PSF.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-03				
Project verifier assessment				**Date:** 02/03/2023
a. The leachate is generated by the landfill and not the project activity, which is collected and treated in the leachate treatment system present on landfill site. This is deemed acceptable to the assessment team and therefore, this part of the CL is closed. b. PO has revised section E.2 of the PSF to indicate the impact and justify the scoring of the parameters Reducing / increasing accidents/Incidents/fatality", "Reducing / increasing fire/explosion and risk to human life", which is deemed acceptable and therefore, this part of the CL is closed.				

Table 2. CARs from this Project Verification

CAR ID	01	Section no.	-	Date: 07/01/2023
Description of CAR				
PO needs to rectify the following: a. Formatting errors are observed under section B of the table of contents and under section B.6.3 of the PSF. b. At several places in the PSF, terminology of other GHG program for e.g., project proponent in section B.5, has been used. PO needs to refer to GCC Program Definitions V3.1 and rectify the same according to GCC definitions/glossary. c. The PSF, at several places, does not follow universal numbering format i.e., using point instead of comma as a decimal separator. Refer to Table 1 under section A.3 of the PSF for example.				
Project Owner's response				**Date:** 31/01/2023
a. The format has been revised. b. Project owner was used to replace project proponent. c. Numbering format has been revised.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-03				
Project verifier assessment				**Date:** 02/03/2023

a. Table of contents has been updated satisfactorily. Therefore, this part of the CAR is closed. b. PO has revised the PSF to revise the terminology in accordance with GCC requirements. Therefore, this part of the CAR is closed. c. PO has revised the PSF to follow universal numbering format at relevant places. Therefore, this part of the CAR is closed.

CAR ID	02	**Section no.**	D.7, D.13, D.14	**Date:** 07/01/2023
Description of CAR				
It is unclear if the project activity is targeting towards CORSIA or not. It must be clearly stated in section A.6. of the PSF. Also, the requirements for CORSIA credits as mentioned in the PS must be justified as per clause 14c.				
Project Owner's response				**Date:** 31/01/2023
As per Clarification No.1 version 1.3-2022, submission of Host Country Attestation (HCA) on Double Counting as and when required by CORSIA. For carbon credits generated during 01/01/2016 to 31/12/2020, HCA is not required for CORSIA labeled credits. For carbon credits generated since 01/01/2021, HCA will be provided prior to submission of requesting issuance for emission reductions achieved since 01/01/2021 to the GCC Program. The above content has been added in A.6.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-03				
Project verifier assessment				**Date:** 02/03/2023
PO has revised section A.6 of the PSF to fulfil the requirements of clause 14 (c) of the GCC project standard. Therefore, this CAR is closed.				

CAR ID	03	**Section no.**	D.3.7	**Date:** 07/01/2023
Description of CAR				
The criterion *'Measuring/reading/ recording frequency (if applicable)'* is included in data/parameter tables in section B.6.2 of the PSF which is not in accordance with the PSF template (version 4.0).				
Project Owner's response				**Date:** 31/01/2023
The criterion 'Measuring/reading/ recording frequency (if applicable)' has been deleted.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-v03				
Project verifier assessment				**Date:** 02/03/2023
PO has revised section B.6.2 of the PSF satisfactorily which is deemed acceptable to the project verification team. Therefore, this CAR is closed.				

CAR ID	04	**Section no.**	D.3.7	**Date:** 07/01/2023
Description of CAR				

Following findings are raised with respect to section B.7 of the PSF: a. The criteria in data/parameter tables of section B.7.1 do not match with those in the PSF template (version 4.0). b. As the project activity is already commissioned since 2018, PO needs to describe actual calibration practice for the monitoring meters under QA/QC procedures in section B.7.1 of the PSF. c. In section B.7.1, for parameters to be monitored for E+/S+ assessments and SDG labels (positive impacts), PO has stated that the purpose is to monitor an environmental impact identified as *Harmful* in the risk assessment and to develop a Program of Risk Management Actions plan. PO needs to justify the correctness of the same. d. In section B.7.2, for criterion *"Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)",* PO has not specified the dates under criteria *"Target to be Achieved by", "Targets achieved on",* and *"Date of Closing the Program"* and for criterion "*Actions and targets*", PO needs to clearly define the targets aimed to be achieved. e. In section B.7.4 of the PSF, under *'Data file management',* PO has stated that *"All data collected as part of monitoring will be archived electronically and be kept at least for 2 years after the end of the crediting period."* However, all the collected data should be kept 2 years after the end of crediting period or till the last issuance of ACCs for the project activity whichever occurs later. Therefore, PO needs to rectify this statement.
Project Owner's response **Date:** 31/01/2023
a. The criteria in data/parameter tables of section B.7.1 has been revised to match with those in the PSF template (version 4.0). b. The actual calibration frequency has been added in QA/QC procedures. c. The purpose is that "To monitor an environmental impact identified as Harmful Harmless in the risk assessment and to ensure this environmental impact are expected to be in compliance with applicable national regulatory /stricter voluntary corporate requirements and will be within legal/ voluntary corporate limits to develop a Program of Risk Management Actions plan". d. The relevant content has been revised. e. "All the collected data should be kept 2 years after the end of crediting period or till the last issuance of ACCs for the project activity whichever occurs later" has been added in section B.7.4.
Documentation provided by Project Owner
Project-Submission-Form-Zhaoqing LFG-v03
Project verifier assessment **Date:** 02/03/2023
a. PO has revised section B.7.1 in accordance with the PSF Template requirement. Therefore, this part of the CAR is closed. b. PO has adequately described actual calibration practice for the monitoring meters under QA/QC procedures in section B.7.1 of the PSF. Therefore, this part of the CAR is closed. c. PO has revised section B.7.1 satisfactorily which is deemed acceptable to the project verification team. Therefore, this part of the CAR is closed. d. PO has revised section B.7.2 in accordance with the PSF Template requirement. Therefore, this part of the CAR is closed. e. PO has revised section B.7.4 of the PSF to state that "*All data including calibration records is kept until 2 years after the end of the crediting period or till the last issuance of ACCs for the project activity whichever occurs later."* Therefore, this part of the CAR is closed.

