



**Verified Carbon  
Standard**

# BALIKESIR LANDFILL GAS (LFG) CAPTURE AND UTILIZATION PROJECT

**Earthood**

<b>Project Title</b>	Balikesir Landfill Gas (LFG) Capture and Utilization Project
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### Summary:

Earthood Services Private Limited (ESPL) has been contracted by Gaia Finansal Danismanlik Hizmetleri A.Ş. to carry out an independent verification of their VCS project "Balikesir Landfill Gas (LFG) Capture and Utilization Project" with VCS ID (2645) against VCS Standard v4.7/11/. The project is implemented over an area of 137 hectares within acceptance boundary of Balikesir Solid Waste Landfill Facility in Balikesir Province, Altieylul District, Gökköy village.

The verification is a complete evaluation of a project activity's implementation in relation to the relevant VCS requirements by an impartial third party. The verification includes assessment of the emission reduction in the current monitoring period.

The project activity is a Methane gas Power generation plant with total installed capacity of 11.312 MWe consisting of 8 gas engines are in operation with each engine of 14.14 MWe capacity. The project activity has planned to rehabilitate the Balikesir Solid Waste Disposal Site which receives 1200 tons of municipal solid waste generated in Balikesir province. The project activity will be generating electricity from the landfill gas. The Project activity will lead to reduction in GHG emissions by substituting the equal amount of electricity produced by the fossil fuel-fired power stations.

Also, the project activity prevents the release of methane that would be generated and emitted from the decomposition of the municipal solid waste. The project activity is anticipated to reduce GHG emissions by an average of 2,344,393 tCO<sub>2</sub>e/y over the 7-year renewal crediting period. Therefore, throughout the project's first crediting period, 334,913 tCO<sub>2</sub>e of emissions are anticipated to be reduced. The project activity in the current monitoring period from 27-October-2019 to 31-December-2022 has reduced 826,666tCO<sub>2</sub>e of GHG emission by displacing around 143,160.012 MWh of electricity from the fossil fuel dominated grid.

The scope of the verification includes confirming the implementation of the monitoring plan with the registered PDD, version 01 and the application of the monitoring methodology ACM0001 "Flaring or use of landfill gas 6" - Version 19/7/. There are various tools

applied during this current monitoring period, among which are described:

“Combined tool to identify the baseline scenario and demonstrate additionality” (Version 07.0) also known as “Additionality tool”, “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion” (Version 03.0), “Emissions from solid waste disposal sites” (Version 08.1), “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (Version 03.0), “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (Version 03.0), “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” (Version 03.0.1).

The verification consists of three phases:

- Desk review of the project
- Follow-up interview with the Project Proponent/ Project Developer
- Resolution of outstanding issues and issuance of final verification report and opinion.

The overall verification, from the contract review to verification report & opinion, was conducted following Earthood internal quality procedures. A risk-based approach has been followed to perform this verification activity and there are significantly low uncertainties associated with this verification. During verification process, a total of 05 findings were raised, which includes 09 CARs, 09 CL, and 01 FARs. These are covered in more detail in Appendix II.

The monitoring report, emission reduction calculations, and accompanying documents provided are all in compliance with VCS criteria. The verification was completed with a reasonable level of assurance and no uncertainties were found related to the project activity verification.

Earthood certifies that the project meets the relevant requirements of VCS MR template v4.2/2/, VCS Standard v4.7/11/ and the methodology ACM0001 “Flaring or use of landfill gas 6” v19/7/. Reviewing the monitoring report and other documentation pertaining to baseline and monitoring methods, gathering further background data, and conducting remote interviews with project owners have given Earthood enough justification to confirm that the specified VCS requirements have been met. Hence, Earthood is able to certify that the emission reductions from the project activity for the monitoring period from 27-October-2019 to 31-December-2022 amount to 823,666 tCO<sub>2e</sub>.

<b>1</b>	<b>Introduction</b>	<b>6</b>
1.1	Objective .....	6
1.2	Scope and Criteria .....	6
1.3	Level of Assurance .....	7
1.4	Summary Description of the Project.....	7
<b>2</b>	<b>Verification Process</b>	<b>8</b>
2.1	Method and Criteria .....	8
2.2	Document Review.....	9
2.3	Interviews.....	9
2.4	Site Visits .....	11
2.5	Resolution of Findings .....	13
2.5.1	Forward Action Requests	14
2.6	Eligibility for Validation Activities .....	14
<b>3</b>	<b>Validation Findings</b>	<b>14</b>
3.1	Participation under Other GHG Programs .....	14
3.2	Methodology Deviations .....	14
3.3	Project Description Deviations.....	15
3.4	Grouped Project.....	15
<b>4</b>	<b>Verification Findings</b>	<b>15</b>
4.1	Project Implementation Status.....	15
4.2	Safeguards.....	18
4.2.1	No Net Harm	18
4.2.2	Local Stakeholder Consultation	18
4.3	AFOLU-Specific Safeguards .....	18
4.4	Accuracy of GHG Emission Reduction and Removal Calculations.....	19
4.5	Quality of Evidence to Determine GHG Emission Reductions and Removals.....	19
4.6	Non-Permanence Risk Analysis .....	52
<b>5</b>	<b>Verification OPINION</b>	<b>53</b>
	<b>APPENDIX 1: Document References</b>	<b>54</b>
	<b>APPENDIX 2: FINDINGS OVERVIEW</b>	<b>56</b>

<b>APPENDIX 3: ABBREVIATIONS</b>	<b>63</b>
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<b>APPENDIX 4: COMPETENCY STATEMENTS</b>	<b>64</b>
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# 1 INTRODUCTION

## 1.1 Objective

The objective of this verification is to thoroughly examine and independently confirm the project's emission reductions. The verification process includes review of all the supporting documentation that may be needed to substantiate the sources and sinks of greenhouse gases (GHGs) that are located within the project boundary, the procedures involved, the metrics for qualifying these monitored parameters, as well as their level of reliability, and the validity of the supporting documents shared at each stage of the verification process. Verification is an independent assessment and retrospective judgement by Earthood of the observed reductions in GHG emissions that have taken place during the current monitoring period. This verification activity's objective is to evaluate with verifiable facts:

- The monitoring report's data are transparent and complete and in the event that the project activity complies with the monitoring report and the registered PD/01/.
- The monitoring report version 12 dated 21/04/2024/2/ complies with the guidelines of the monitoring plan for the registered Project Description (PD)/1/ and the authorized methodology.

## 1.2 Scope and Criteria

The independent and objective assessment of the project activity's implementation and the ex-post calculation of the observed emission reduction in GHG emissions are the main components of the verification's scope. The registered project description/1/, the ER calculations/3/, the applied methodologies/7/, and any supporting documentation submitted by the project proponent to the verification team are used to assess the project.

During the verification, following criteria was adopted:

The project activity has been carried out and run in accordance with the registered PD, and all the project's physical characteristics (including technology, project equipment, monitoring and metering equipment), have been put in place.

Documents are checked and verified in accordance with the most recent applicable version of the completeness checklist for requests for the issuance of VERs, verifiable, and in accordance with applicable VCS requirements. This includes the monitoring report and any other supporting documents that have been provided.

Verification of the monitoring methods and systems put in place - The actual monitoring systems and processes adhere to the authorized methodology, any revised approved monitoring plan,

and the monitoring systems and procedures indicated in the monitoring.

### 1.3 Level of Assurance

- Reasonable Level of Assurance
- Limited Level of Assurance

A reasonable level of assurance includes the understanding that there is remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the auditor needs to obtain sufficient appropriate evidence to reduce audit risk to an acceptable low level.

The assessment team drafted a verification report. An independent technical review team (one or more members) conducts a second examination of the information in the report to determine if the internal policies established and implemented by Earthood were followed correctly and to produce an opinion or conclusion that complies with the relevant VCS criteria. The technical review team must collectively have the necessary technical knowledge in all of the technical fields and sectoral focuses to which the project relates. Independent from the verification team are the members of the technical review team. The technical review team members are independent of the verification team.

Additional details for how a reasonable level of assurance was achieved are specified in section 2.3 and 2.4 of this report.

### 1.4 Summary Description of the Project

The VCS project activity "Balıkesir Landfill Gas (LFG) Capture and Utilization Project" (VCS Project ID - 2645) involves a Methane Gas Power generation plant having 14.14MWe installed capacity (Operational 10 gas engines) as per the generation license/5/. However, due to low LFG generation as expected, PP has planned to commission the 9th gas engine in year 2024 and 10<sup>th</sup> gas engine to be commissioned later. At present, a total installed capacity of 11.312 MWe consisting of 8 gas engines having 1.414 MWe capacity each are in operation. The project activity has planned to rehabilitate the Balıkesir Solid Waste Disposal Site which receives Balıkesir municipal waste. The project activity is implemented by Landfill Enerji Sanayi ve Ticaret A.S. over an area of 137 hectares within acceptance boundary of Balıkesir Solid Waste Landfill Facility in Balıkesir Province, Altıeylül District, Gökköy village.

This project has been officially registered and operational since 27-October-2019, After validation, the operation continues with a slight change implementation. Initially, there were 8 engines in operation, which is different from the 10 gas engines stated in the validation report. The 9th gas engine is now scheduled to be commissioned in 2024. This adjustment was necessitated by lower-

than-expected landfill gas (LFG) generation from the rehabilitated sections of the landfill. Estimating the remaining organic content in landfills is a challenging task and involves uncertainties.

The project aims to generate cleaner electricity using the power project technology and displace the amount of electricity generated using the fossil fuel-based power plant. The electricity generated is supplied to the national grids as verified using the Power Purchase Agreement/23/.

BIOTREND Çevre ve Enerji Yatırımları Anonim Şirketi and Gaia Climate Finansal Danışmanlık Hizmetleri ve Ticaret A.Ş. are the project proponent of the project. Mundo Verde Climate is seeking to boost its capacity for project development and investment within the worldwide carbon markets through the establishment of a strategic partnership with Gaia Climate.

The site audit of the project was conducted by the assessment team on 22-February-2023. The assessment team verified the details regarding the implementation operational status of the project. The details regarding the waste management site were also verified. The details regarding the technological process occurring on the site have also been verified by conducting the interviews of PP and its representatives. The technical specification of Janbacher Genset JGS 420 GS-L-L has been verified from the technical specification by technology supplier/14/ and from the registered PDD/1/. The verified technical specification is mentioned below:

<b>Technical Specifications</b>	
Electrical output	1,414 KW
Voltage	480V-13.8kV
Thermal Output	980-1.720kW
Thermal Efficiency	Up to 43%
Fuel Type	Flexible

It has been verified that the project activity has not been implemented and operational in accordance with the registered PDD/1/ due to low LFG generation and this has been verified at the time of audit and photographs, video provided by the PP/21/.

The start date of the project is 27-October-2019, which is also the commissioning date of the plant, verified through the commissioning certificate/9/. The project activity has opted for 07 Years of renewal crediting period. The duration of the crediting period is 27-October-2019 to 26-October-2026, and the monitoring period for the project activity is from 27-October-2019 to 31-December-2022.

The location of the project lies between +39.612806 latitudes and +27.85313939 longitude was verified through google map/14/ and found to be consistent with the data provided in the VCS PDD/1/.

During the current monitoring period, the project activity has been operational and lead to emission reduction of 823,666tCO<sub>2</sub>e and by supplying around 143,160.012 MWh of electricity to the national grid.

## 2 VERIFICATION PROCESS

### 2.1 Method and Criteria

The ESPL assessed and determined whether the proposed implementation and operation of the project activity and the steps taken to report the emission reductions comply with the VCS guidelines and the criteria. The verification consists of the following three phases:

- A desk review of the VCS PD/1/ and VCS MR/2/.
- Onsite audit along with discussions on multiple occasions/8/ (by Microsoft teams and telephonic calls) follow up interviews with PP and clients.
- The resolutions of outstanding issues and issuance of the final report and opinion.

### 2.2 Document Review

Verification is primarily done by reviewing the documents that were submitted at different stages of assessments. As mentioned in detail in appendix 1 of this document, the documents were compared with the information mentioned in the registered VCS PD /1/ & Validation report/19/, and related documents. Internal Earthood processes carry out the evaluation in accordance with the most recent VCS criteria. Cross-checks are made between the data in the Monitoring report and the VCS PD/1/, Validation Report/19/, supporting documentation given by the PP, data from sources other than those used, and independent background checks.

Earthood conducts a desk review as under:

- Review of the data and information presented to verify their completeness.
- Review of the monitoring plan/1/, monitoring methodology/07/, relevant tool, where appropriate, applied standardized baseline, with special focus on measurement frequency, metering equipment quality (including calibration needs) and quality assurance and quality control processes.
- Analysis of data management, the quality assurance and control system in the context of their influence on the generation and reporting of emission reductions.

A list of documents reviewed during this verification are annexed as Appendix I in this report.

## 2.3 Interviews

The assessment team conducted a physical audit for the verification of the project activity, 'Balikesir Landfill Gas (LFG) Capture and Utilization Project. In accordance with VCS standard, v4.7/11/, the audit was conducted on 22-February-2023, the PP and its representatives were interviewed in person. The questions related to the monitoring, project technology, waste management sites, data collecting, ownership, project location, site management, and QA/QC procedures were discussed. Additionally, local stakeholders were also interviewed to verify further details regarding the project activity. The table below includes information on the interviewees:

<b>Name</b>	<b>Affiliation</b>	<b>Activity Performed on-site</b>	<b>VVB team members</b>
Mert Karaosmanoglu	Biotrend Sustainability Manager	Project implementation, start date of the project, baseline scenario, plant operation, location of the project	Shreya Garg Ashish Yadav Kubra Agriman
Engin Karal	Project Developer (Gaia Climate)	Project implementation, start date of the project, baseline scenario, plant operation, location of the project,	Shreya Garg Ashish Yadav Kubra Agriman
Muge Afacan Ural	Technical Manager (Gaia Climate)	Plant operation, QA/QC procedure, maintenance schedule, meter details, data storage procedure, waste collection, records of waste brought to the site, calibration of the instrument installed at site, plant technology	Shreya Garg Ashish Yadav Kubra Agriman

Zulfikar Koc	Biotrend Plant Manager	Plant operation, QA/QC procedure, maintenance schedule, meter details, data storage procedure, waste collection, records of waste brought to the site, calibration of the instrument installed at site, plant technology	Shreya Garg Ashish Yadav Kubra Agriman
Yasar Yaras	Mukhtar of the Kesirven Village	Plant location, boundary	Kubra Agriman
Mehmet Sungur	Villager	Grievance Mechanism, Project implementation Employment opportunities	Kubra Agriman
Beytullah Corak	Villager	Grievance Mechanism, Project implementation Employment opportunities	Kubra Agriman

It was concluded that the local people were aware of the grievance register and there were no negative comments from local stakeholder's side. Instead, the local people appreciated the development and jobs created by the project activity in that area. This was confirmed through the local expert who visited the site and assisted the team to confirm the information. Thus, a reasonable level of assurance was met.

## 2.4 Site Visits

The project activity during the current verification did undergo on-site audit, part of the team was participating online and some team members visited the site in person to achieve reasonable level of assurance. The table below describes the assessment of various topics covered:

Assessment Criteria	Means of verification/source documents	Assessment opinion
Description of project activity	Commissioning Certificate/9/ Technical specifications provided by technology supplier for the project activity/14/  VCS validation report site visit conducted on 22-February-2023	The information with reference to project capacity, technology, plant equipment and commissioning dates as provided in MR/2/ and PDD/1/ are found consistent with the documents provided by the PP.
Compliance of the project implementation with the registered project description	Monthly JMR & Invoices issued by the state/16/  Geographical co-ordinates of project activity verified through Google Map/13/  VCS validation report /19/  site visit/8/conducted on 22-February-2023	Monthly JMRs/16/ issued by the state indicate the following information:  Name of the pooling substation, Capacity of project and name of project participant.  Location of project is verified through Google Map/13/ and found consistent with registered VCS PD/1/.  All the information's regarding the project implementation as discussed above are further verified through VCS PD/1/ and found consistent.
Compliance of the project implementation with the	Monthly JMR & Invoices issued by the state/16/  Geographical co-ordinates of project activity verified through Google Map/13/	Monthly JMRs/16/ issued by the state indicate the following information:  Name of the pooling substation, Capacity of project and name of project participant.

<p>registered project description</p>	<p>VCS validation /19/ site visit/8/conducted on 22-February-2023</p>	<p>Location of project is verified through Google Map/13/ and found consistent with registered VCS PD/1/.</p> <p>All the information's regarding the project implementation as discussed above are further verified through VCS PD/1/ and found consistent.</p>
<p>Compliance of the project implementation with the registered project description</p>	<p>Monthly JMR &amp; Invoices issued by the state/16/ Geographical co-ordinates of project activity verified through Google Map/13/ VCS validation report/19/ site visit/8/conducted on 22-February-2023</p>	<p>Monthly JMRs/16/ issued by the state indicate the following information:</p> <p>Name of the pooling substation, Capacity of project and name of project participant.</p> <p>Location of project is verified through Google Map/13/ and found consistent with registered VCS PD/1/.</p> <p>All the information's regarding the project implementation as discussed above are further verified through VCS PD/1/ and found consistent.</p>
<p>Compliance of the registered monitoring plan with applied methodologies and standardized baselines</p>	<p>Monthly JMR &amp; Invoices issued by the state/16/ site visit/8/conducted on 22-February-2023.</p>	<p>Compliance of monitoring plan/1/ is verified through JMR &amp; Invoices/16/.</p> <p>The methods used for measuring, recording, storing, aggregating, and reporting the data on monitored parameters are verified though registered PDD/1/ and previous validation report/19/ and virtual interviews with site personnel/8/. Procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mentioned in the MR/2/is confirmed through virtual conversations with site personnel/8/.</p>

Compliance with the calibration frequency requirements for measuring instruments	Calibration certificates of meters/4/  Photograph of energymeters indicating sr. No, accuracy class, make /18/.	Calibration frequency and energy meter specifications (Sr. No, make, accuracy class) is verified through calibration certificates/4/ and previous VCS validation report/19/.  Responsibility of calibration and maintenance of energy meters is solely under control of TEIAS/20/ this is verified through the previous validation report/19/.
Assessment of data and calculation of emission reductions or net removals	Monthly JMR & Invoices issued by the state (EPIAS)/16/	Monthly values of monitoring parameter used in ER calculation/3/ are verified through share certificates/JMRs/16/ and cross-checked from the raised invoices/16/.

## 2.5 Resolution of Findings

The aim of this process is to identify, discuss, and reach a conclusion on issues related to the registered project activity's monitoring, implementation, and operations that could impair the registered project activity's ability to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is based on the desk review and phone interaction with site personnel. The verification team creates and/or updates a verification protocol (internal document) that records conformities and non-conformities of various types.

**Corrective Action Request (CAR)** is raised if one of the following occurs:

- Non-compliance with the monitoring plan, methodology, or standardized baseline is discovered during monitoring and reporting and has not been adequately documented by project participants, or the evidence provided to prove conformity is insufficient.
- The project participants have not adequately documented changes to the implementation, operation, and monitoring of the registered project activity.
- Mistakes in applying assumptions, data, or calculations of emission reductions have resulted in an increase in the quantity of emission reductions.
- Modifications to the main indicators of sustainable development.
- The project participants have not addressed issues that were discovered in a FAR during validation that need to be verified during verification or in a prior verification.

**Clarification request (CL)** is issued when there is insufficient or unclear information to determine whether the applicable VCS requirements have been met. Prior to submitting a request for issuance, all CARs and CLs raised by the ESPL during verification must be rectified.

**Forward Action Request (FAR)** is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

During the verification, a total of 09 CLs and 09 CAR were raised and successfully closed. A FAR regarding the monitoring of temperature at the outlet of the heat exchanger to demonstrate compliance with tool 8, option A condition was raised. All the findings that are raised and communicated to project participants during the verification and are included in Appendix II. The section also includes the responses provided by the project participants, along with an assessment by the verification team if it was closed out or otherwise.

The MR was revised to account for the CARs and CLs issued by Earthood, which was rechecked with the documentary evidence and was found to be inline. After reviewing the revised MR/2/ and estimated GHG emission reductions calculation sheet/3/; addressing the findings raised and outstanding concerns, final verification report and opinion was issued by Earthood.

### 2.5.1 Forward Action Requests

This is the first verification for the project activity. One FAR was raised during the current monitoring period regarding the monitoring of temperature at the outlet of the heat exchanger to demonstrate compliance with tool 8, option A condition. There were no open FARs raised during the previous validation report/20/ applicable for the current monitoring period.

### 2.6 Eligibility for Validation Activities

Since no validation was performed during the current verification, this section is not applicable.

## 3 VALIDATION FINDINGS

### 3.1 Participation under Other GHG Programs

The project activity is registered under VCS, with VCS ID -2645, titled “Balikesir Landfill Gas (LFG) Capture and Utilization Project” on 27-October-2019/10/. The ER’s generated due to the project activity are not being claimed in any other GHG program. The VVB has independently assessed CDM registry webpage and also, checked other registries like GS and GCC for the registration of the project activity.

### 3.2 Methodology Deviations

The project has applied the following methodology deviations as per the requirements set out in para 3.20 of the VCS Standard v4.7 :

1. Flow measurement dry basis assumption where gaseous stream temperature is lesser than 60 °C wet basis assumption at the measurement of flow due to pressurization

To apply option A from Tool 8, PP need to follow either of the conditions stated under para 23 of the CDM tool 8 “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” v03.0 /47/ to demonstrate that the gaseous stream is dry. Condition (b) states that “Demonstrate that the temperature of the gaseous stream (Tt) is less than 60°C (333.15 K) at the flow measurement point”.

PP has demonstrated that dry gas os achieved through treatment of wet gas which undergoes many processes as part of the project, including desulfurization, cooling in heat exchangers (which are connected to chiller units), losing humidity, mechanical filtering, and pressurization to ensure effective combustion in gas engines.

However, the tool requires to show the temperature of the stream (Tt) at the flow measurement location to be less than 60°C (333.15 K), per methodological TOOL08 paragraph 23 (b) to demonstrate that the gaseous stream is dry and apply for option A. However, it was observed that the temperature values provided in the booster data of ER sheet surpassed 60°C, reason being the pressurization of gaseous stream via blowers (influenced by seasonality as well) and no temperature recording being done the outlet of the drying unit. Therefore, deviation was sought by the

to apply an 'option C' as an alternative to 1491 entries with high temperature to calculate the emission reductions conservatively. Moreover, FAR#01 has been raised to monitor the temperature at the outlet of the heat exchanger in line with Tool 8. Thus, it was acceptable as an alternative method.

Requirements (VCS Standard v4.7)	Means of Verification
Para 3.20.1 Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan).	Since the proposed deviation is related to not meeting the conditions for applying option A from Tool 8, the deviation is being considered as methodology deviation.
Para 3.20.2 Methodology deviations shall not negatively impact the conservativeness of the quantification of reductions or removals, except where they result in increased accuracy of such quantification. Deviations relating to any other part of the methodology shall not be permitted.	As explained above a conservative option has been applied for the entries with temperature above 60°C Thus, the deviation does not negatively impact the ER calculations.
Para 3.20.3 Methodology deviations shall be permitted at validation or verification, and their consequences shall be reported in the validation or verification report, as applicable, and all subsequent verification reports. Methodology deviations are not considered to be precedent setting.	The deviation is being sought for the current MP and are not being considered to be precedent setting.

## 2. No flow meter for flaring:

The PP has not monitored flaring data for the current MP. PP has confirmed by presenting the flare unit's flow timer or total operating hour parameter is zero and the landfill produces less LFG than anticipated (lower than planned load factor), the flare was confirmed to be non-operational during the current MP. However, as a conservative approach PP has calculated the project emissions from flaring as shown in section 5.2 of the MR/02/.

Requirements (VCS Standard v4.7)	Means of Verification
Para 3.20.1 Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan).	Since the proposed deviation is related to not meeting the conditions for applying option A from Tool 8, the deviation is being considered as methodology deviation.
Para 3.20.2 Methodology deviations shall not negatively impact the conservativeness of the quantification of reductions or removals, except where they result in increased accuracy of such quantification. Deviations relating to any other part of the methodology shall not be permitted.	As explained above a conservative approach has been applied for the calculation of project emissions, the deviation does not negatively impact the ER calculations.
Para 3.20.3 Methodology deviations shall be permitted at validation or verification, and their	The deviation is being sought for the current MP and are not being considered to be precedent setting.

consequences shall be reported in the validation or verification report, as applicable, and all subsequent verification reports. Methodology deviations are not considered to be precedent setting.	
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### 3. Insufficient data collection for a certain period of time

VVB confirms from the ER sheet that PP has not accounted baseline emissions from 27-October-2019 to 02-January-2020 since the booster data was not kept properly during this time interval for the parameters  $v_{i,t,db}$  (Volumetric fraction of greenhouse gas  $i$  in the gaseous stream in a time interval  $t$  on a dry basis  $m^3$  gas  $i/m^3$  dry gas),  $V_{t,db}$  (Volumetric flow of the gaseous stream in time interval  $t$  on a dry basis,  $m^3$  dry gas/h),  $P$  (Absolute pressure of the gaseous stream in time interval  $t$ ), and  $T$  (Temperature of the gaseous stream in time interval  $t$ ). The same was checked in the ER sheet /03/ and in section 4.2 of the MR and is deemed appropriate by the assessment team.

Requirements (VCS Standard v4.7)	Means of Verification
Para 3.20.1 Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan).	Since the proposed deviation is related to not meeting the conditions for applying option A from Tool 8, the deviation is being considered as methodology deviation.
Para 3.20.2 Methodology deviations shall not negatively impact the conservativeness of the quantification of reductions or removals, except where they result in increased accuracy of such quantification. Deviations relating to any other part of the methodology shall not be permitted.	As explained above a conservative approach has been applied for the calculation of project emissions, the deviation does not negatively impact the ER calculations.
Para 3.20.3 Methodology deviations shall be permitted at validation or verification, and their consequences shall be reported in the validation or verification report, as applicable, and all subsequent verification reports. Methodology deviations are not considered to be precedent setting.	The deviation is being sought for the current MP and are not being considered to be precedent setting.

CL 05,06 and 08 has been raised and resolved.

### 3.3 Project Description Deviations

The project has applied the following methodology deviations as per the requirements set out in para 3.21 point 2 of the VCS Standard v4.7 . It's important to note that these changes do not affect the applicability of the methodology nr the additionality or the appropriateness of the baseline scenario and thus the project remains in conformance with the applied methodology.

#### 1. Change in project proponent.

The project owner is BIOTREND Çevre ve Enerji Yatırımları Anonim Şirketi. The list of project proponents mentioned in the MR has changed as the project owner has contracted a different consultants(Gaia Climate Finansal Danışmanlık Hizmetleri ve Ticaret A.Ş. and MUNDO VERDE CLIMATE SA) to complete the verification process. PP has submitted sufficient evidence to support the project proponents mentioned in

section 3.2.2 of the MR/43/. Therefore, removing BIO SOLUTIONS Yenilenebilir Enerji ve Danışmanlık Hizmetleri Sanayi ve Ticaret Limited Şirketi (LLC) was found acceptable.

## 2. Calculation option change for mass flow of a greenhouse gas in a gaseous stream

The PD mentioned the option to determine mass flow in line with Tool 8 inconsistently. The mass flow of a greenhouse gas in a gaseous stream would be determined by Option F in the registered PDD section 3.2 (TOOL08 applicability table) and section 5.2 (parameter  $v_{i,t,wb}/01/$  while on pages 46–47, Option A is listed as the chosen technique. Nonetheless, PP has a system (heat exchanger and blower) to procure dry gas and has been able to demonstrate condition b from para 23 of Tool 8 to apply option A in order to replace the infeasible method of applying option F. Thus, the deviation was accepted.

Accordingly all related parameters have been updated to be calculated on dry basis.

CL05 was raised and resolved.

VVB has confirmed that deviation from the project description does not impact the methodology's applicability; thus, the project remains in line with the methodology.

All three criteria outlined in VCS Standard v4.7/11/ paragraph 3.21.2 sub point 1 have been assessed. Consequently, the observed deviation does not breach the project's compliance with the methodology, the appropriateness of the baseline scenario, or the project's additionality. The increased net Emission Reduction (ER) generation does not impact the project's additionality.

## 3.4 Grouped Project

This is not a grouped project activity. Hence, this section is Not Applicable.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

The landfill where the project is located will receive 1200 tonnes MSW each day, coming from municipal of Balıkesir Province. The project activity was expected to supply 143,160.012 MWh (average value) of electricity to the grid during the reporting period. The project was commissioned with generation of electricity from 27-October-2019, which is regarded as the project start date. The validation of the project involves a Methane Gas Power generation plant having 14.14 MWe installed capacity (Operational 10 gas engines) as per the generation license/5/. However, due to low LFG generation as expected, PP has planned to commission the 9th gas engine in year 2024 and 10<sup>th</sup> gas engine to be commissioned later. At present, a total installed capacity of 11.312 MWe consisting of 8 gas engines having 1.414 MWe capacity each are in operation.

No special event which would affect the monitoring of the project has been observed during the monitoring period. The actual implementation of the project during this verification period was verified in terms of name plate capacities of each gas-fired Engine / generator and monitoring equipment. The details of gas-fired Engine / generator with respect to installation and capacity have been verified to be consistent with description indicated in the Project Description/1/ & Monitoring Report/2/. The electricity generated by the project activity was supplied to the Centralized National Grid System of Turkey, which can be confirmed by the Power Purchase Agreement (PPA)/23/ signed between the project owner and Turkish national grid [TEIAS]/20/. On-site training for the related procedures including monitoring, recording and reporting was verified to be in place /5/ and their implementation was confirmed by interview with the key operators /25/ and observing the operations.

As part of the site audit, VVB confirms that the project implementation is not in accordance with the project description and monitoring plan contained in the VCS PD (version 1 dated 01-September-2021). The verification team confirmed through visual inspection and document review that all physical features of the proposed project activity including data collection systems and storage systems have been implemented in accordance with monitoring plan.

#### **Compliance of monitoring plan with monitoring methodology**

VVB is able to confirm that the monitoring plan in the VCS PD (version 1 dated 01-September-2021) is in accordance with the approved methodology applied by the project activity, i.e. ACM0001 (Version 19/7).

#### **Compliance of monitoring with the monitoring plan**

The monitoring has been carried out in accordance with the monitoring plan contained in the VCS PD (version 1 dated 01-September-2021). VVB confirms that all parameters stated in the monitoring plan/2/

are monitored and reported appropriately. All parameters required to be monitored by the monitoring plan as per the monitoring methodology ACM0001 (Version 19.0)/7/ and the management system were assessed during the site visit.

The monitoring report/2/ lists each parameter required by the monitoring plan and the information flow (i.e., from data generation, aggregation, recording, calculation, and reporting) for these parameters is provided. The information flow for each parameter is further verified in the following sections.