CAR ID	05	**Section no.**	D.10, D.11, D.12	**Date:** 07/01/2023
Description of CAR				
In sections E of the PSF, PO needs to address environmental and social aspects & impacts corresponding to the relevant project type in accordance with Appendix 01 of the GCC Environment and Social Safeguards Standard (Version 3.0).				
Project Owner's response				**Date:** 31/01/2023
The relevant environmental and social impact have been added in section E in revised PSF.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-03				
Project verifier assessment				**Date:** 02/03/2023

PO has revised section E of the PSF to address environmental and social aspects & impacts corresponding to the relevant project type in accordance with Appendix 01 of the GCC Environment and Social Safeguards Standard (Version 3.0), which is deemed acceptable to the project verification team. Therefore, this CAR is closed.

CAR ID	06	**Section no.**	D.6	**Date:** 07/01/2023
Description of CAR				
In section G.1 of the PSF, it is not clear that No net Harm to Environment/Society and SDG impacts of project were also discussed during LSC meeting or not.				
Project Owner's response				**Date:** 31/01/2023
The EIA report was publicized during LSC. The environmental impacts (Environment) during the construction and operation periods are discussed during the LSC, and the advantages of the project for local economic development (Society) are also discussed, so it is in line with SDG 8. The annual power generation of the project is described in the public EIA report, and the electricity generated by the project is clean energy, so it complies with SDG7. Compared with fossil fuel power plants, the emission reductions of this project in terms of CO_2, SO_2 and other pollutants are also recorded in the EIA report and discussed during the LSC, so it is also in line with SDG 13. In conclusion, no net Harm to Environment/Society and SDG impacts of project were discussed during LSC meeting. The content listed in below has been added in PSF: **Advantages of the project:** In the LSC process of this project, the Advantages of the project has been popularized for all stakeholders. 1. This project is a LFG power generation project that generates clean and sustainable electricity and increases the proportion of clean energy in the national grid. Project target to generate and feed 11,602.2 MWh/year LFG based electricity for entire lifetime of the project activity into the Chinese national grid. 2. Project activity supports creation of short term and long -term job opportunities during the construction and operation of the project activity. Supports economic productivity through technology upgradation and innovation through training of labour in intensive sector. The project is expected to create 10 long-term job opportunities. 3. Project activity generates clean energy-based electricity and mitigates the CO_2 emissions which would have been generated from the fossil fuel-based power plants.				
Documentation provided by Project Owner				
Project-Submission-Form-Zhaoqing LFG-v03				
Project verifier assessment				**Date:** 02/03/2023
PO has explained that during local stakeholder consultation, the advantages of the project including economic development (job opportunities), clean energy (electricity generation through landfill gas capture), and emission reductions were discussed with the stakeholders which covers No net Harm to Environment/Society and SDG impacts. All the requirements for LSC were taken care during EIA and is deemed acceptable to the project verification team. Therefore, this CAR is closed.				

CAR ID	07	**Section no.**	D.6	**Date:** 07/01/2023
Description of CAR				
In the PSF, PO has not included the information on the blower capacity, flare details and details of leachate collection system at the project site.				
Project Owner's response				**Date:** 31/01/2023
The blower capacity has been added in section A.3. The project has no flare and according to the methodology, flare system is not mandatory. When the project is not generating electricity, the landfill gas is directly emptied, and the emission reduction during this period is recorded as zero. The project has no leachate collection system in pre-treatment system. Condensate from the pre-treatment system passes through pipe to the landfill's leachate treatment system for treatment.				
Documentation provided by Project Owner				
The specification of blower.				
Project verifier assessment				**Date:** 02/03/2023

PO has updated section A.3 of the PSF to include information on blower capacity. Therefore, this CAR is closed

CAR ID	08	**Section no.**	Technical Review	**Date:** 10/06/2023
Description of CAR				

The following findings were raised during technical review process:

a. Section A.1 of the PSF states that *"Ma'an landfill site is implemented in different phases. Phase I of Ma'an landfill site started operation since 1993 and was closed in 2014. Phase II of Ma'an landfill site started operation since October in 2014 and can handle 900 tonnes of MSW per day when running at its full capacity".* In line with this, PO is requested to clarify how to demarcate phase I and II of the landfill and what happens to the gas generated in Phase I. Additionally, PO is also requested to clarify what happens to the gas generated beyond the 2 MW capacity.

b. For legal requirement test, under demonstration of additionality, PO is requested to clarify if the landfill site has received any notice on non-compliance to GB16889-2008.

   Additionally, PO is requested to justify the non-applicability of Case 2 for the determination of $F_{CH4,BL,y}$ given that there is a requirement to destroy methane despite of the noncompliance to the regulation in China.

c. PO has applied the value of 3% for $TDL_{j,y}$ for the calculation of project emissions from consumption of electricity due to the project activity in accordance with TOOL 05 (version 03.0). According to data/parameter table 3 of the tool, *a default value of 3% is applied for project and leakage electricity consumption sources if the electricity consumption by all project and leakage electricity consumption sources to which scenario A applies is smaller than the electricity consumption of all baseline electricity consumption sources to which scenario A applies*. In line with this, PO is requested to justify the choice given that in the baseline scenario there is no electricity consumption and there is no recovery of gas or electricity generation.

d. Under section B.7.1 of the PSF, for electricity and flow meters, it has been stated that *"Calibration and frequency of calibration is according to manufacturer's specifications. Calibration was conducted every year."* In line with this, PO is requested to mention the frequency of calibration specified by the manufacturer and describe the procedure in place when the meter is not working.

Project Owner's response	**Date:** 19/06/2023

a. There is a clear physical boundary between the first and second phases, the two are adjacent but not connected, and the LFG in the first phase has not been recovered and is directly released to atmosphere. The gas generated beyond 2MW will be released into atmosphere.
b. Most landfill sites in China are not equipped with LFG capture and utilization or flare facilities, and landfill gas is released to the atmosphere directly without recovery and utilization or flare. According to the latest survey report published in 07/12/2021 of Guangdong Provincial Environmental Protection Industry Association, there're a total of 1871 landfill sites in cities and counties across China by end of 2020[7], only around 15% of the landfill sites are equipped with LFG recovery and utilization facilities. Landfill gas from the rest 85% landfill sites is released directly without recovery. The landfill site has not received any notice on non-compliance to GB 16889-2008. According to information from the Ministry of Ecology and Environment of China[8], GB16889-2022 is currently seeking public comments, so GB16889-2008 is still the latest standard.
   There is existing regulation or standard that mandatorily enforces LFG recovery and destruction at Zhaoqing Ma'an Landfill site and there is no existing LFG power generation project at Zhaoqing Ma'an landfill site prior to the implementation of the project activity. Therefore, this project is in line with case 2. The requirement does not specify any amount or percentage of LFG that should be destroyed but requires the installation of a system to capture and flare the LFG, then a typical destruction rate of 20 per cent is assumed.
c. There is no electricity consumption and there is no recovery of gas or electricity generation in baseline scenario and there is no electricity consumption in project scenario. The electricity consumption by project scenario is not smaller than baseline scenario. Thus, $TDL_{j,y}$ = 20% is applied.
d. According to the manufacturer's technical agreement, the flow meter and electricity meter are calibrated every year. When the meter is damaged, the emission reduction during the damage will not be claimed.

Documentation provided by Project Owner

Project-Submission-Form-Zhaoqing LFG- v04
Zhaoqing_LFG_ER_Calculation

Project verifier assessment | **Date:** 08/08/2023

a. PO has satisfactorily clarified how phase I and II of the landfill is demarcated and what happens to the gas generated in Phase I. PO has also clarified that the gas generated beyond 2MW capacity would be vented to the atmosphere. This is deemed acceptable to the project verifier and therefore, this part of the CAR is closed.

b. The project verifier has confirmed by interviewing the PO representatives in addition to the observation during remote site visit that the landfill site has not received any notice of non-compliance to GB16889-2008.
Furthermore, PO has revised section B.6.1 of the PSF to indicate the applicability of Case 2 for the determination of $F_{CH4,BL,y}$ given that there is a requirement to destroy methane despite of the noncompliance to the regulation in China which is deemed acceptable to the project verifier. Therefore, this part of the CAR is closed.

c. PO has revised the PSF and the ER Sheet to apply the value of 20% for $TDL_{j,y}$ due to the fact that in the baseline scenario there is no electricity consumption and there is no recovery of gas or electricity generation. This is in accordance with the applied TOOL 05 (version 03.0) which is deemed acceptable to the project verifier. Therefore, this part of the CAR is closed.

d. PO has revised section B.7.1 and B.7.4 of the PSF to mention the frequency of calibration and describe the procedure in place when the meter is not working, which is deemed acceptable to the project verifier. Therefore, this part of the CAR is closed.

[7] http://www.gdepi.com/Content-36890.html
[8] https://www.mee.gov.cn/xxgk2018/xxgk/xxgk06/202203/t20220301_970201.html

Table 3. FARs from this Project Verification

FAR ID	01	**Section no.**		**Date:** 07/01/2023
Description of FAR				
The Verifier should certify CORSIA Label (C+) till 31/12/2020. Once the Host Country Authorization is provided later, this can be verified in first or subsequent emission reduction verifications.				
Project Owner's response				**Date:** DD/MM/YYYY
Documentation provided by Project Owner				
GCC Project Verifier assessment				**Date:** DD/MM/YYYY