### **Parameters monitored.**

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PD /1/. The parameter  $BE_{CH_4, SWDS, y}$  - methane generation from the landfill in the absence of the project activity, is only used for ex-ante estimation the parameter  $F_{CH_4, PJ, y}$ . In this monitoring period, the parameter  $F_{CH_4, PJ, y}$  was ex post determined through monitoring parameters, which is consistent with the approved methodology ACM0001/7/. Thus, the parameters, including  $\phi_y$ ,  $OX$ ,  $F$ ,  $DOC_f$ ,  $DOC_i$ ,  $MCF_y$ ,  $k_j$ ,  $W_{j, x}$ ,  $DOC_j$ , which determined  $BE_{CH_4, SWDS, y}$  and  $F_{CH_4, PJ, y}$  ex-ante are not included in this report.

### **Parameter monitored ex post**

By checking Monitor System Display Screen during site visit /8/, it is confirmed by the verification team that the parameter  $V_{t, db}$  have been converted automatically into normal condition ( $0^\circ C$  and  $101,325 Pa$ ) during the monitoring process, therefore,  $P_t$  and  $T_t$  are not included as separate parameters according to the registered PD. For all rest parameters, including Management of SWDS,  $O_{pj, h}$ ,  $EG_{PJ, y}$ ,  $TDL_{k, y}$ ,  $EC_{PJ, y}$ ,  $TDL_{j, y}$ ,  $f$ ,  $v_{i, t, db}$ ,  $V_{t, db}$ , CAPEX and OPEX, Tariff of electricity exported were monitored and determined as per the monitoring plan which is listed as follows:

### **Management of SWDS**

This parameter was monitored annually by the project owner through following up with any changes in the management of Balikesir Solid Waste Disposal Site (SWDS). Through interview with staff and by checking the Operation Management Manual/31/ of Balikesir Solid Waste Landfill /10/, the verification team confirmed that there was no changes in the management of the SWDS after the implementation of the project activity, which is consistent with that in the registered PD/1/ and MR/2/. Staff from Balikesir Solid Waste Disposal Site (SWDS) was interviewed, the Operation Management Manual of Balikesir Solid Waste Landfill was checked during site audit, and on-site inspection was conducted by the local expert, all monitoring method and frequency meets the description in the PD/1/.

### **SDG Goal 7: Affordable and Clean Energy**

The project utilizes the LFG from the Balikesir Solid Waste Landfill site to generate electricity by gas engines. Total electricity generation supplied by the project to the grid is estimated to be 143,160.012 MWh which could replace the equivalent electricity from fossil fuel-based grid.

### **SDG 8 Decent works and Economic Growth**

The project can provide permanent and full-time job opportunities over the project lifetime

### **SDG 13 Affordable and Clean Energy**

The project utilizes the LFG for electricity generation, which contains nearly 50% of methane, to substitute the equivalent electricity supplied by the grid.

This project adopts the renewal crediting period of 7 years. The expected average annual emission reductions are 334,913 tCO<sub>2</sub>e. Accordingly, the project is expected to generate 2,344,393 tCO<sub>2</sub>e emissions reduction throughout its first crediting period.

The project activity is a LFG power generation plant which is contributing to sustainable development by reducing the GHG emission, that would have been emitted from the project baseline.

Based on the above, it can be concluded that the project has been implemented as described in VCSPD/1/ and no discrepancies has been found in this regard. The project has been functioning since 27-October-2019. The project adopts a renewal crediting period of 07 years. 27-October-2019–26-October-2026 is the first crediting period.

Assessment team concludes the following:

The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling, and analyzing the monitored data and parameters) is appropriate.

There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/7/.

The GHG emission reductions or removals generated by the project have not been included in an emissions trading program or any other mechanism that includes GHG allowance trading.

The project activity is complying with indicators for sustainable development as discussed in detail under section 1.11 of MR.

In view of the information as verified above the assessment team can conclude that the project has been implemented as described in the project description.

## 4.2 Safeguards

### 4.2.1 No Net Harm

It is confirmed that the impact is very little caused by LFG power generation on the water, surrounding ecosystem and residents. Also confirmed by checking the EIA exemption certificate that was approved by Government and during site visit by local expert, Stakeholders interviewed. Furthermore, the project activity helps to improve local socio-economic development through creating employment opportunities. The assessment team confirms that PP has taken preventive measures to minimize the odor, dust, gas, noise, leachate, etc by verifying all the necessary documents /38,39,40,41/ provided by the project participant. The same has also been mentioned in section 2.1 of the MR /02/,

Hence, VVB team confirmed that the project activity does not cause any harm to environment.

CL03 was raised and resolved.

### 4.2.2 Local Stakeholder Consultation

By checking the attendance list, the verification team confirmed that a local stakeholder consultation meeting was held on 30-September-2021/25/ through online mode (due to corona cases) by the project proponent. Before the stakeholder consultation meeting, the project information with contact information and the stakeholder meeting notice were published through the newspaper(s), E-mail, notice at and nearby the public place on 16 September 2021.

During the meeting, the project information and grievance mechanisms were introduced to all the stakeholders via online webinar, Microsoft teams. The local stakeholders submitted their feedback through the links that were shared by the moderator during the meeting.

Following the discussion on the Project will affect sustainable development, the audience was asked to fill out the Local Stakeholder Consultation/25/ Feedback Form. 8 of the 21 participants finished the forms that were distributed via the link.

No negative comments about the project activity were made during this monitoring period. A signed declaration by the deputy general manager of Biotrend Cerve ve Enerji Yatirimlari A.S. confirming the same was submitted as evidence /42/.

CL04 was raised and resolved.

## 4.3 AFOLU-Specific Safeguards

This section is Not Applicable as this project activity is a non-AFOLU project activity type.

#### 4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The registered PD/1/ and the monitoring report/2/ have both been followed for the project monitoring. At the site, the monitoring strategy outlined on the registered PD/1/ was being followed. The information flow (from data generation to recording, calculation, and reporting for these parameters) in the MR/2/. Also, this information flow was verified through interviews with the PP representative during the audit/8/ and has been verified by the local expert on-site and assessed by the verification team. and the information collected during the audit shared with local expert and found in accordance with the registered PD/1/ and VCS standards/11/, VCS program guide/12/.

It was discovered that the emissions reduction calculation was accurate. In section 4.5 of this report, a list of all the parameters' reported and verified values is provided.

In the ER sheet/3/, the PP has provided the full set of data for all the monitored parameters. The verification report's section 4.5 describes how this data was confirmed. The formulas and procedures utilized to determine the baseline emissions, project emissions, and leakage emissions are suitable and in accordance with the applicable methodology ACM0001 version 19/7/.

The calculation method and formulae used in calculating baseline emission is in compliance to the methodology used i.e., ACM0001 v19/7/. The tables mentioned in next section describes how each parameter has been verified to confirm that the actual monitoring complies with the monitoring plan fixed ex-ante, as well as the monitored data has been thoroughly assessing and it is confirmed that the sampling requirements are met.

The details regarding the calculation of the emission reductions for the project activity can be found in section 4.5 of the verification report.

#### 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The emission reductions produced by the project activity were based on the Solid Waste Disposal Site (SWDS) Rehabilitation and Landfill Gas (LFG) Capture's contribution to the production of energy and subsequent displacement of fossil fuels for electricity generation. The PP has provided all necessary evidence against the information related to the parameters to be monitored. Appendix I of the report contains the list of the records that were used by the assessment team for the verification of the project activity. In order to confirm the reported values in the ER sheet/3/, the assessment team evaluated the value of the parameter found to be consistent. According to the monitoring plan outlined in the PD/1/ & MR/2/ and the monitoring methodology ACM0001/7/, the project activity is being monitored in accordance with plan. The system works well and is dependable. This section has talked about ex-ante and monitored parameter verification.

##### **Assessment of Data and parameters:**

**Ex-Ante parameters:**

The assessment of ex-ante parameter has been carried out as method described in below table

Means of verification	Data/Parameter	Value	VVB Assessment
	$\phi$ (Model correction factor to account for model uncertainties)	0.75	The value has been taken from Tool 04 "Emissions from solid waste disposal sites" (version 08.1). As per the Data / Parameter table 1 under section 6.4. of the tool for "Application A", the value mentioned is found to be consistently reported in the VCS PD/1/ and in the MR/2/.
	$OX_{top\_layer}$ (Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline)	0.1	The value has been taken from the methodological tool, "Emissions from solid waste disposal sites" which further refers to IPCC 2006 guidelines for National Greenhouse Gas Inventories/26/ and is found consistent with the PD/1/.
	F (Volume fraction of methane in the SWDS gas)	0.5	The value has been taken from "Emissions from solid waste disposal sites" /30/ and is found consistent with the PD/1/.
	MCF (Methane correction factor)	0.8	The value has been taken from the methodological tool 'Emissions from solid waste disposal sites'/30/ under section 6.4. and is found consistent with the PD/1/.

	$DOC_f$ (Fraction of degradable organic carbon that can decompose)	0.5		The value has been taken from "Emissions from solid waste disposal sites" /30/ and is found consistent with the PD/1	
	$DOC_j$ (Fraction of degradable organic carbon (by weight) in the waste type j.)	Waste Type j	$DOC_j$ (% wet waste)		The value has been taken from "Emissions from solid waste disposal sites"/30/ and is found consistent with the PD/1/.
		Wood and wood products	43		
		Pulp, paper, and cardboard (other than sludge)	40		
		Food, food waste, beverages, and tobacco (other than sludge)	15		
		Textiles	24		
		Garden, park, and yard waste	20		
		Glass, plastic, metal, other inert	0		
	$k_j$ (Decay rate for the waste type j)	Type of Waste		Climate Zone	The value has been taken from "Emissions from solid waste disposal sites" /30/ and is found consistent with the PD/1/.
				Boreal and Temperate	
				(MAT $\leq$ 20 C)	
				Dry	
				(MAP/PET < 1)	
		Default			
		Slowly degrading waste	Paper/textile waste	0.04	
Wood/straw waste	0.02				
Moderately degrading waste	Other (non-food) organic	0.05			

		c putres cible/ Garde n and park waste)			
	Rapidly degrading waste	Food waste/ Sewa ge sludge	0.06		
	Bulk Waste		0.05		
$W_{total}$ (The amount of waste disposed in the landfill sites in year x)			$W_{total}$ (t/y)		These values are taken from the Historical waste data and waste projections and found consistent with the PD/1/.
	2003		35,000		
	2004		35,700		
	2005		36,414		
	2006		37,142		
	2007		37,885		
	2008		38,643		
	2009		39,416		
	2010		40,204		
	2011		41,008		
	2012		41,828		
	2013		42,665		
	2014		43,518		
	2015		44,309		
	2016		67,560		
	2017		84,937		
	2018		315,850		
	2019		377,303		
	2020		423,338		
	2021		474,139		
2022		531,035			
2023		594,759			

		2024	666,131	
		2025	746,066	
		2026	835,594	
		2027	935,865	
		2028	1,048,169	
		2029	1,173,950	
		2030	1,314,824	
		2031	1,472,602	
		2032	1,649,315	
		2033	1,847,232	
		2034	2,068,900	
		2035	2,317,168	
		2036	2,595,229	
		2037	2,906,656	
		2038	3,255,455	
		2039	3,646,109	
		2040	4,083,642	
	GWP <sub>CH<sub>4</sub></sub> (Global warming potential of methane)	28 t CO <sub>2</sub> e/ t CH <sub>4</sub>		This value has been taken from the applied methodology and is found consistent with the PD/1/.
	EF <sub>CO<sub>2</sub>,grid,y</sub> (Emission factor for the Turkish National Grid)	0.5706 t CO <sub>2</sub> /MWh		This value has been taken from the Ministry of the Energy and Natural Resources in Turkey and is found consistent with the PD/1/.

	TDL <sub>j,y</sub> (Average technical transmission and distribution losses for providing electricity to source j in year y)	9.101	The value has been taken from from Turkish Electricity Transmission Corporation (TEİAŞ) /46/ in accordance with Methodological Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, Version 3.0/49/
	ρ CH <sub>4</sub> (Density of methane gas at reference conditions)	0.716 kg/m <sup>3</sup>	This value has taken from the tool 6 based upon the methane mass flow of the residual gas.
	SPEC <sub>flare</sub>	Combustion range: 25-50%methane Combustion temperature 850 -1100 °C Operating logic managed byPLC. Designed for combustion of 300m <sup>3</sup> /h of biogas. (Flow range 50 to 1500 m <sup>3</sup> /h)  Flame retention >0.3 sec	This value has been taken from thetechnical specification data sheet/14/ provided by the PP.

**Ex-Post Parameters:**

The following monitored parameters have been verified for the current monitoring period:

Parameter	Management of SWDS (Management of SWDS)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	N/A
	Monitoring equipment	N/A
	Calibration frequency /interval:	N/A

	How were the values in the monitoring report verified?	N/A
	If applicable, has the reported data been cross-checked with other available data?	N/A
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter is found to be appropriate. The parameter was used to calculate the baseline emissions of the project activity	

Parameter	EG <sub>PJ,y</sub> (Amount of electricity generated using LFG by the project activity in year y)				
Means of verification	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>			
	Measuring /Reading /Recording frequency	Continuous measurement in every 10 minutes all year.			
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.			
	Value(s) Applied	2019(01-December-2019–31-December2019): 778.65 MWh 2020: 43,790.472 MWh 2021: 56,179.247 MWh 2022: 42,434.513MWh			
	Monitoring equipment	The main monitoring device for the measurement of electricity consumption is the main meter.			
		Model	Serial Number	Date of Calibration	Accuracy Class
		Landis + Gyr E550	97821853	28-November-2019	0.5s
	Landis + Gyr E550	97838980	28-November-2019	0.5s	
	Calibration frequency /interval:	Every 10 Years.			
	How were the values in the monitoring report verified?	The value was checked against the JMR and invoices/16/ raised by PP			
If applicable, has the reported data been cross-checked with other available data?	The values reported have been cross checked against the JMR and invoices/16/ raised by PP				
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not applicable				

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded every 10 mins. as per the approved frequency in the monitoring plan. While calculating the ex-ante emission reduction before 2021, the actual data has been used by the PP. Also, there was 12% increase in waste generation projected for subsequent year after 2021. However, the actual disposed waste quantity in the year 2020 to 2022 fluctuated significantly due to which there is decrease in electricity generation and LFG. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	EC <sub>P,J,y</sub> (Amount of electricity consumed by the project activity in year y)			
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>		
	Measuring /Reading /Recording frequency	Recorded every month.		
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.		
	Value(s) Applied	2019(01-December-2019–31-December-2019): 10.35 MWh 2020: 3,450 MWh 2021: 5,091 MWh 2022: 3,975 MWh		
	Monitoring equipment	The main monitoring device for the measurement of electricity consumption is the main meter.		
	Model	Serial Number	Date of Calibration	Accuracy Class
	Landis + Gyr E550	97821853	28-November-2019	0.5s

	Landis + Gyr E550	97838980	28-November-2019	0.5s	
	Calibration frequency /interval:	10 Years			
	How were the values in the monitoring report verified?	The value was checked against JMR/16/ provided by PP			
	If applicable, has the reported data been cross-checked with other available data?	NA			
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable			
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.			
<b>Findings</b>	No findings were raised.				
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.				

<b>Parameter</b>	O <sub>pi,h</sub> (Operation of the equipment that consumes the LFG)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Recorded Hourly
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.

	Value applied	125,307 (Total, for 8 gas engines and years 2020, 2021 and 2022 full years) 46,053 hours off time
	Monitoring equipment	Flare Program logic controller
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	The value was checked against flow meter data provided by PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors	

<b>Parameter</b>	$V_{i,t,db}$ (Volumetric fraction of greenhouse gas i in a time interval t on a dry basis)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuous measurement and hourly recording.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.