Appendix 5. Environmental Safeguard assessment

Impact of Project Activity on		**Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards**								**Project Owner's Conclusion**		**GCC Project Verifier's Conclusion** **(To be included in Project Verification Report only)**
		Description of Impact *(positive or negative)*	**Legal/ voluntary corporate requirement / regulatory/ voluntary corporate threshold Limits**	**Do-No-Harm Risk Assessment (choose which ever is applicable)**			**Risk Mitigation Action Plans for aspects marked as Harmful**		**Performance indicator for monitoring of impact**	***Ex-ante* scoring of environmental impact**	***Explanation of the Conclusion***	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational Controls**	**Program of Risk Management Actions**	**Monitoring parameter and frequency of monitoring**	**Ex- Ante scoring of the environmental impact (as per scoring matrix Appendix-02)**	**Ex- Ante description and justification/explanation of the scoring of the environmental impact**	**Verification Process**
Environmental Aspects on the identified categories [9] indicated below.	*Indicators for environmental impacts*	*Describe and identify anticipated and actual significant environmental impacts, both positive and negative from all sources (stationary and mobile) during normal and abnormal/emergency conditions, that may result from the construction and operations of the Project Activity, within and outside the project boundary, over which the Project Owner(s) has/have control.*	*Describe the applicable national regulatory requirements /legal limits / voluntary corporate limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If environmental impacts exist but are expected to be in compliance with applicable national regulatory /stricter voluntary corporate requirements and will be within legal/ voluntary corporate limits by way of plant design and operating*	*If negative environmental impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as '**Harmful** at least to a level that is in compliance with applicable legal/regulatory requirements or industry best practice or stricter voluntary corporate requirements*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce or eliminate the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well including the data source.*	*-1* *0* *+1*	*Confirm the score of environmental impact of the project with respect to the aspect and its monitored value in relation to legal /regulatory limits (if any) including basis of conclusion.*	*Describe how the GCC Verifier has assessed that the impact of the Project Activity against the particular aspect and in case of "harmful impacts" how has the project adopted Risk Mitigation Action Plans to mitigate the risks of negative environmental impacts to levels that are unlikely to cause any harm as well as the net positive impacts of the project with respect to the most likely baseline alternative.* *.*

[9] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

					*principles, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as **Harmless** /If the project has a positive impact on the environment mark it as "harmless" as well.*	*un-safe) and shall be indicated as **Harmful***						
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 (c)*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 (e) (i)*	*Paragraph 13 (e) (ii)*	*Paragraph 12 (c) and Paragraph 13 (f)*	*Paragraph 22*		*Paragraph 24 and Paragraph 26 (a) (i)*
Environment - *Air*	*SO_x emissions (EA01)*	As per EIA report, after proper treatment, SO_x content in the exhaust gas of LFG generators can be maintain around 13mg/m^3 significantly lower than the emission limit.	SO_x emission limit of 35 mg/m^3 as specified in mandatory regulation GB13223-2011	-	The SO_x emission by the project is expected to be lower than the legal limits, and it will be monitored during the entire crediting period, hence the project is deemed Harmless	-	N.A.	N.A.	The project owner regularly entrusts a third-party agency to conduct sampling and testing to monitor the SO_2 content in the exhaust gas to ensure the compliance with regulations. Once per year	+1	LFG Pre-treatment system has been installed and properly operated to ensure the compliance with regulations.	This is covered to monitor impacts from SO_x content from exhaust gas generated by the project activity. The impacts are being monitored through parameters 'SO_x emission' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	NO_x emissions (EA02)	As per EIA report, NO_x content in the exhaust gas of LFG generators	NO_x emission limit of 110	-	The NO_x emission by the	-	N.A.	N.A.	The project owner regularly entrusts a third-party agency	+1	Most of nitrogen-containing	This is covered to monitor impacts from NO_x content

		can be maintain around 88 mg/m^3, lower than the emission limit.	mg/m^3 as specified in mandatory regulation GB13223-2011 and the EIA approval		project is expected to be lower than the legal limits, hence the project is deemed Harmless				to conduct sampling and testing to monitor the NO_x content in the exhaust gas to ensure the compliance with regulations. Once per year		impurities are removed by the pretreatment system and ensure the gas concentration in exhaust gas compliance with the regulation.	from exhaust gas generated by the project activity. The impacts are being monitored through parameters 'NO_x emission' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	CO_2 emissions (EA03)	There exists CO_2 emissions in the exhaust gas of LFG generators. However, there is no restriction on CO_2 emissions by LFG power generation project. Furthermore, the project reduces the CO_2 emission by power generation using previously atmospheric released LFG as fuel, replacing equivalent electricity generated by the connected power grid	There are no laws and regulations which limit the CO_2 emissions by LFG power generation projects in China.	-	The project reduces CO_2 emissions in the baseline; hence the project will not cause any harm in this regard	-	N.A.	N.A.	The electricity generated will be monitored and CO_2 emission reductions will be calculated accordingly. Furthermore, availability of regulations on CO_2 emissions applicable for the project will be monitored throughout the crediting period. Continuously measured and monthly recorded	+1	The project is expected to result in lower CO_2 emission than the baseline throughout the crediting period	The project activity being renewable power generation that avoids CO_2 emissions that would have occurred in baseline scenario due to the electricity generation in thermal power plants. The impacts is being monitored through parameter 'CO_2 emission' and is verified under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	CO emissions (EA04)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