	Value(s) Applied	2019: 0.543 2020: 0.551 (average) 2021: 0.548 (average) 2022: 0.522 (average)																						
	Monitoring equipment	Infrared Gas analyzer <table border="1"> <thead> <tr> <th>Model</th> <th>Serial Number</th> <th colspan="2">Calibration Date</th> </tr> </thead> <tbody> <tr> <td>SWG100 Biogas</td> <td>081087</td> <td>16-July-2019</td> <td>11-April-2022</td> </tr> <tr> <td>SWG100 Biogas</td> <td>081476</td> <td colspan="2">17-May-2022</td> </tr> <tr> <td>BIOGAS 5000</td> <td>G506493</td> <td colspan="2">26-July-2019</td> </tr> <tr> <td>BIOGAS 5000</td> <td>G506480</td> <td colspan="2">24-July-2019</td> </tr> </tbody> </table>			Model	Serial Number	Calibration Date		SWG100 Biogas	081087	16-July-2019	11-April-2022	SWG100 Biogas	081476	17-May-2022		BIOGAS 5000	G506493	26-July-2019		BIOGAS 5000	G506480	24-July-2019	
Model	Serial Number	Calibration Date																						
SWG100 Biogas	081087	16-July-2019	11-April-2022																					
SWG100 Biogas	081476	17-May-2022																						
BIOGAS 5000	G506493	26-July-2019																						
BIOGAS 5000	G506480	24-July-2019																						
	Calibration frequency /interval:	Every six months as per manufacturer's specifications/4/.																						
	How were the values in the monitoring report verified?	The value was checked against Gas analyzer details provided by PP/14/.																						
	If applicable, has the reported data been cross-checked with other available data?	NA																						
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable																						
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. Deviation has been sought for current MP. Please see section 3.2 and 3.3 for the details.																						
<b>Findings</b>	No findings were raised																							
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. However, there is a delay in calibration for the gas analyzer having serial no. 081087, PP has taken a conservative approach. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PD/1/ & MR/2/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.																							

<b>Parameter</b>	CAPEX and OPEX (Total investment to implement the project and total cost to operate the project).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	At the first issuance request after each phase of the project is fully implemented.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	CAPEX (Initial): 21,102.16USD  OPEX (27/10/2019-31/12/2022): 13,691.99USD
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	The value was checked against financial invoices/16/ provided by PP
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PD&MR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameter	Tariff or Electricity Exported (Tariff of Electricity Exported).	
<b>Means of verification</b>	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	At the first issuance request after each phase of the project is fully implemented
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	13.3 \$/kWh
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	The value was checked against power purchase agreement/23/ provided by PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring of this parameter is only required for projects applying simplified procedures to identify the baseline scenario. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/.	

Parameter	$V_{i,t,db}$ (Volumetric flow of the gaseous stream in time interval t on a dry basis)	
<b>Means of</b>	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Continuous measurement and hourly recording

<b>verification</b>	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR.		
	Value(s) Applied	2019: - 2020: 2,352.632(average) 2021: 3,444.526(average) 2022: 2,748.713(average)		
	Monitoring equipment	The main monitoring device for the measurement of gaseous stream are flow meters.		
		<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>
		Deltabar PMD75	S P808470109D	16-July-2019
	Calibration frequency /interval:	The frequency of calibration for the flowmeter is 5 to 10 years as per manufacturer specifications/4/.		
	How were the values in the monitoring report verified?	The value was checked against metering details provided by PP.		
If applicable, has the reported data been cross-checked with other available data?	NA			
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable			
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. These are the aggregated values of Booster 1&2. Deviation has been sought for current MP. Please see section 3.2 and 3.3 of this report for the details.			
<b>Findings</b>	No findings were raised			

<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.
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<b>Parameter</b>	T (Temperature of the gaseous stream in time interval t)				
<b>Means of verification</b>	<b>Criteria/Requirements</b>		<b>Assessment/Observation</b>		
	Measuring /Reading /Recording frequency		Continuous measurement and hourly recording		
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)		Yes. The frequency is in line with the MR/1/.		
	Value(s) Applied		2019: - 2020: 42.541 (average) 2021: 45.692 (average) 2022: 51.288 (average)		
	Monitoring equipment		Temperature transmitter of booster unit		
			Model	Serial Number	Calibration Date
			Endress+H auser Deltabar S PMD75	P808470109 D	16-July-2019
			Temperature sensors:		
			Manufacturer	Model	Serial Number
			Metron	RCT-L	1393/2019
Metron			RCT-L	0419/2019	

	Calibration frequency /interval:	5-10 years as per manufacturer specifications Flowmeter is controlled and calibrated with it's sensors by the manufacturer Conveco /44/
	How were the values in the monitoring report verified?	The value was checked against Gas analyzer details provided by PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	CL06 was raised and resolved	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	P (Pressure of the gaseous stream in time interval t)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuous measurement and hourly recording.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	NA
	Monitoring equipment	Pressure Transmitter of Booster Units

		Model	Serial Number	Calibration Date	
		Endress+ Hauser Deltabar S PMD75	P808470109 D	16-July-2019	
	Calibration frequency /interval:	5-10 years as per manufacturer specifications /44/			
	How were the values in the monitoring report verified?	NA			
	If applicable, has the reported data been cross-checked with other available data?	NA			
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable			
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.				
<b>Findings</b>	CL06 was raised and resolved				
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.				

<b>Parameter</b>	$W_{c,i,y}$ mass unit/ volume unit(Weighted average density of fuel type i in year y)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	only valid for first monitoring period.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	0.8343 kg/m <sup>3</sup>
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	Measurements were undertaken with national or international fuel standards/37/. It is in accordance with the Tool-3 “Tool to calculate project or leakage CO2 emissions from fossil fuelcombustion” version 03.0.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	$\rho_{i,y}$ (Weighted average density of fuel type i in year y).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Only valid for first monitoring period.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/..
	Value(s) Applied	NA
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	It is in accordance with the Tool-3 "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" version 03.0.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	$NCV_{i,y}$ (Weighted average net calorific value of fuel type i in year y)	
	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>

<b>Means of verification</b>	Measuring /Reading /Recording frequency	Only valid for first monitoring period.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	43
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	It is in accordance with 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 1, Table 1.2, page 1.18 -Gas/Diesel Oil – Default.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.	
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	EF <sub>CO<sub>2</sub>,i,y</sub> (Weighted average CO <sub>2</sub> emission factor of fuel type i in year y)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Measured at the time of fuel delivery.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the PDMR/01/.
	Value(s) Applied	74.100
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	The value was checked against IPCC report/26/.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	F <sub>CH<sub>4</sub>,EG,t</sub> (Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period t)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Only valid for first monitoring period.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	0
	Monitoring equipment	NA
	Calibration frequency /interval:	NA
	How were the values in the monitoring report verified?	The value was checked against flare meter details and ER sheet/3/ provided by PP
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. Deviation has been sought for current MP. Please see section 3.2 and 3.3 of this report for the details.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	T <sub>EG,m</sub> (Temperature in the exhaust gas of the enclosed flare in the minute m).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Once per minute if the flare is 100% operated.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	0
	Monitoring equipment	NA
	Calibration frequency /interval:	5-10 years as per manufacturer specifications /44/
	How were the values in the monitoring report verified?	The value were checked from flare timer in the ER sheet.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	CL06 was raised and resolved	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. Since the flare working hour was 0, there was no monitoring required. The verification team is able to confirm that the project is implemented as per the registered PD. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	V <sub>i,RG,m</sub> (Volumetric fraction of component i in the residual gas on a dry basis in the minutem where i = CH <sub>4</sub> , CO <sub>2</sub> ,O <sub>2</sub> , H <sub>2</sub> S, N <sub>2</sub> .)					
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>				
	Measuring /Reading /Recording frequency	Continuously.				
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.				
	Value(s) Applied	Residual Gas	2019	2020	2021	2022
		CH <sub>4</sub>	-	55.149 %	54.835 %	55.265 %
		CO <sub>2</sub>	-	38.762 %	40.003 %	40.767 %
		O <sub>2</sub>	-	0.144%	0.249%	0.453%
	H <sub>2</sub> S	-	0.0498 %	0.0309 %	0.029%	
	Other	-	5.895%	4.882%	3.786%	
	Monitoring equipment	Gas analyzer				
		Model	Serial Number	Calibration Date		
		SWG100 Biogas	081087	16-July-2019 11-April-2022		
		SWG100 Biogas	081476	17-May-2022		
		BIOGAS 5000	G506493	26-July-2019		
		BIOGAS 5000	G506480	24-July-2019		
	Calibration frequency /interval:	Every six months as per manufacturer's specification/4/.				
	How were the values in the	NA				

	monitoring report verified? If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. Please refer to section 3.2 and 3.3 of this report for deviation details.
<b>Findings</b>		
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	V <sub>RG,m</sub> (Volumetric flow of the residual gas on a dry basis at reference conditions in the minute m).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuously.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	0
	Monitoring equipment	Gas analyzer
	Calibration frequency /interval:	Periodically
	How were the values in the monitoring report verified?	NA
	If applicable, has the reported data been cross-checked with other available data?	NA

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. Please refer to section 3.2 and 3.3 of this report for deviation details.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was	

<b>Parameter</b>	M <sub>RG,m</sub> (Mass flow of the residual gas on a dry basis at reference conditions in the minute m).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuously.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	-
	Monitoring equipment	Flow meter, Pressure and Temperature Transmitters.
	Calibration frequency /interval:	Every six months as per manufacturer's specifications/4/.
	How were the values in the monitoring report verified?	NA
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	VO <sub>2,EG,m</sub> (Volumetric fraction of O <sub>2</sub> in the exhaust gas on a dry basis at reference conditions in the minute m).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuously.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	NA
	Monitoring equipment	Gas analyzer
	Calibration frequency /interval:	Continuous.
	How were the values in the monitoring report verified?	NA
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was	

<b>Parameter</b>	f <sub>C<sub>CH4,EG,m</sub></sub> (Concentration of methane in the exhaust gas of the flare on a dry basis at reference conditions in the minute m).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuously.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/2/.
	Value(s) Applied	0
	Monitoring equipment	NA
	Calibration frequency /interval:	Every six months as per manufacturer's specification/4/.
	How were the values in the monitoring report verified?	The value was checked against MR/2/ and ER sheet/3/ provided by PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. Deviation has been sought for current MP. Please see section 3.2 for the details.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	Flame <sub>m</sub> (Flame detection of flare in the minute m)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Continuously
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/02/.

	Value(s) Applied	0
	Monitoring equipment	Flame timer
	Calibration frequency /interval:	Periodically
	How were the values in the monitoring report verified?	The value was checked in the MR/2/ and ER sheet/3/ provided by PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. Please refer to section 3.2 and 3.3 of this report for deviation details.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	FC <sub>i,j,y</sub> (Weighted average mass fraction of carbon in fuel type i in year y)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Measurements were undertaken as per national or international fuel standards/37/.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	N/A
	Value(s) Applied	N/A
	Monitoring equipment	N/A

	Calibration frequency /interval:	Only valid for first monitoring period.
	How were the values in the monitoring report verified?	The value was checked against MR/2/ and ER sheet/3/ provided by PP.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

<b>Parameter</b>	Maintenance, (Maintenance events completed in year y).	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The frequency is in line with the MR/02/.
	Value(s) Applied	NA
	Monitoring equipment	LogBook
	Calibration frequency /interval:	Periodically

	How were the values in the monitoring report verified?	The value was checked against logbook and site visit.
	If applicable, has the reported data been cross-checked with other available data?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the registered VCS PDMR/1/. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

### Calculation of Emission Reductions

The emission reductions have been computed using the following formula in accordance with the applied methodology ACM0001 "Flaring or use of landfill gas 6," version 19/7/:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

**ER<sub>y</sub>** = Emission reductions in year y (tCO<sub>2</sub>e/yr)

**BE<sub>y</sub>** = Baseline emissions in year y (tCO<sub>2</sub>e/yr)

**PE<sub>y</sub>** = Project emissions in year y (tCO<sub>2</sub>e/yr)

**LE<sub>y</sub>** = Leakage emissions in year y (tCO<sub>2</sub>e/yr)

For BE<sub>y</sub>;

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

Emissions from methane from the SWDS;

$$BE_{CH_4} = ((1 - OX_{toplayer}) \times F_{CH_4,PJ,y} - F_{CH_4,BL,y}) \times GWP_{CH_4}$$

Year	F <sub>CH<sub>4</sub>,PJ,y</sub> (tCH <sub>4</sub> )	F <sub>CH<sub>4</sub>,BL,y</sub> (tCH <sub>4</sub> )	GWP <sub>CH<sub>4</sub></sub> (tCO <sub>2</sub> e/tCH <sub>4</sub> )	BE <sub>CH<sub>4</sub>,y</sub> (tCO <sub>2</sub> e/yr)
2019	0	0	28	0
2020	7,813.680	0	28	196,904.73
2021	11,241.953	0	28	283.297,21
2022	8,756.686	0	28	220.668,49

Project emissions are calculated by the below equation:

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

Project emissions from consumption of electricity by the project activity (PEEC,y) are calculated as follows:

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

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
27-10-2019 - 31-12-2019	486	55	0	441
2020	224,637	4,142	0	220,495
2021	318,876	5,980	0	312,896
2022	247,542	4,797	0	242,745
<b>Total</b>	791,541	14,974	0	823,666

**Baseline Emissions:**

The baseline emissions include the CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, multiplying the electricity supplied to the grid (MWh) with the combined margin CO<sub>2</sub> emission factor for grid connected power generation in y

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

<i>Year</i>	<i>BE<sub>CH<sub>4</sub>,y</sub> (tCO<sub>2</sub>e)</i>	<i>BE<sub>EC,y</sub> (tCO<sub>2</sub>e)</i>	<i>Baseline Emission (tCO<sub>2</sub>e)</i>
2019	0	478.288	478
2020	216,182.03	27,258.748	231,017
2021	317,975.63	34,970.115	335,007
2022	245,281.12	26,414.296	257,307

Where:

BE = Baseline emissions in year y (tCO<sub>2</sub>e/yr)

BE<sub>CH<sub>4</sub>,y</sub> = Baseline emissions of methane from the SWDS in year y (tCO<sub>2</sub>e/yr)

BE<sub>EC,y</sub> = Baseline emissions associated with electricity generation in year y (tCO<sub>2</sub>/yr)

BE<sub>HG,y</sub> = Baseline emissions associated with heat generation in year y (tCO<sub>2</sub>/yr)

BE<sub>NG,y</sub> = Baseline emissions associated with natural gas use in year y (tCO<sub>2</sub>/yr)

**Baseline emissions of methane from the SWDS (BE<sub>CH<sub>4</sub>,y</sub>)**

$$BE_{CH_4} = ((1 - OX_{top\_layer}) \times F_{CH_4,Pj,y} - F_{CH_4,BL,y}) \times GWP_{CH_4}$$

Where:

BE<sub>CH<sub>4</sub>,y</sub> = Baseline emissions of methane from the SWDS in year y (tCO<sub>2</sub>e/yr)

OX<sub>top\_layer</sub> = Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless)

F<sub>CH<sub>4</sub>,PJ,y</sub> = Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH<sub>4</sub>/yr)

F<sub>CH<sub>4</sub>,BL,y</sub> = Amount of methane in the LFG that would be flared in the baseline in year y (tCH<sub>4</sub>/yr)

GWP<sub>CH<sub>4</sub></sub> = Global warming potential of CH<sub>4</sub> (tCO<sub>2</sub>e/tCH<sub>4</sub>)

**Ex post determination of F<sub>CH<sub>4</sub>,PJ,y</sub>**

$$F_{CH_4,PJ,y} = F_{CH_4,flared,y} + F_{CH_4,EL,,y} + F_{CH_4,HG,y} + F_{CH_4,NG,y}$$

Where,

F<sub>CH<sub>4</sub>,PJ,y</sub> = Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH<sub>4</sub>/yr)

$F_{CH_4,flared,y}$  = Amount of methane in the LFG which is destroyed by flaring in year y (tCH<sub>4</sub>/yr)

$F_{CH_4,EL,y}$  = Amount of methane in the LFG which is used for electricity generation in year y (tCH<sub>4</sub>/yr)

$F_{CH_4,HG,y}$  = Amount of methane in the LFG which is used for heat generation in year y (tCH<sub>4</sub>/yr)

$F_{CH_4,NG,y}$  = 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<sub>4</sub>/yr)

The project does not utilize LPG for heat generation nor supply LPG to natural gas distribution network. Therefore,  $F_{CH_4,HG,y}$  and  $F_{CH_4,NG,y}$  are zero. The project only utilizes the LFG only for power generation. Despite the fact that a flare is placed as part of the booster unit, the data collection and instrument configuration during the first monitoring period precluded the claim of emission reduction via flaring. Therefore  $F_{CH_4,flared,y}$  is also zero.