	Suspended particulate matter (SPM) emissions (EA05)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Fly ash generation (EA06)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Non-Methane Volatile Organic Compounds (NMVOCs) (EA07)	The project reduces NMVOCs emission by combustion of previously atmospheric released LFG. This is a positive impact.	N.A.	-	The project reduces NMVOCs emissions in the baseline, hence the project will not cause any harm in this regard	-	N.A.	N.A.	N.A.	0	No monitoring activity will be performed. To be conservative, this parameter is not scored.	The project reduces NMVOCs emission by combustion of previously atmospheric released landfill gas. PO has considered zero score for this parameter and, it is verified as harmless.
	Odor (EA08)	The project reduces odor emissions by LFG recovery, purification, and destruction. This is a positive impact.	N.A.	-	The project reduces odor emissions in the baseline; hence the project will not cause any harm in this regard	-	N.A.	N.A.	N.A.	0	No monitoring activity will be performed. To be conservative, this parameter is not scored.	The project reduces odor emission by recovery of landfill gas followed by purification and destruction. PO has considered zero score for this parameter and, it is verified as harmless.
	Noise Pollution (EA09)	The LFG generators may cause noise pollutions during operation. Measures have been taken to ensure that the noise is reduce to below 55dB in night time and 65dB in daytime outside the project facility, which is within the limit of regulations.	Environmental quality standard for noise (GB3096-2008) requires noise under 65dB during	-	The noise by the project is expected to be lower than the legal limits, hence	-	N.A.	N.A.	The project owner regularly entrusts a third-party agency to conduct sampling and testing to monitor the noise to ensure the compliance with regulations. Once per year	+1	The noise outside the project facility is lower than 55dB at nighttime and 65dB at daytime, which complies with national regulation.	This is covered to monitor impacts from noise generated by the project activity. The impacts are being monitored through parameters 'Noise Pollution' and discussed under

			daytime and 55dB during night hour for Class III area		the project is deemed Harmless							section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Methane emissions(EA10)	The project reduces methane emission by combustion of previously atmospheric released LFG. This is a positive impact.	N.A.	-	The project reduces methane emission in the baseline; hence the project will not cause any harm in this regard	-	N.A.	N.A.	The LFG combusted by the project will be monitored and methane emission reductions will be calculated accordingly. Continuously measured and monthly recorded	+1	The project will result in lower methane emissions than the baseline.	The project activity includes capture of landfill gas and hence avoids methane emissions that would have occurred in baseline scenario due to venting of landfill gas. The impacts is being monitored through parameter 'Methane emission' and is verified under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
Environment - *Land*	*Solid waste Pollution from Plastics (EL-01)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Solid waste Pollution from Hazardous wastes (EL02)	There may be Hazardous wastes, e.g., waste mineral oil generated at the project site. Hazardous wastes will be properly collected and treated by qualified entity	Law of the China on the Prevention and Control of Environme	-	Hazardous wastes will be properly collected, temporari	-	N.A.	N.A.	The hazardous waste treatment contract, hazardous waste transfer sheet, the qualification certificate of the	+1	Solid waste Pollution from Hazardous wastes is properly disposed as per regulations,	This is covered to monitor impacts from waste mineral oil generated by the project activity. The impacts are being monitored through

			ntal Pollution by Solid Waste requires proper collection and treatment by qualified entity		ly stored in the specific storage facility at the project site and then transferred to qualified entity for treatment at periodic interval. Solid waste Pollution from Hazardous wastes is properly disposed as per regulations, hence the project is deemed Harmless				Hazardous waste treatment entity will be monitored. Once per year		hence the project is deemed Harmless	parameters 'Hazardous waste' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Solid waste Pollution from Bio-medical wastes (EL03)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Solid waste Pollution from E-wastes (EL04)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Solid waste Pollution from Batteries (EL05)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

	Solid waste Pollution from end-of-life products/ equipment (EL06)	Solid waste pollution from end-of-life equipment may be generated by the project.	Law of the China on the Prevention and Control of Environmental Pollution by Solid Waste requires proper treatment of solid waste	-	Solid waste from end-of-life equipment will be recycled by waste recycling company. Non-recyclable parts will be collected and sent to Sanitation department for treatment. Therefore harmless	-	N.A.	N.A.	Monitor the treatment of Solid waste pollution from end-of-life equipment throughout the entire crediting period. Once per year	+1	Solid waste from end-of-life equipment were recycled by waste recycling company. Non-recyclable parts will be collected and sent to Sanitation department for treatment.	This is covered to monitor impacts from end-of-life equipment generated by the project activity. The impacts are being monitored through parameter 'Solid waste pollution from end-of-life equipment' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury) (EL07)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	land use change (change from cropland /forest land to project land) (EL08)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Environment - *Water*	*Reliability/ accessibility of water supply (EW01)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

	Water Consumption from ground and other sources (EW02)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Generation of wastewater (EW03)	.Condensed water will be produced in the pretreatment system of the project, and the condensed water is the wastewater generated by the project。 The wastewater during the operation period of this project is the domestic sewage of the employees. After the domestic sewage is treated in the septic tank, it is discharged into the integrated domestic sewage treatment facility for further treatment.	Law of the China on the Prevention and Control of Environmental pollution by wastewater requires proper treatment of wastewater	N.A.	Wastewater pollution is properly treated as per regulations, hence the project is deemed Harmless	-	N.A.	N.A.	The wastewater treatment volume will be recorded by the operating department. Once per year	+1.	The generated condensed water is discharged into the sewage treatment plant through the conduit, so the wastewater generated by the project will not affect the environment. The wastewater during the operation period of this project is the domestic sewage of the employees. After the domestic sewage is treated in the septic tank, it is discharged into the integrated domestic sewage treatment facility for further treatment.	This is covered to monitor impacts from condensed water generated by the project activity. The impacts are being monitored through parameters 'Generation of wastewater' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Wastewater discharge without/with insufficient treatment (EW04)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Pollution of Surface, Ground and/or Bodies of	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