Therefore:

$$F_{CH_4,PJ,y} = F_{CH_4,EL,y}$$

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

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

Where,

$EC_{BL,k,y}$  = Net amount of electricity generated using LFG in year y (MWh/yr)

$EF_{EL,k,y}$  = Emission factor for electricity generation for source k in year y (tCO<sub>2</sub>/MWh)

$TDL_{k,y}$  = Average technical transmission and distribution losses for providing electricity to source k in year y

k = Sources of electricity generated in the baseline

**Project emissions:**

Project emissions are calculated as follows:

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

Where:

$PE_y$  = Project emissions in year y (tCO<sub>2</sub>/yr)

$PE_{EC,y}$  = Emissions from consumption of electricity due to the project activity in year y (tCO<sub>2</sub>/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<sub>2</sub>/yr)

$PE_{DT,y}$  = Emissions from the distribution of compressed/liquefied LFG using trucks, in year y (tCO<sub>2</sub>/yr)

$PE_{SP,y}$  = Emissions from the supply of LFG to consumers through a dedicated pipeline, in year y (tCO<sub>2</sub>/yr)

$PE_{FC,j,y}$  = Are the CO<sub>2</sub> emissions from fossil fuel combustion in process j during the year y (tCO<sub>2</sub>/yr)

$PE_{flare,y}$  = Project emissions from flaring of the residual gas in year y

The project does not involve the distribution of compressed/liquefied LFG using trucks nor pipelines. Therefore,  $PE_{DT,y}$  and,  $PE_{SP,y}$  will be 0. Hence,  $PE_y$  will be equal to  $PE_{EC,y} + PE_{FC,y}$ .

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

Where,

$PE_y$  = Project emissions in year y (tCO<sub>2</sub>/yr)

$PE_{EC,y}$  = Emissions from consumption of electricity due to the project activity in year y (tCO<sub>2</sub>/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<sub>2</sub>/yr)

$PE_{DT,y}$  = Emissions from the distribution of compressed/liquefied LFG using trucks, in year y (tCO<sub>2</sub>/yr)

$PE_{SP,y}$  = Emissions from the supply of LFG to consumers through a dedicated pipeline, in year y (tCO<sub>2</sub>/yr)

$PE_{FC,j,y}$  = Are the CO<sub>2</sub> emissions from fossil fuel combustion in process j during the year y (tCO<sub>2</sub>/yr)

$PE_{flare,y}$  = Project emissions from flaring of the residual gas in year y

The project does not involve the distribution of compressed/liquefied LFG using trucks nor pipelines.

### Project emissions from fossil fuel combustion

$$PE_{FC,j,y} = \sum_i FC_{PJ,j,y} \times COEF_{i,y}$$

Where:

$PE_{FC,j,y}$  = Are the CO<sub>2</sub> emissions from fossil fuel combustion in process j during the year y (tCO<sub>2</sub>/yr)

$FC_{PJ,j,y}$  = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr)

$COEF_{i,y}$  = Is the CO<sub>2</sub> emission coefficient of fuel type i in year y (tCO<sub>2</sub>/mass or volume unit) =

Are the fuel types combusted in process j during the year y

COEF = 0,00268 tCO<sub>2</sub>/L \* fuel

Year	Diesel oil consumption (L, y)	COEF (kg CO <sub>2</sub> /L)	PE <sub>FC</sub> (tCO <sub>2</sub> )
2019	1,350	2.68	3.61
2020	2,331	2.68	6.24
2021	2,586	2.68	6.92
2022	2,703	2.68	7.23

### Project emissions from flaring

Methodological tool 06 shows procedure from three steps to calculate the flaring emissions. Emission from flare was planned to be used to calculate the project emission from flaring, if working hours wouldn't have been 0.

- a) Step 1: Determination of the methane mass flow of the residual gas.
- b) Step 2: Determination of the flare efficiency
- c) Step 3: Calculation of project emission from flaring.

- a. Step 1: Determination of the methane mass flow of the residual gas.

The residual gas was continuously monitored by the PP in normal conditions every 10 min for 24/7.

$$F_{CH4,RG,t} = V_{t,db} \times V_{CH4,db,t} \times \rho_{CH4,n}$$

Where:

$F_{(CH4,RG,t)}$  = Mass flow of greenhouse gas (CH<sub>4</sub>) in the gaseous stream in time interval t (kg gas/h)

$V_{(t,db)}$  = Volumetric flow of the gaseous stream in time interval t on a dry basis (m<sup>3</sup> dry gas/h)

$V_{(CH4,db,t)}$  = Volumetric fraction of GHG CH<sub>4</sub> in the gaseous stream in a time interval t on a dry basis (m<sup>3</sup> gas i/m<sup>3</sup> dry gas)

$\rho_{(CH4,n)}$  = Density of GHG CH<sub>4</sub> in the gaseous stream at normal conditions t (kg gas i/m<sup>3</sup> gas i)

- b. Step 2: Determination of flare efficiency.

Enclosed Flare

In this case the project implemented an enclosed flare, there are two options to determine the flare efficiency for minute m

- a) Option A. Apply a default value for flare efficiency.
- b) Option B; Measure the flare efficiency.

PP has chosen option A and found acceptable because the operating temperature of Conveco's flare system is 850 – 1100 °C, and according to records temperature were from (0°C to 40°C) due to weather conditions meaning not operation. Before electricity production (commission day 25-October-2019) production the thermocouples showed for 1 day in 22 and 23 September 2019 (3200 °C) before system was set, calibrated, and producing energy.

Since the enclosed flare could be define as low height (8.40 m Height) flare the efficiency is adjusted 10 percentile points less from the default value:

$\eta$ flare,m	80%
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- c. Step 3: Calculation of project emission from flaring.

$$PE_{Flare,y} = GWP_{CH4} \times \sum_{m=1}^{525600} F_{CH4,RG,m} \times (1 - \eta_{flare,m}) \times 10^{-3}$$

Where:

$PE_{flare,y}$  = Project emissions from flaring of the residual gas in year y (tCO<sub>2</sub>e)

$GWP_{CH4}$  = Global warming potential of methane valid for the commitment period (tCO<sub>2</sub>e/tCH<sub>4</sub>)

$F_{CH4,RG,m}$  = Mass flow of methane in the residual gas in the minute m (kg)

$\eta_{flare,m}$  = Flare efficiency in the minute m

Since the commission date the working hours of flare have been in zero (please refer to excel sheet 'compiled data SD storage system Balikesir 2019/2020/2021/2022' attached, Parameter flare working hours and Hour meter Flare can be read directly for crosschecking.

Table 15. Parameters used to calculate project emission from flaring

Period	Amount of LFG destroyed in gas engines (Nm <sup>3</sup> )	Conservative weighted average methane content of LFG (%)	Conservative thermal energy to electricity generation efficiency	Net Energy Content (NCV) of Methane (MJ/Nm <sup>3</sup> )	Conversion Factor (MJ to MWh)

27-October-2019 – 30-September-2022	74,770,386	54.134	40	35.9	1/3600
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Theoretical Energy generation can be calculated as

$$EG_y = \frac{\sum_i LFG_{i,y} \times NCV_{CH_4} \times EE_y}{3600}$$

Where:

- $EG_y$  = Theoretical Electricity generation in year y (MWh)  
 $LFG_{i,y}$  = Landfill gas destroyed via method i year y (m<sup>3</sup> LFG).  
 $NCV_{CH_4}$  = NCV of methane (MJ/Nm<sup>3</sup>) use default value: 35.9 MJ/Nm<sup>3</sup>  
 $EE_y$  = Energy Conversion Efficiency (Default efficiency of 40 per cent)  
 3600 = Conversion factor (1 MWh = 3600 MJ)

Theoretical electricity generation has been calculated with the above formula and result was found to be 161,456.0137 MWh. Gross electricity generation value for same period is 151,793.93 MWh. The difference between two value is “9,662.0858” MWh.

To convert gas volume to mass, following equation has been used.

$$F_{CH_4, RG} = V_{t, db} \times V_{CH_4, db} \times \rho_{CH_4}$$

Where:

- $V_{,db}$  = Cumulative LFG flow of the gaseous stream on a dry basis  
 (668,995.579 Nm<sup>3</sup>)

$V_{CH_4, db}$	=	Volumetric fraction of greenhouse gas CH <sub>4</sub> in the gaseous stream on a dry basis (54.134%) weighted average of first crediting period.
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- $\rho_{CH_4, n}$  = Density of greenhouse gas CH<sub>4</sub> in the gaseous stream at normal conditions t (0.716 kg/m<sup>3</sup> = 7.16E-04)

Thus:  $F_{CH_4, RG} = F_{CH_4, RG, m} = 3,203.7551 \text{ tCH}_4$

Project emission from flaring has been calculated as below:

$$PE_{flare, y} = GWP_{CH_4} \times \sum_{m=1}^{525600} F_{CH_4, RG, m} \times (1 - \eta_{flare, m}) * 10^{-3}$$

$$PE_{flare, y} = 28 \times 3,203.7551 \times (1 - 0.50) * 10^{-3} = 44,852.571 \text{ tCO}_2e$$

Where flare efficiency has been adopted as 50% due to conservative estimations.

Therefore:

$F_{CH_4, RG, m}$ (tCH <sub>4</sub> )	3,203.7551
$PE_{flare, y}$ (tCO <sub>2</sub> e)	44,852.571

Then  $PE_{flare, y}$  distributed to each year linearly based on coefficients; LFG destroyed in year t over cumulative LFG

#### Project Emission from flaring

Period	$F_{ch_4, EG}$ (tCH <sub>4</sub> )	$PE_{flare, y}$
27.10.2019 - 31.12.2019	9.4851,42	132.78519,853
2020	886.737132,58	12,414.3231856,094
2021	1,280.551191,46	17,927.7102680,413
2022	1,026.982153,55	14,377.7522149,651
<b>Sum</b>	3,203.755479,00	44,852.5716706,012

#### Leakage emissions:

The leakage emissions are assumed to be zero as per the ACM0001 version 19/7/ as defined in the registered VCS PD/1/.

The data presented in the monitoring report/2/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment.

Sufficient evidence was presented and verified by Earthood for the reported emission reductions.

#### 4.6 Non-Permanence Risk Analysis

There is no non-performance risk rating determined by the project proponent.

## 5. VERIFICATION OPINION

Earthood Services Private Limited (ESPL) was contracted by Gaia Finansal Danismanlik Hizmetleri A.Ş to perform the independent verification of the emission reductions for the VCS project activity “Balikesir Landfill Gas (LFG) Capture and Utilization Project” (VCS ID- 2645) in Turkey for the monitoring period 27-October-2019 to 31-December-2022 as reported in the Monitoring Report Version 12. Gaia Finansal Danismanlik Hizmetleri A.Ş is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

Earthood commenced the verification based on the baseline and approved methodology ACM0001 v19.0/7/, the monitored plan contained in the VCS PD/1/ & MR/2/, VCS standard /11/ and VCS program guide/12/ as per the process described under section 2 of this report.

Understanding the risks involved with reporting GHG emission data and the measures in place to reduce them forms the foundation of the Earthood verification process. By gathering documentation, additional data, and justifications that Earthood deemed required to provide a reasonable level of assurance that reported GHG emission reductions are accurately stated, ESPL planned and carried out the verification.

The verification team can confirm that:

- The project is implemented and operated as per the VCS PD.
- The monitoring plan in VCS PD is as per the applied methodology.
- The monitoring complies with the monitoring plan in the VCS PD.
- The monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS standard Version 4.7 and CDM requirements.
- The installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately.
- The monitoring system is in place and generates GHG emission reductions data.
- The GHG emission reductions are calculated without material misstatements.

In our opinion the GHG emissions reductions reported for the project activity for the monitoring period 27-October-2019 to 31-December-2022 are fairly stated in the Monitoring Report/2/. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodologies ACM0001 v19.0/7/.

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

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
27-October-2019 - 31-December-2019	478	143	-	335
2020	243,440	12,423	-	231,017

2021	352,945	17,938	-	335,007
2022	271,695	14,388	-	257,307
<b>Total</b>	<b>868,558</b>	<b>44,892</b>	<b>-</b>	<b>823,666</b>

The actual emission reductions for this monitoring period are 823,666 tCO<sub>2</sub>e. Whereas the estimated emission reductions for this monitoring period are 909,530 tCO<sub>2</sub>e. Thus, there is a variation of ~14.618(negative) in the total ERs as demonstrated below:

Year	Ex-ante emissions reductions /removals	Achieved emissions reductions /removals	Percent difference	Justification for the difference
<b>27-October-2019 to 31-December-2022</b>	909,530	823,666	9.144%	<p>The Balikesir solid waste disposal site is the primary landfill serving the entire Balikesir province, receiving waste from various districts. Changes in waste generation rates and composition in these districts have led to variations in the amount of waste delivered to the site.</p> <p>In the calculation of ex-ante emission reduction before 2021, actual data was used but a 12% increase in waste generation was projected for each subsequent year after 2021. However, between 2020 and 2022, the actual disposed waste quantity fluctuated significantly and was considerably lower than the projected ex-ante waste quantity. VVB has confirmed the same from waste quantum data submitted by PP/36/. The variance is the primary reason for the difference.</p>

				Additionally, VVB has verified by reviewing the calibrations certificate/4/ that there is a delay in calibrating gas analyser for a total number of 14 months. Hence, number of emission reduction from methane avoidance is subtracted from the calculations.																				
				<table border="1"> <thead> <tr> <th>YEAR</th> <th>EX-ANTE WASTE QUANTUM (t)</th> <th>DISPOSED WASTE QUANTUM (t)</th> <th>DIFFERENCE</th> </tr> </thead> <tbody> <tr> <td>2020</td> <td>423,338</td> <td>450,964</td> <td>6.12%</td> </tr> <tr> <td>2021</td> <td>474,139</td> <td>419,986</td> <td>-12.89%</td> </tr> <tr> <td>2022</td> <td>531,035</td> <td>427,702</td> <td>-24.16%</td> </tr> <tr> <td colspan="3"><b>AVERAGE DIFFERENCE</b></td> <td><b>-9.99%</b></td> </tr> </tbody> </table>	YEAR	EX-ANTE WASTE QUANTUM (t)	DISPOSED WASTE QUANTUM (t)	DIFFERENCE	2020	423,338	450,964	6.12%	2021	474,139	419,986	-12.89%	2022	531,035	427,702	-24.16%	<b>AVERAGE DIFFERENCE</b>			<b>-9.99%</b>
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Approved by



Dr. Kaviraj Singh

 Managing Director  
 Earthood Services Privated Limited

 Date: 22/04/2024  
 Place: Gurugram, Haryana

# APPENDIX 1: DOCUMENT REFERENCES

S.No	Title of Document	Version	Date
1.	Registered PD	01	
2.	VCS Monitoring Report (25/10/2019 to 31/12/2022)	12	21/04/2024
3.	ER sheet	-	Corresponding to MR
4.	-Manufacturer calibration certificate for the energy meters -Subsequent certificates of calibration for all energy meters	-	Various
5.	Generation license	-	12/09/2019
6.	Plant Records/Logbooks/DCS record for the duration of monitoring period (01/04/2018 to 31/12/2022)	-	-
7.	Approved ACM0001 "Flaring or use of Landfill gas 6"	19	-
8.	Site Audit through Local expert, recorded through video call	-	22/02/2023
9.	Commissioning certificate	-	-
10.	VCS webpage for the project, <a href="https://registry.verra.org/app/projectDetail/VCS/2645">https://registry.verra.org/app/projectDetail/VCS/2645</a>	-	Last accessed on 28/02/2023
11.	VCS Standard	4.7	Last accessed on 22/04/2024
12.	VCS Program Guide	4.3	Last accessed on 10/08/2023
13.	Google Earth desktop/Mobile application	-	Last accessed on 20/02/2023 <sup>72</sup>

14.	Technical Specifications by technology supplier	-	-
15.	Skill development training records	-	-
16.	JMR & Invoices	-	-
17.	Copy of grievance register/suggestion box placed at site office	-	03/08/2022
18.	Latest photographs of energy meters installed at site	-	-
19.	Validation Report	5.0	14/09/2022
20.	TEIAS web page: <a href="https://webapi.teias.gov.tr/file/037a54ff-0964-46b5-84ff-375ab6c285dc?download">https://webapi.teias.gov.tr/file/037a54ff-0964-46b5-84ff-375ab6c285dc?download</a>	-	September 2008
21.	Photographs and videos of the plant site	-	22/02/2023
22.	EIA Report	-	07/10/2019
23.	Power Purchase Agreement	-	-
24.	Regulation on Increasing Efficiency in the Use of Energy Resources and Energy	-	-
25.	Local Stakeholder Consultation		30/09/2021
26.	IPCC Guidelines for National Greenhouse Gas Inventory.		2006
27.	Agreement on connection to the distribution		27/09/2019
28.	Technical datasheet		-
29.	Diesel Generator Records		30/10/2019-19/06/2022
30.	Tool-04 "Emissions from solid waste disposal sites", Application A.	8.1	
31.	Operation management Manual/Booster manual	-	-
32.	<a href="https://data.tuik.gov.tr/Bulten/Index?p=The-Results-of-Address-Based-Population-Registration-System-2022-49685&amp;dil=2">https://data.tuik.gov.tr/Bulten/Index?p=The-Results-of-Address-Based-Population-Registration-System-2022-49685&amp;dil=2</a>	-	-
33.	Tool-3 Tool to calculate project or leakage CO <sub>2</sub> emission from fossil fuel combustion	03.0	
34.	Connection Agreement	-	-
35.	Tool to determine the mass flow of a greenhouse gas in a gaseous stream	03.0	-
36.	Waste Quantum data	-	-
37.	National or international fuel standards	-	-
38.	Truck cover picture	-	-
39.	EIA report	-	2023
40.	Gas stack emission reports for year 2021 and 2022.	-	-
41.	Pictures of the leachate collection pool, treatment system and discharge permit	-	-
42.	signed document by deputy manager of Biotrend company claiming no grievance reviewed.	-	-

43	Deed of Ascension for GAIA Climate and Mundo Verde Climate S.A., and partial release signed by Biotrend Company and Biosolutions.	-	28/02/2023 and 28/03/2023
44	calibration documents for flowmeters, temperature sensors and pressure sensors	-	-
45	Gross and net energy generation data	-	-
46	Annual development of electricity generation-consumption and losses in Turkey (1993-2022)	-	-
47	CDM tool 8 "Tool to determine the mass flow of a greenhouse gas in a gaseous stream"	03.0	Last assessed on 22/04/2024
48	Specifications of flare unit installed		-
49	CDM tool 5 "Methodological Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"	03.0	Last assessed on 22/04/2024

# APPENDIX 2: FINDINGS OVERVIEW

**Table 1. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	1.7	<b>Date :</b> 02/01/2023
<b>Description of CAR</b>				
<p>On assessment it has been observed that the geocoordinates longitude +27.853139 and latitude +39.612806'. are linked to Saudi Arabia. However, the project activity is in Turkey. PP shall address the inconsistency.</p>				
<b>Project participant response</b>				<b>Date :</b> 15/03/2023
<p>Project coordinates are correct however the order its represented is the opposite format of usual practice, It's given in usual Latitude/ Longitude format in PDD. Kindly find screenshot of project location display, taken with Google Earth Pro software.</p>				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> 17/03/2023
<p>VVB has confirmed that PP has revised the MR and found consistent with the PDD. Hence, CAR#01 is closed.</p>				
<b>CAR ID</b>	02	<b>Section no.</b>	1.1	<b>Date :</b> 02/01/2023
<b>Description of CAR</b>				

<ol style="list-style-type: none"> <li>The expected average annual emission reductions in MR are 310,306. However, in PDD the expected average annual emission reductions are 334,913. PP shall address the inconsistency.</li> <li>The project is expected to generate 2,172,146 CO<sub>2</sub>e emissions reduction throughout the crediting period. However, According to PDD the project is expected to generate 2,344,393 CO<sub>2</sub>e emissions reduction throughout the crediting period. PP shall address the inconsistency.</li> </ol>	
<b>Project participant response</b>	<b>Date : 15/03/2023</b>
<ol style="list-style-type: none"> <li>The expected annual reduction number is fixed to 334,913 tCO<sub>2</sub>e in MR report.</li> <li>Expected ER number throughout 7 years project activity is fixed to 2,344,393 tCO<sub>2</sub>e.</li> </ol>	
<b>Documentation provided by project participant</b>	
<b>DOE assessment</b>	<b>Date: 17/03/2022</b>
<ol style="list-style-type: none"> <li>VVB has confirmed that PP has revised the MR. Now, the expected average annual reduction is found consistent with the registered PDD.</li> <li>VVB has confirmed that PP has revised the MR. Now, the expected average annual reduction throughout the crediting period is found consistent with the registered PDD.</li> </ol>	
Hence, CAR#02 is closed.	

<b>CAR ID</b>	03	<b>Section no.</b>	4.1	<b>Date : 02/01/2023</b>
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>In accordance with PDD the description of the parameter SPECflare is missing in the section 4.1 of the MR. PP is requested to clarify.</li> </ol>				
<b>Project participant response</b>				<b>Date : 15/03/2023</b>
1) "SPECflare" parameter is added in section 4.1 of the MR.				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date: 17/03/2023</b>
VVB has confirmed that PP has now added SPECflare parameter in the revised version of MR and found consistent with PDD.				
Hence, CAR#03 is closed.				

<b>CAR ID</b>	04	<b>Section no.</b>	5.1, 5.4	<b>Date : 02/01/2023</b>
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>In section 5.1 "Baseline Emission" The data for BE<sub>CH<sub>4</sub></sub>, BE<sub>EC,y</sub> and Baseline Emission for the year 2019 is found inconsistent with the ER sheet tab "Baseline Emission", Cell F7, G7, H7".PP shall address the inconsistency.</li> <li>In section 5.4 "Net GHG Emission Reduction and Removals" The data provided in the table for the year 2019 is found to be inconsistent with the ER sheet tab- "FCH<sub>4</sub>, PJ,y" and tab- "baseline emission" , PP is requested to update.</li> <li>In section 5.4 "Net GHG Emission Reduction and Removals" Booster data is missing for the periods of 27/10/2019-31/12/2019 and 27/07/2022-31/12/2022. PP is requested to provide the data.</li> </ol>				
<b>Project participant response</b>				<b>Date : 15/03/2023</b>
<ol style="list-style-type: none"> <li>Table is revised.</li> <li>Table is revised.</li> <li>Booster data is added for missing timeline. However, data is mostly incomplete for the year 2019 therefore only electricity generation is accounted for baseline emissions.</li> </ol>				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date: 17/03/2023</b>

<ol style="list-style-type: none"> <li>VVB has confirmed that PP has now update the table in the revised version of MR and found consistent with the ER sheet.</li> <li>VVB has confirmed that PP has now update the table in the revised version of MR and found consistent with the ER sheet.</li> <li>VVB has confirmed that PP has submitted the booster data for the period of 27/10/2019-31/12/2019 and 27/07/2022-31/12/2022 and found consistent.</li> </ol> <p>Hence, Car#04 is closed.</p>
--

<b>CAR ID</b>	05	<b>Section no.</b>	MR	<b>Date :</b> 10/03/2023
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>According to registered VCS PD the proposed project activity installed capacity is 14.14 MW<sub>e</sub> However, the proposed project activity installed capacity is 11.312 MW<sub>e</sub> in MR version 02.</li> <li>The "Title and reference of Methodology" mentioned under section 1.8 is inconsistent with the title of applied methodology.</li> <li>PP is requested to provide justification for the difference between Ex-ante emission reductions and achieved emission reductions under section 5.4 of VCS MR.</li> </ol> <p>PP shall address the inconsistencies.</p>				
<b>Project participant response</b>				<b>Date :</b> 15/03/2023
<ol style="list-style-type: none"> <li>14.14 MW<sub>e</sub> installed capacity is generation licence capacity however due to low LFG generation, current 11.312 MW<sub>e</sub> operational capacity is sustainable.</li> <li>Methodology title is revised.</li> <li>Justifications with references are included.</li> </ol>				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> 17/03/2023
<ol style="list-style-type: none"> <li>VVB has confirmed during site visit that due to low LFG generation only 8 gas engines are working, Hence, 11.312MWe operational capacity is sustainable.</li> <li>VVB has confirmed that PP has revised the MR and PP has now update the title of methodology.</li> <li>VVB has confirmed that PP has now revised the MR and added the justification for the difference between Ex-ante and achieved emission under section 5.4.</li> </ol> <p>Hence, CAR#05 is closed.</p>				

<b>CAR ID</b>	06	<b>Section no.</b>	1.10,3.1,3.2.1	<b>Date :</b> 30/03/2023
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>Under section 1.10 "Other forms of credit and supply chain (Scope-3) emission" there is no information regarding Scope 3 supply chain. PD is requested to update the section as per the template guidelines.</li> <li>Under Section 3.1 "Implementation status of the Project Activity" there is lack of major information like information related to measuring equipment, update labels T1, T2,P1 etc. in flow diagram, Technical specifications of machines and equipment.</li> <li>Under section 3.1, Table 2 "Technical specifications of Static closed Chamber" The flow capacity range and combustion range is inconsistent with PDD. Kindly specify if any deviation is applicable for the same.</li> <li>Under section 3.2.1, Booster data for 2019 has not been provided by PP. Moreover, PP is requested to apply methodology deviation.</li> </ol> <p>PD shall address the inconsistencies.</p>				
<b>Project participant response</b>				<b>Date :</b> 04/07/2023

<ol style="list-style-type: none"> <li>1) Section is updated.</li> <li>2) PFD is updated with legends and brief explanations. However, some equipment explanations are deemed irrelevant and not incorporated into the report. Upon a request by VVB, such information can be included.</li> <li>3) Section is updated to be inline with PDD.</li> <li>4) Booster data for the year 2019 is incomplete. Data flow is consistent from 02-01-2023 and ER from methane avoidance is not accounted due to this reason. This situation explained in deviation section.</li> </ol>
<b>Documentation provided by project participant</b>
<b>DOE assessment</b>
<b>Date: 08/07/2023</b>
<ol style="list-style-type: none"> <li>1. The VVB has assessed the update in the said section, and it is found to be correct.</li> <li>2. The relevant information has been added to the document.</li> <li>3. The section has been assessed by the VVB to be updated correctly.</li> <li>4. The VVB has confirmed that sufficient explanation has been provided in the deviation section.</li> </ol> <p>All the inconsistencies have been rectified and hence, the finding CAR#06 is closed.</p>

<b>CAR ID</b>	07	<b>Section no.</b>	MR	<b>Date</b>	30/03/2023	
<b>Description of CAR</b>						
<ol style="list-style-type: none"> <li>1. PP shall add the following details in line with VCS MR template guidelines:                             <ul style="list-style-type: none"> <li>• A summary description of the implementation status of the technologies/ measures (e.g., plant, equipment, process, or management or conservation measure) included in the project.</li> <li>• The relevant implementation dates (e.g., dates of construction, commissioning, and continued operation periods).</li> </ul> </li> <li>2. The installed capacity of the PA is 14.14MWe and the expected average annual reduction are 334,913. However, during the current monitoring period only 8 out of 10 gas engines were working and the average annual reduction remained unchanged. PP is requested to review.</li> <li>3. Under section 4.1. "Data and Parameters", The value applied for parameter MCF is 0.8. According to tool 4 "Emissions from waste disposal sites" 0.8 for unmanaged solid waste disposal sites ñ deep and/or with high water table. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of greater than or equal to 5 meters and/or high water table at near ground level. Latter situation corresponds to filling inland water, such as pond, river or wetland, by waste. Please provide justification for the same.</li> <li>4. Under section 4.1. "Data and Parameters"                             <ul style="list-style-type: none"> <li>• The parameter 'C' is not listed as ex-ante in the PDD.</li> <li>• Please provide the exact date for calibration for the equipment used for monitoring.</li> <li>• PP is requested to remove the blank table and consider mentioning 'multiple values mentioned in ER sheet' under 'O<sub>pi,h</sub>' parameter.</li> </ul> </li> </ol> <p>PP shall address the inconsistencies.</p>						
<b>Project participant response</b>					<b>Date</b>	04/07/2023
<ol style="list-style-type: none"> <li>.1) Summary page is revised.</li> <li>2) The value is taken from ex-ante estimations, provided in the PDD. Since it's an estimation and year 2023 is not ended (2 more gas engines can be introduced if more waste is diverted to landfill by municipality) average annual reduction can be reached. Therefore, we deem it's early to update estimated ER numbers.</li> <li>3) This value is taken from validated PDD. Although the current situation reflects MCF "1" value, the project activity covers rehabilitated old lots as well. Therefore this was as assumption made during validation.</li> <li>4)                             <ul style="list-style-type: none"> <li>• The parameter " FCI<sub>i,j,y</sub>" is given in page 82 of validation report. However if comment is made for another parameter, an elaboration from VVB is requested.</li> <li>• Exact dates of calibration is included in the MR.</li> <li>• Operation hours data is included in the file.</li> </ul> </li> </ol>						

Documentation provided by project participant	
<b>DOE assessment</b>	<b>Date:</b> 08/07/2023
1) The VVB has confirmed the revision made in the document. 2) The VVB has assessed the response and the reasoning provided by the PP has been found to be sufficient and appropriate. 3) The response from the PP has been assessed and found to be correct and justified. 4) The VVB team has confirmed that the required changes have been made in the said section and no further changes are required. Hence., the finding CAR#07 is closed.	