	water (EW05)											
	Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A	N.A	N.A
	Pollution of leachate (EW07)	The LFG extracted from the landfill site contains small amount of leachate (LFG condensate), which will be treated by leachate treatment station of the landfill site. The leachate is generated by the landfill site, not the project activity. The leachate is to be treated by the leachate treatment station of the landfill site. Thus, there's no difference between the project scenario and baseline scenario regarding this impact.	Law of the China on the Prevention and Control of Environmental Pollution by Wastewater requires proper treatment of leachate	The leachate is generated by the landfill site, not by the proposed project activity. And the leachate is treated by the leachate treatment station of the landfill site. Therefore, it is deemed Not applicable.	-	-	N.A.	N.A.	There's no difference between the project scenario and baseline scenario regarding leachate. Therefore, no monitoring of this parameter is required.	0	The leachate is properly treated in the leachate treatment station of the land fill site to comply with the standard of "Pollutant Control Standard for Domestic Waste Landfill" (GB16889-2008). To be conservative, this parameter is not scored.	The leachate is not generated by the project activity which was confirmed during remote site visit. The leachate generated by the landfill is treated by the leachate treatment station present at the landfill site. PO has considered zero score for this parameter and, it is verified as harmless.
Environment – *Natural Resources*	*Conserving mineral resources (ENR01)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Protecting/ enhancing plant life (ENR02)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Protecting/ enhancing species diversity (ENR03)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

	Protecting/ enhancing forests (ENR04)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Protecting/ enhancing other depletable natural resources (ENR05)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Conservin g energy (ENR06)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Replacing fossil fuels with renewable sources of energy (ENR07)	The project utilizes LFG to generate electricity, which will replace the electricity generated by fossil fuel plants of CSPG. This is a positive impact.	N.A.	-	The project activity causes positive impact on the environm ent by replacing the fossil fuels with the renewabl e energy sources of energy	-	N.A.	N.A.	The electricity generated from LFG will be monitored throughout the crediting period. Continuously measured and monthly recorded	+1	The project is expected to supply an average of 11,489MWh renewable electricity to CSPG annually	The impact is self-evidentiary as project being a renewable energy power plant and baseline is fossil fuel dominated grid. The impact is being monitored through parameter '$EG_{PJ,y}$' and discussed under section D.3.7 of this report. An appropriate monitoring plan has been put in place to monitor the parameter for the impact, hence the scoring has found acceptable by the team.
	Replacing ODS with non-ODS refrigerant s (ENR08)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Net Score:			**+9**									

Project Owner's Conclusion in PSF:	No net harm	The Project Owner confirms that the Project Activity will not cause any net harm to Environment.
GCC Project Verifier's Opinion:		The GCC Verifier certifies that the Project Activity is not likely to cause any net harm to the environment.

Appendix 6. Social Safeguard assessment

Impact of Project Activity on		**Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards**							**Project Owner's Conclusion**		**GCC project Verifier's Conclusion** **(To be included in Project Verification Report only)**
		Description of Impact (*positive or negative*)	**Legal requirement /Limit, Corporate policies / Industry best practice**	**Do-No-Harm Risk Assessment** **(Choose which ever is applicable)**			**Risk Mitigation Action Plans (for aspects marked as Harmful)**	**Performance indicator for monitoring of impact.**	**Ex-ante scoring of environmental impact**	**Explanation of the Conclusion**	**3rd Party Audit**
				Not Applicable	**Harmless**	**Harmful**	**Operational / Management Controls**	**Monitoring parameter and frequency of monitoring (as per scoring matrix Appendix-02)**	**Ex- Ante scoring of social impact of the project**	**Ex- Ante description and justification/explanation of the scoring of social impact of the project**	**Verification Process** **Will the Project Activity cause any harm?**
Social Aspects on the identified categories[10] indicated below.	*Indicators for social impacts*	*Describe and identify actual and anticipated impacts on society and stakeholders, both positive or negative, from all sources during normal and abnormal/emergency conditions that may result from constructing and operating of the Project Activity within or outside the project boundary, over which the project Owner(s) has/have control*	*Describe the applicable national regulatory requirements / legal limits or organizational policies or industry best practices related to the identified risks of social impacts*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If social impacts exist but are expected to be in compliance with applicable national regulatory requirements/ stricter voluntary corporate limits by way of plant design and operating principles then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Harmless****), project having positive impact on society. To the BAU / baseline*	*If negative social impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm and shall be indicated as* ***Harmful***	*Describe the operational or management controls that can be implemented as well as best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in nature along with the data source*	*-1* *0* *+1*	*Confirm the score of the social impacts of the project with respect to the aspect and its monitored value in relation to legal/regulatory limits (if any) including basis of conclusion*	*Describe how the GCC Verifier has assessed that the impact of Project Activity on social aspects (based on monitored parameters, quantitative or qualitative) and in case of "harmful aspects how has the project owner adopted Risk Mitigation Action / management actions plans and policies to mitigate the risks of negative social impacts to levels that are unlikely to cause any harm.*

[10] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

					*scenario must also mark their aspect as **"harmless"***						*Also describe the positive impacts of the project on the society as compared to the baseline alternative or BAU scenario.*
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 (c)*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 (e) (i)*	*Paragraph 12 (c) and Paragraph 13 (f)*	*Paragraph 23*		*Paragraph 24 and Paragraph 26 (a) (ii)*
Social - *Jobs*	*Long-term jobs (> 10 year) created/ lost (SJ01)*	The project is expected to provide 10 long-term job opportunities. This is a positive impact.	N.A.	-	The social impact is expected to increase employment; hence the project is harmless	-	N.A.	Number of people employed by the project will be monitored through checking payroll records or the social insurance payment records of the project owner.	+1	The social impact is expected to increase employment, which can be confirmed by payroll records or the social insurance payment records of the project owner	The impacts being monitored throughout crediting period by parameter 'Long-term jobs (> 1 year) created/ lost (SJ01)' and is verified under section D.3.7 of this report. The employment was verified during the audit /39/ and by interviews and it was accepted by the VVB team that appropriate monitoring plan is going to be implemented.
	New short-term jobs (< 1 year) created/ lost (SJ02)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.