CAR ID	08	Section no.	ER sheet	Date :	30/03/2023
<b>Description of CAR</b>					
In the ER sheet, 1. Tab “BE EC y”, the values mentioned for parameter EC BL,k,y and BE EC,y are punched in values. PP is requested to link with cells where EC is calculated transparently.  2. Tab 2020& 2021 Booster & Elec. Gen.” and “2022 Booster & Electricity Gen.”, the values mentioned in column AQ are average value of same column. PP is requested to review and present continuous measurement of flow rate. PP shall address the inconsistencies.					

<b>Project participant response</b>	<b>Date :</b> 04/07/2023
1) Electricity production numbers are included in the ER sheet transparently. Settlement record already shared before values are displayed transparently. 2) We believe that values are added during SCADA / testing period and linked to data unavailability. Therefore, those readings are not accounted for Er calculations.	

Documentation provided by project participant	
<b>DOE assessment</b>	<b>Date:</b> 08/07/2023
1) The VVB has checked the Settlement record and electricity production numbers in the ER sheet and found them to be appropriate. 2) The VVB has assessed the response and found it to be appropriate.  Hence, the finding CAR#08 is closed.	

CAR ID	09	Section no.	5.2 of MR	Date :	24/02/2024
<b>Description of CAR</b>					
The values reported for PE <sub>flare</sub> under page 75 of MR are not in line with calculated ones in the ER spreadsheet, TAG Project Emissions. PP is requested to report consistent values for the PE <sub>flare</sub>					
<b>Project participant response</b>					<b>Date :</b> 03/04/2024
PE <sub>flare</sub> calculation has been revised in both ER and MR documents.					
<b>Documentation provided by project participant</b>					
<b>DOE assessment</b>					<b>Date:</b> 12/04/2024

<p>PP has considered 50% as default methane content in cell C2, sheet titled 'methane content' for calculation of PE flare. It is not clear how 50% methane was considered conservative when weighted average methane content is 54.20%, and thus would lead to higher project emissions.</p> <p>Thus, the finding is open.</p>	
<b>Project participant response</b>	<b>Date : 17/04/2023</b>
<p><i>Average methane content is used for the calculations. Gross electricity generation is also revised as the calculation from the AMS-III.G equation 6 and parameter EGy (Electricity generation in year y).</i></p>	
<b>Documentation provided by project participant</b>	
<p> </p>	
<b>DOE assessment</b>	<b>Date: 18/04/2024</b>
<p>PP has now considered the average methane content which is the most conservative value available for project emission calculations.</p> <p>Thus, the finding is closed.</p>	

**Table 2. CL from this Verification**

CL ID	01	Section no.	1.11,5.2	Date: 30/03/2023
<b>Description of CL</b>				
<ol style="list-style-type: none"> <li>1. Bio solutions has been removed as PP while GAIA climate and Mundo VERDE have been added as the PP. PP is requested to clarify and provide supportive document for the same.</li> <li>2. Under section 1.11, Table 1 "Sustainable Development Contributions" PP mentioned that "With this project it is expected to achieve an accumulated GHG emission reduction of 2,344,393 tCO<sub>2</sub>e during 1st monitoring period by end of the reporting period." PP is requested to clarify that the estimation is based on planned capacity or actual capacity.</li> <li>3. The project has not been implemented as per the implementation plan mentioned in the registered PDD. PP is requested to clarify and apply project deviation.</li> <li>4. PP is requested to explain why there is no value in the year 2019 for the parameter 'V<sub>i,t,wb</sub>'.</li> <li>5. PP is requested to explain why the calibration is not applicable for the parameter 'P'.</li> <li>6. Under section 5.2 "Project emissions" page no. 56, PP mentioned that "It is worth mentioning that records show a significant total diesel consumption for 2019 (commission year). However, only the diesel consumption records from after commissioning date (25th of October 2019) are taken into account" PP shall provide explanation.</li> </ol> <p>PP shall address the inconsistencies.</p>				
<b>Project participant response</b>				<b>Date: 04/07/2023</b>

<ol style="list-style-type: none"> <li>1) Deed of accession document is added as supportive.</li> <li>2) Estimation is based on licence capacity which is 14.14 MW<sub>e</sub>. Since remaining 2 gas engines are to be introduced in year 2023 and year is not ended so we deemed this value can be stayed for the first crediting period and revised for the next crediting report.</li> <li>3) Section 3.1 is updated.</li> <li>4) Booster data for year 2019 is incomplete therefore it is not accounted for baseline emission calculations.</li> <li>5) Pressure and Temperature sensors are part of flowmeter and not calibrated as stand-alone transmitters. Booster unit manufacturer Conveco stated calibration certificates are not applicable for that units and there is no serial number assigned to sensors (it can be seen from pictures taken from site-visit)</li> <li>6) This section was valid for the IZMIR LFG and should be removed for this project. That part has been removed from the report.</li> </ol>
<b>Documentation provided by project participant</b>
<b>DOE assessment</b>
<b>Date:</b> 08/07/2023
The VVB team has assessed the PP responses and clarifications. The team confirmed the said changes that have been made by the PP. The points/clarifications/additions have been found to be correct. And hence, the finding CL#01 is closed.

<b>CL ID</b>	02	<b>Section no.</b>	MR	<b>Date :</b> 24/07/2023
<b>Description of CL</b>				
Under Section 3.2.2 "Project Description Deviation", PP has applied project deviation related to not implement the project as per approved PDD.				
<ol style="list-style-type: none"> <li>A) PP shall clarify whether the project deviation is temporary or permanent?</li> <li>B) PP shall clarify whether they purchased the remaining 2 gas engines to make inline with the approved PDD. If yes, then provide the supportive document and if not, then PP shall demonstrate the additionality with the exist scenario.</li> </ol>				
<b>Project participant response</b>				<b>Date :</b> 14/08/2023
<ol style="list-style-type: none"> <li>a) Out of 10 gas engines, 8 gas engines were commissioned in first monitoring period and one more is expected to be commissioned in year 2024. Commissioned gas engine number is directly correlated with the LFG generation and waste management. Since municipality is the responsible agency for waste management of the province, we can only forecast the situation. Therefore we think this deviation is temporarily.</li> <li>b) Amount of gas engines and electricity generation's impact on additionality is evaluated in section 3.2.2. Kindly find supportive IRR documents.</li> </ol>				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> 08/07/2023
<ol style="list-style-type: none"> <li>A) The VVB has assessed the response and found the clarification to be correct.</li> <li>B) The assessment team has checked the supportive documents and confirmed that the evaluation is provided accordingly.</li> </ol> <p>The PP's response has been found to be appropriate and inline with the clarification sought after. Hence, the finding CL#02 is closed.</p>				

<b>CL ID</b>	03	<b>Section no.</b>	2.1 of MR	<b>Date :</b> 23/02/2023
<b>Description of CL</b>				
Section 2.1 of the monitoring report (MR) does not indicate what are the preventive measures taken to minimize the odor, dust, gas and similar negative effects that may arise from the facility and if those measures have been taken during the monitoring period. PP must explain what measures were undertaken during this monitoring period to ensure that no net harm has occurred, under section 2.1 of the MR.				
<b>Project participant response</b>				<b>Date :</b> 03/04/2023

Section is revised.	
<b>Documentation provided by project participant</b>	
<i>Revised MR</i>	
<b>DOE assessment</b>	<b>Date:</b> 12/04/2024
<p>Section 2.1. no net harm of the MR consists of 4 measures:</p> <ol style="list-style-type: none"> <li>1. Stones and gravels used on project site to cover gas collection system. PP shall provide supportive for the same.</li> <li>2. During project feasibility, it has been found that calculated maximum noise level at the nearest settlement would be 40.17 dBA under conservative estimations and wouldn't exceed 65 dBA threshold level. Page 318 of the report mentions that maximum noise is 40.11 near the closest statement. PP shall address the inconsistency.</li> <li>3. Gas engines stacks are subjected to biannual testing. PP shall provide supportive.</li> <li>4. Collected leachate is temporarily transferred to leachate collection pool and sent to proper leachate treatment facilities regularly. PP shall provide the supportive.</li> </ol> <p>Thus, the finding is open.</p>	
<b>Project participant response</b>	<b>Date :</b> 17/04/2024
<p><i>Section 2.1 is revised to include more information.</i></p> <ol style="list-style-type: none"> <li>1. <i>Picture(s) from a truck that carries stone and gravel is added.</i></li> <li>2. <i>Noise level is revised to 40.11 dBA as document presented.</i></li> <li>3. <i>Gas stack emission reports for year 2021 (during test time 6 gas engines were operational) and year 2022 (during test time 8 gas engines were operational) are given as supportive documents.</i></li> <li>4. <i>Pictures from site and permit for treatment is given as supportive documents.</i></li> </ol>	
<b>Documentation provided by project participant</b>	
<ol style="list-style-type: none"> <li>1) <i>Truck cover picture</i></li> <li>2) <i>EIA report (sent on previous round)</i></li> <li>3) <i>Gas stack emission reports for year 2021 &amp; 2022</i></li> <li>4) <i>Pictures belong to leachate collection pool, treatment system and discharge permit.</i></li> </ol>	
<b>DOE assessment</b>	<b>Date:</b> 18/04/2024
<ol style="list-style-type: none"> <li>2. PP has revised the information in line with the supporting report.</li> <li>1., 3., and 4. PP has submitted sufficient evidence to support the statements mentioned under section 2.1 no net harm of the MR.</li> </ol> <p>Thus, the findings is closed.</p>	

<b>CL ID</b>	04	<b>Section no.</b>	2.2 of MR	<b>Date :</b> 24/02/2024
<b>Description of CL</b>				

Section 2.2 of the MR does not describe if any grievance/feedback has been received from the local stakeholders during the monitoring period. PP must describe if any grievance/feedback has been received from the local stakeholders during the monitoring period, under section 2.2 of the MR.	
<b>Project participant response</b>	<b>Date : 03/04/2024</b>
Project owner informed that no grievance/ feedback has been received from the local shareholders during the first monitoring period. It might not be relevant; however, an online communication platform allows any complaints to reach directly to respective Balikesir municipality and the project owner. As of 02-04-2024, all complaints related with rubbish are based on insufficient container number, size, and collection frequency . Section 2.2 is revised include this information.	
<b>Documentation provided by project participant</b>	
<b>DOE assessment</b>	<b>Date: 12/04/2024</b>
The PP has described that no grievance/feedback from the local stakeholders during the current monitoring period has been received. However, no evidence of the same has been submitted.  Thus, the finding is open.	
<b>Project participant response</b>	<b>Date : 17/04/2023</b>
<i>There has been no grievance/feedback from the local stakeholders received during the current monitoring period. A signed document by deputy manager of Biotrend company is provided in appendix.</i>	
<b>Documentation provided by project participant</b>	
<b>DOE assessment</b>	<b>Date: 18/04/2024</b>
PP has submitted sufficient evidence to support the statements mentioned under section 2.2 of the MR.  The finding is closed.	

<b>CL ID</b>	05	<b>Section no.</b>	3.2.1 and 3.2.2 of MR	<b>Date : 24/02/2024</b>
<b>Description of CL</b>				
The following discrepancies have been found in section 3.2.1 and 3.2.2 of the MR				
(a) It remains unclear which is the deviation applied during the monitoring period which is related to the re-calculation of the project IRR.				
(b) Further it is not clear why the deviation related to the PE <sub>flare</sub> have been included under 'project description deviations' since they are related to a methodology deviation.				
(c) The PPs have changed during the monitoring period, however, these changes have not been included under Section 3.2.2 of the MR.				

PP must clearly explain which is the project description deviation related to the re-calculation of the IRR and address points a to c above.	
<b>Project participant response</b>	<b>Date :</b> 03/04/2024
<ul style="list-style-type: none"> <li>a) <i>IRR deviation and respective analysis removed from the section 3.2.2.</i></li> <li>b) The flare working hours situation has been explained in CAR5. There is no dedicated flowmeter on-site, but flare is not mechanically operated as well. This deviation was deemed a middle ground during verification time. Explanation is depending on the validity of the explanation for CAR5, therefore we request further feedback/ suggestions on the matter.</li> <li>c) Change of PPs has been explained in section 3.2.2.</li> </ul>	
<b>Documentation provided by project participant</b>	
<i>Revised MR</i>	
<b>DOE assessment</b>	<b>Date:</b> 12/04/2024
<ul style="list-style-type: none"> <li>a) IRR analysis has been removed. There was no deviation identified which would require IRR analysis. Thus the revision was accepted. Closed.</li> <li>b) CAR#05 does not mention deviation. CAR#06 mentions deviation under point 4. Moreover, VCS standard, para 3.20.1. states, Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan).</li> </ul> <p>PP shall explain why flare flowmeter is not methodology deviation and project description deviation.</p> <ul style="list-style-type: none"> <li>c) PP shall provide supportive for addition of new PP and removal of old PP.</li> </ul> <p>Thus, the finding is open.</p>	
<b>Project participant response</b>	<b>Date :</b> 17/04/2023
<ul style="list-style-type: none"> <li>a) <i>IRR deviation and respective analysis removed from the section 3.2.2.</i></li> <li>b) <i>Deviation related to project emissions from flaring is moved to methodological deviation section.</i></li> <li>c) <i>Supportive documents are given.</i></li> </ul>	
<b>Documentation provided by project participant</b>	
<i>c) Deed of Ascension for GAIA Climate and Mundo Verde Climate S.A., and partial release signed by Biotrend Company and Biosolutions.</i>	
<b>DOE assessment</b>	<b>Date:</b> 18/04/2024
<ul style="list-style-type: none"> <li>b) Deviation for project emissions has been considered as methodological deviation inline with para VCS standard, para 3.20.1.</li> <li>c) PP has submitted sufficient evidence to support the project proponents mentioned in the MR</li> </ul> <p>Thus, the finding is closed.</p>	

<b>CL ID</b>	06	<b>Section no.</b>	4.2 of MR	<b>Date :</b> 24/02/2024
<b>Description of CL</b>				

Section 4.2 of the MR does not provide any information on the calibration frequency required for the devices used to measure TEG,y, T and P. PP must include all the calibration information of the instruments used under Section 4.2 of the MR.	
<b>Project participant response</b>	<b>Date :</b> 03/04/2024
Calibration frequency for 3 parameters is added.	
<b>Documentation provided by project participant</b>	
Revised MR	
<b>DOE assessment</b>	<b>Date:</b> 12/04/2024
PP has added that the measuring equipment will be calibrated in 5-10 years as per the manufacturer's specifications for all 3 parameters. However, no document has been shared to substantiate the same.	
Thus, the finding is open.	
<b>Project participant response</b>	<b>Date :</b> 17/04/2024
Available calibration documents for flowmeters and temperature sensors are included.	
<b>Documentation provided by project participant</b>	
Revised MR	
<b>DOE assessment</b>	<b>Date:</b> 22/04/2024
The certificates provided confirmed that calibration has been done as per the manufacturer's specification. Finding is closed.	