	Sources of income generation increased / reduced (SJ03)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Avoiding discrimination when hiring people from different race, gender, ethnics, religion, marginalized groups, people with disabilities (SJ04) *(Human rights)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
Social - *Health & Safety*	*Disease prevention (SHS01)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Occupational health hazards (SHS02)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A	N.A	N.A
	Reducing / increasing accidents /Incidents/fatality (SHS03)	Recovery and destruction of LFG by the project can reduce the accidents of the landfill site, improve the safety of working environment of the landfill site. However, the LFG power plant itself may have risks of accidents since LFG is a	N.A.	-	The project is operated by trained and qualified staffs as per the safety requirement of the LFG power plant, no accident is expected to	-	N.A.	The project owner will monitor the accidents occurred within the project site.	+1	Project owner will provide regular safety training to their workers about the accident hazards	The impact is being monitored throughout the crediting period by parameter 'Accidents occurred at project site' and is verified under

		kind of flammable and explosive gas			occur during the operation of the project activity. Thus it is deemed as harmless					and risk related to specific works and preventive measures for avoiding accidents at site	section D.3.7 of the report. The project owner shall provide the job-related Health and safety trainings to its employees on regular interval, and the number of accidents occurred can be verified at the time on emission reduction verification
	Reducing / increasing crime (SHS04)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Reducing / increasing food wastage (SHS05)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Reducing / increasing indoor air pollution (SHS06)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Efficiency of health services (SHS07)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Sanitation and waste management (SHS08)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Reducing / increasing	Recovery and destruction of LFG by the project can reduce the potential safety	N.A.	-	The social impact is expected to reduce fire/	-	N.A.	Monitoring the fire and explosion incident occurred within the land fill	0	The owner holds regular safety	The project owner conducts regular safety training which is verified

	fire/explosion and risk to human life (SHS09)	hazards of landfill gas fire and explosion, which will reduce the risk to human life of landfill staff. This is a positive impact			explosion and risk to human life; hence the project is harmless			site and the project site.		training and ensure no fire or explosion is expected to happen throughout the crediting period. To be conservative, this parameter is not scored.	by reviewing the training records. PO has considered zero score for this parameter and, it is verified as harmless.
Social - *Education*	*specialized training / education to local personnel (SE01)*	The project owner provides job related training for all employees. This is a positive impact.	No regulation	-	The project provides job related training for all employees; hence it is harmless	-	N.A.	Training records will be monitored annually.	+1	Job related training can be confirmed by training records	The impact is being monitored throughout the crediting period by parameter 'Number of Job-related Trainings' and is verified under section D.3.7 of the report. The project owner shall provide the job-related Health and safety trainings to its employees on regular interval, and the number of trainings can be verified at the time on emission reduction verification.
	Educational services improved or not (SE02)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Project-related knowledge dissemination	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.

	effective or not (SE03)										
	Other educational issues (SE03)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
Social - *Welfare*	*Improving/ deteriorating working conditions (SW01)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Community and rural welfare (indigenous people and communities) (SW02)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Poverty alleviation (more people above poverty level) (SW03)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Improving / deteriorating wealth distribution/ generation of income and assets (SW04)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Increased or /	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.

	deteriorating municipal revenues (SW05)										
	Women's empowerment (SW06) *(Human rights)*	Please refer to SJ01	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	The project owner will employ female employees with equal pay which will be confirmed from the payroll records or social insurance payment records. However, PO will not score this parameter as the monitoring approach is already covered under Long-term jobs (> 1 year) created/ lost.
	Reduced / increased traffic congestion (SW07)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Exploitation of Child labour *(Human rights)* *(SW08)*	The project will not employ child labor	Promulgation of the State Council of the China Prohibiting the Use of Child Labor[11]	N.A.	This project will comply with relevant laws and will not employ any child labor, so it is harmless	-	N.A.	Ensure child labor is not employed by monitoring employment lists Regular Monitoring, Aggregation annually	0	This project continuously monitors the employment list to ensure that no child labor is employed, child labour is absolutely prohibited in China and no related positive or negative	According to "Promulgation of the State Council of the China Prohibiting the Use of Child Labor", employment of children under the age of 16 is prohibited in China. The employment was verified during the audit and by interviews and it was accepted by the verification team

[11] http://www.gov.cn/zhengce/2020-12/26/content_5573524.htm

										impact is being created by the project. Thus, it will not be scored.	that an appropriate monitoring plan is going to be implemented. However, PO has considered zero score for this parameter and, it is verified as harmless.
	Minimum wage protection *(Human rights) (SW09)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Abuse at workplace. (With specific reference to women and people with special disabilities / challenges) *(Human rights) (SW10)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Other social welfare issues (SW11)	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Avoidance of human trafficking and forced labour	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.

	(Human rights) *(SW12)*										
	Avoidance of forced eviction and/or partial physical or economic displacement of IPLCs *(Human rights)* *(CW13)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.
	Provisions of resettlement and human settlement displacement *(Human rights)* *(CW14)*	N.A.	N.A.	N.A.	-	-	N.A.	N.A.	N.A.	N.A.	N.A.

Net Score:	**+3**
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.
GCC Project Verifier's Opinion:	The GCC Verifier certifies that the Project Activity is not likely to cause any net harm to society.

Appendix 7. United Nations Sustainable Development Goals (SDG) assessment

UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs				GCC Project Verifier's Conclusion (To be included in Project Verification Report only)	
			Project-level SDGs	Project-level Targets/Actions	Contribution of Project-level Actions to SDG Targets	Monitoring	Verification Process	Are Goal/ Targets Likely to be Achieved?
Describe UN SDG targets and indicators *See: https://unstats.un.org/sdgs/indicators/indicators-list/*	*Describe the UN-level target(s) and corresponding indicator no(s)*	*Has the host country declared the SDG to be a national priority? Indicate Yes or No*	*Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope or creating a new indicator(s). Refer to previous column for guidance.*	*Define project-level targets/actions in line with nee project level indicators chosen. Define the target date by which the project Activity is expected to achieve the project-level SDG target(s).*	*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG indicator and its corresponding target, frequency of monitoring and data source*	*Describe how the GCC Verifier has verified the claims that the project is likely to achieve the identified Project level SDGs target(s).*	*Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or no)*
Goal 1: End poverty in all its forms everywhere	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 3. Ensure healthy lives and	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

promote well-being for all at all ages									
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 5. Achieve gender equality and empower all women and girls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 6. Ensure availability and sustainable management of water and sanitation for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all	According to SDG Target 7.2 "By 2030, increase sustainability the share of renewable energy in the global energy mix" by the utilization of biomass as a renewable energy source." Indicator 7.2.1 Renewable energy share in the total final energy consumption.	Yes	This project generates clean energy annually.	Increase the share of renewable energy sources in the total electricity generation.	Indicator 7.2.1 Renewable energy share in the total final energy consumption. It is expected to provide 1,952,342 MWh renewable energy per year.	The project increases the renewable energy share in China's energy production mix. It provides clean energy to the grid.	Calculate the share of installed capacity from renewable energy.	The project activity contributes towards this goal by replacing the generation of fossil fuel dominated grid in baseline by power generation through LFG capture and utilization. The contribution towards SDG goal is being monitored by the parameter '$EG_{PJ,y}$', quantity of net electricity generation supplied by the project plant / unit to the grid in the monitoring plan and is found adequate. This has been discussed under section D.3.7 of this report.	Yes

Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all	SDG Target 8.5 "By 2030, achieve full and productivity, employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value". Indicator 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities.	Yes	The project generates job opportunities and income.	Providing employment opportunities during the operation and construction period.	Provide both long-term and short-term job opportunities. The average number of people working on this project is 3,500, and the peak number is 4,200.	The project created job opportunity for both construction and operation period. It created long term employment for people who work during the operation period and short-term job opportunities for people who work during the construction period. The average number of people working on this project is 3,500, and the peak number is 4,200. The number of people working during the operation period is 125.	Check the number of persons employed	The contribution towards SDG goal is by providing employment by creating 10 long term jobs for the project activity. This is being monitored by the parameter 'Long-term jobs (> 10 year) created/ lost (SJ01)' in the monitoring plan and is found adequate. This has been discussed under section D.3.7 of this report.	Yes
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Goal 10. Reduce inequality within and among countries	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 12. Ensure sustainable consumption and production patterns	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 13. Take urgent action to combat climate change and its impacts	SDG Target 13.2 Integrate climate change measures into national policies, strategies and planning	Yes	It is estimated to eliminate 1,116,837 tCO2e on a yearly basis.	Commissioning of renewable energy power plant.	13.2.2 The project provides 1,116,837 tCO2e per year.	Since the project uses hydropower, there is no GHG emissions related to the project.	Calculate avoided GHG emissions on a yearly basis.	The contribution towards SDG goal is being monitored by the parameter 'CO_2 emission' in the monitoring plan and is found adequate. This has been discussed under section D.3.7 of this report.	Yes
Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SUMMARY	**Targeted**	**Likely to be Achieved**
Total Number of SDGs	**3**	**3**
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF	**Silver**	**Silver**

DOCUMENT HISTORY

Version	Date	Comment
V 3.1	31/12/2020	▪ The name of GCC Program's emission units has been changed from "Approved Carbon Reductions" or ACRs to "Approved Carbon Credits" or ACCs.
V 3.0	23/08/2020	▪ Revised version released on approval by the Steering Committee as per the GCC Program Process; ▪ Revised version contains the following changes: o Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC); o Considered and addressed comments raised by the Steering Committee: ➢ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and ➢ electronic consultations EC01-Round 04 (17.08.2020 – 22.08.2020). ▪ Feedback from the Technical Advisory Board (TAB) of ICAO on GCC submissions for approval under CORSIA[12];
V 2.0	25/06/2019	▪ Revised version released for approval by the GCC Steering Committee. ▪ This version contains details and information to be provided, consequent to the latest worldwide developments (e.g., CORSIA EUC).
v1.0	01/11/2016	▪ Initial version released for approval by the GCC Steering Committee under GCC Program Version 1

[12]See ICAO recommendation for conditional approval of GCC at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf

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