<b>CL ID</b>	07	<b>Section no.</b>	4.2 of MR	<b>Date :</b> 24/02/2024
<b>Description of CL</b>				
It is not clear how the flow sent to the flare is measured provided that under page 57 of the MR it is stated that the monitoring equipment for vRG,m is the "flare timer". Further, the monitoring of that parameter has not been reported in the submitted ER spreadsheet. PP must explain how the flow sent to the flare is measured during the monitoring period in line with the requirements in the registered PD.				
<b>Project participant response</b>				<b>Date :</b> 03/04/2024
As observed during the site visit, there is no dedicated flowmeter that measures the biogas flow sent to the flare. And project documents stated total flare flow is zero. The rationale behind these statements was; Although the flare was mechanically connected & operational, it was not connected to automation system electronically and can only be operated by manually opening the mechanical valve. Flare unit is part of booster-unit and it's designed to protect the system during emergencies. Due to presence of diesel generator on-site (provides electricity when grid is off), landfill generating lower than expected LPG (lower than expected load factor) and not experiencing emergency situation flare unit has not been activated manually on-site.				
<b>Documentation provided by project participant</b>				
Revised MR				

<b>DOE assessment</b>	<b>Date:</b> 12/04/2024
<p>VCS standard, para 3.20.1. states, Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan). PP shall explain why flare flowmeter is not methodology deviation.</p> <p>Thus, the finding is open.</p>	
<b>Project participant response</b>	<b>Date :</b> 17/04/2024
<p><i>A methodological deviation is proposed to overcome the data gap occurred during the first monitoring period. Flare timer data is included in the ER sheet.</i></p>	
<b>Documentation provided by project participant</b>	
<p><i>Gross and net energy generation data , provided by the P.O. where gross generation value is copied. In the baseline emission from electricity generation values from settlement records are used where net emission reduction claims are more conservative.</i></p>	
<b>DOE assessment</b>	<b>Date:</b> 18/04/2024
<p>PP has sought deviation for not installing flow meter and applied conservative values for calculating project emissions from flaring. Detailed assessment of deviation is provided in section 3.2 of VCR.</p> <p>Thus, the finding is closed.</p>	

<b>CL ID</b>	08	<b>Section no.</b>	5.1 of MR	<b>Date :</b> 24/02/2024
<b>Description of CL</b>				
<p>As per the information in the registered PD, <math>F_{CH4PJ}</math> is calculated as per Option F of the TOOL08, v.03.0. However:</p> <ol style="list-style-type: none"> <li>It remains unclear why the density of methane has been fixed given that as per Option F it has to be calculated.</li> <li>It is not clear why <math>V_{t,wb}</math>, <math>v_{i,RG,m}</math>, <math>v_{RG,m}</math>, <math>MRG,m</math>, <math>v_{O2,EG,m}</math>, <math>f_{cCH4,EG,m}</math> and <math>F_{CH4,EG,t}</math> are described as measured on "dry basis" whereas Option F requires the "wet basis" values.</li> <li>Why it has been considered that <math>F_{CH4,PJ,y}</math> is equal to <math>F_{CH4,EL,y}</math> provided that a flare is installed under the project activity.</li> </ol> <p>PP shall address points a to c above and calculate the <math>F_{CH4PJ}</math> as per the applied TOOL08.</p>				
<b>Project participant response</b>				<b>Date :</b> 03/04/2024
<ol style="list-style-type: none"> <li>Similar situation has been observed during the verification of IZMIR LFG project (VCS2605). During first PRR, ER calculated via option F of TOOL08 v.03.0 is switched to fixed biogas density value upon Verra's request. Both projects has the same structure (option F calculation is mentioned and density value is fixed).</li> <li>Figure 1 of process flow diagram and picture "Control panel visualization on from flare system" (section 3.1) indicates there are heat exchanger units that cools the landfill gas and removes the water vapor for operational reasons (gas engines efficiency, safety and longevity). Flowmeter model Endress Hauser brand Deltabar S PMD75 model measure flow on different pressure differences and calculates mass with pressure and temperature readings . paragraph 23 (a) of TOOL08 v03.0 states that if biogas temperature is proven to be less than 60 °C, biogas can be considered dry. Our opinion is with the current setup, option</li> </ol>				

A is the best option to calculate mass flow of methane. ER sheets contain measured biogas temperatures that leaves the booster unit therefore biogas is pressurized and heated consequently.

c) Installed flare unit is not used during first monitoring period therefore no baseline emission reduction can be claimed from flaring. Thus  $FCH_4,PJ,y = FCH_4,EL,y$ .

**Documentation provided by project participant**

*Revised MR*

<b>DOE assessment</b>	<b>Date:</b> 12/04/2024
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a) And b) PP shall explain whether option A or F is applied with justification. PDD mentioned under table 10, that option A will be followed.

c)PP shall mention detail justification of any component of  $FCH_4,PJ,y$  under section 5.2 of the

Thus, the finding is open.

<b>Project participant response</b>	<b>Date :</b> 17/04/2024
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a) *Option A is followed for emission reduction calculation and a project deviation is addressing the issue.*

b) *Option A is the appropriate selection for gaseous stream (dry).*

c) *An explanation is included in section 5.1 why other items are excluded from the calculation.*

**Documentation provided by project participant**

*Revised MR*

<b>DOE assessment</b>	<b>Date:</b> DD/MM/YYYY
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a) And b). PP has applied option A and sought deviation for not following condition (b), para 23 of the Tool 8.

However, there is statement mentioned in the MR, "Proposed deviation increases the accuracy of quantification since temperature increase of gaseous stream due to pressurization is unrelated with moisture content of gaseous stream".

PP shall explain how is temperature impacting the accuracy with supportive and explain how the cooling process was successful in drying the gas if the temperature is above 60°C. Also, it shall be noted that the gas flow rate is increases with temperature, which my not lead to a conservative baseline emission calculation.

Moreover, condition (a), para 23 state, Measure the moisture content of the gaseous stream (C) and demonstrate that this is less or equal to 0.05 kg H<sub>2</sub>O/m<sup>3</sup> dry gas; or H<sub>2</sub>O,t,db,n

PP shall demonstrate how this condition has been met.

Thus, the finding is open

b) PP has added justification for considering baseline emissions from flaring 0 under section 5.1 of the MR. Closed.

<b>Project participant response</b>		<b>Date :</b> 18/04/2024
<p><i>Raw landfill gas temperature data is included in the ER sheet. Although temperature data of gaseous stream at the outlet of heat exchanger is not available, it should be lower than inlet temperature during cooling operation. The average of raw landfill gas temperature measurements did not exceed 60°C at any measurement.</i></p> <p><i>Deviation description is expanded to explain how mass of methane could be conserved during cooling and pressurization since inlet and outlet mass should be equal (mass conservation. Flow and density have inverse relation therefore any value increase in one parameter should decrease the value of other. It has been found that 1491 hourly measurements out of 26308 measurements are affected by this issue thus deviation is offered only for a fraction of measurements.</i></p> <p><i>Paragraph 23 accepts demonstration of either (a) or (b). Moisture content measurements was not possible.</i></p>		
<b>Documentation provided by project participant</b>		
Revised MR		
<b>DOE assessment</b>		<b>Date:</b> DD/MM/YYYY
<p>A FAR is raised to confirm that temperature is being monitored at the outlet of heat exchanger to demonstrate compliance with the Tool 8.</p> <p>Moreover PP shall apply conservative approach for 1491 entries as an alternative measure for not monitoring temperature at the outlet of heat exchanger.</p> <p>The finding is open.</p>		
<b>Project participant response</b>		<b>Date :</b> 21/04/2024
<p><i>Option C is adopted as conservative approach for hourly measurements where temperature is greater than 60°C.</i></p>		
<b>Documentation provided by project participant</b>		
<b>DOE assessment</b>		<b>Date:</b> DD/MM/YYYY
<p>PP has sought deviation and applied alternative approach for 1491 entries where the temperature was higher than 70°C and followed option C from the tool 8 for the current MP only for these 1491 entries. For the rest of the booster data where the condition could be demonstrated option A has been applied.</p> <p>The alternative approach gives values lower than the values obtained by applying option A calculation method, Thus, it was acceptable as an alternative method.</p> <p>A FAR is raised to confirm that temperature is being monitored at the outlet of heat exchanger to demonstrate compliance with the Tool 8.</p> <p>Thus, the finding is closed.</p>		

<b>CI ID</b>	09	<b>Section no.</b>	4.1 of MR	<b>Date :</b> 24/02/2024
<b>Description of CL</b>				

<p>Page 39 of the MR states for the TDL that 'The annual average value based on the most recent data available within TÜRKİYE is used from the data provided by TEİAŞ. In accordance with the Methodological Tool, for the data from the relevant year, 2021, is absent'.</p> <p>It remains unclear whether most recent data from year 2022 is available.</p>	
<b>Project participant response</b>	<b>Date : 03/04/2024</b>
<p>Current available data is up to year 2022 (During document submission, latest data belonged to year 2021). However, during the verification of IZMIR LFG project (VCS2605) parameter TDL value 0.11 is considered as fixed value. Therefore, applied value is considered as fixed ex-ante value.</p>	
<b>Documentation provided by project participant</b>	
Revised MR	
<b>DOE assessment</b>	<b>Date: 12/04/2024</b>
<p>PP shall provide reference to other project approvals and provide comparison with the latest available data and apply a conservative value.</p> <p>Thus, the finding is open.</p>	
<b>Project participant response</b>	<b>Date : 17/04/2024</b>
<p>Latest value (2022) is applied to parameters TDL<sub>j,y</sub> and TDL<sub>k,y</sub> for whole monitoring period. The applied value is lesser than ex-ante value therefore this approach is considered more conservative.</p>	
<b>Documentation provided by project participant</b>	
Revised MR	
<b>DOE assessment</b>	<b>Date: 18/04/2024</b>
<p>The value could not be verified from the footnote 11. open</p>	
<b>Project participant response</b>	<b>Date : 18/04/2024</b>
<p>Value is taken from cell P44 of document, which is hidden as default when downloaded. Downloaded files is added as supportive and cell is highlighted for convenience.</p>	
<b>Documentation provided by project participant</b>	
<b>DOE assessment</b>	<b>Date: 22/04/2024</b>
<p>The value has been confirmed. The finding stands closed.</p>	

**Table 3. FAR from this verification**

<b>FAR ID</b>	01	<b>Section No.</b>	-	<b>Date: 22/04/2024</b>
<b>Description of FAR</b>				
<p>The VVB involved in the next verification shall confirm that temperature is being monitored at the outlet of heat exchanger to demonstrate compliance with the Tool 8, option A conditions.</p>				

<b>Project participant response</b>	<b>Date: DD/MM/YYYY</b>
NA	
<b>Documentation provided by project participant</b>	
NA	
<b>DOE assessment</b>	<b>Date: DD/MM/YYYY</b>
NA	

## APPENDIX 3: ABBREVIATIONS

Abbreviations	Full texts
BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CL	Clarification Request
CMS	Central Monitoring System
CMP	Conference of Parties Serving as Meeting of Parties
CO <sub>2</sub>	Carbon dioxide
EB	Executive Board
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
JMR	Joint Meter Reading
Kw	Kilowatt
kWh	Kilowatt hour
MFR	Multi-Function Relay
MR	Monitoring Report
MWh	Megawatt-hour
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
QA/QC	Quality Assurance and Quality Control
TEIAS	Turkish Electricity Transmission Corporation
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

# APPENDIX 4: COMPETENCY STATEMENTS

Competence Statement			
<b>Name</b>	Shreya Garg		
<b>Country</b>	India		
<b>Education</b>	M.Sc. (Climate Science & Policy), TERI University		
<b>Experience</b>	9 Years +		
<b>Field</b>	Climate Change		
Approved Roles			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., AMS.III.BL, ACM0002, ACM0012		
<b>Local expert</b>	YES (India)		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
<b>Reviewed by</b>	Shifali Guleria	<b>Date</b>	21/12/2022
<b>Approved by</b>	Deepika Mahala	<b>Date</b>	21/12/2022

Competence Statement	
<b>Name</b>	Kubra Agriman
<b>Education</b>	BS Environmental Engineering
<b>Experience</b>	2+ years
<b>Field</b>	Environmental Engineering
Approved Roles	
<b>Team Leader</b>	NO
<b>Validator</b>	Yes
<b>Verifier</b>	Yes
<b>Local expert</b>	Yes (Turkey)
<b>Financial Expert</b>	NO
<b>Technical Reviewer</b>	NO
<b>TA Expert (X.X)</b>	NO

<b>Reviewed by</b>	Shifali Guleria, Quality Manager	<b>Date</b>	27/12/2022
<b>Approved by</b>	Deepika Mahala, Technical Manager	<b>Date</b>	27/12/2022

<b>Competence Statement</b>			
<b>Name</b>	Ashok Gautam		
<b>Country</b>	India		
<b>Education</b>	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
<b>Experience</b>	16 Years +		
<b>Field</b>	Energy, Climate Change & Environment		
<b>Approved Roles</b>			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AMS III.AR, AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0017, ACM0009, AM0034, AMS.I.B, ACM0016, AMS-III.BL, AMS-II.L, AMS-I.I., AMS-III.A.O., ACM0010		
<b>Local expert</b>	YES (India)		
<b>Financial Expert</b>	YES		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
<b>Reviewed by</b>	Shifali Guleria	<b>Date</b>	14/12/2022
<b>Approved by</b>	Deepika Mahala	<b>Date</b>	14/12/2022

<b>Competence Statement</b>			
<b>Name</b>	Deepika Mahala		
<b>Country</b>	India		
<b>Education</b>	M. Sc. (Environment Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
<b>Experience</b>	8 Years +		
<b>Field</b>	Climate Change		
<b>Approved Roles</b>			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G, AMS-II.C		
<b>Local expert</b>	YES (India, Bangladesh)		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.2, TA 3.1, 13.1, 13.2, 1.1)		
<b>Reviewed by</b>	Shifali Guleria (QM)	<b>Date</b>	23/08/2023
<b>Approved by</b>	Kaviraj Singh (MD)	<b>Date</b>	23/08/2023

<b>Competence Statement</b>	
<b>Name</b>	Ashish Yadav
<b>Education</b>	M.Sc Environmental Sciences B.Sc Biotechnology
<b>Experience</b>	1+ years
<b>Field</b>	Wastewater treatment
<b>Approved Roles</b>	
<b>Team Leader</b>	YES
<b>Validator</b>	YES
<b>Verifier</b>	YES
<b>Methodology Expert</b>	NO
<b>Local expert</b>	NO
<b>Financial Expert</b>	NO
<b>Technical Reviewer</b>	NO

<b>TA Expert (X.X)</b>	Yes (TA 1.2, 3.1)		
<b>Reviewed by</b>	Shifali Guleria (Quality Manager)	<b>Date</b>	17/07/2023
<b>Approved by</b>	Deepika Mahala (Technical Manager)	<b>Date</b>	17/07/2023

<b>Competence Statement</b>			
<b>Name</b>	Shifali Guleria		
<b>Education</b>	M.Sc. (Environmental Studies and Resource Management), TERI University		
<b>Experience</b>	3+ year		
<b>Field</b>	Climate Change		
<b>Approved Roles</b>			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	YES (AMS-I.A., AMS-II.G., AMS-II.E., AMS-III.A.V., AMS-I.D, ACM0002)		
<b>Local expert</b>	YES		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (1.2, 3.1)		
<b>Reviewed by</b>	Deepika Mahala	<b>Date</b>	16/02/2022
<b>Approved by</b>	Ashok Gautam	<b>Date</b>	18/02/2022

<b>Competence Statement</b>	
<b>Name</b>	Abhimanyu Singh Wazir
<b>Education</b>	MSc Environmental and Energy Engineering
<b>Experience</b>	9 months
<b>Field</b>	Climate Change & Energy Engineering
<b>Approved Roles</b>	
<b>Team Leader</b>	NO
<b>Validator</b>	YES (VM only)
<b>Verifier</b>	YES (VM only)
<b>Local expert</b>	NO
<b>Financial Expert</b>	NO
<b>Technical Reviewer</b>	NO

<b>TA Expert (X.X)</b>	NO		
<b>Reviewed by</b>	Shifali Guleria (Quality Manager)	<b>Date</b>	29/02/2024
<b>Approved by</b>	Deepika Mahala (Technical Manager)	<b>Date</b>	29/02/2024