

TEMPLATE

1 | MONITORING REPORT

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VERSION v. 1.1

RELATED SUPPORT - TEMPLATE GUIDE Monitoring Report v. 1.1

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS12670
Title of the project (s) covered by monitoring report	Macaúbas Landfill Gas Project
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	2.1
Version number of the monitoring report	2.0
Completion date of the monitoring report	04/11/2025
Date of project design certification	04/07/2025
Date of Last Annual Report	Not applicable.
Monitoring period number	1 st monitoring period under GS4GG
Duration of this monitoring period	01/01/2021 – 30/07/2025 (both days included)
Project Representative	Vital Engenharia S.A. Mr. Neiber Rodrigues da Silva
Host Country	Brazil
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0001 - "Flaring or use of landfill gas" (version 19.0)
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
7 - Affordable and Clean Energy	Total electricity produced: Renewable	303,434	MWh

8 - Decent work and Economic Growth	Total number of jobs	12 ¹	Jobs
13 - Climate Action	Amount of GHGs emissions avoided or sequestered	1,670,869	tCO ₂ e

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs
01/01/2021	31/12/2021	303,641 tCO ₂ e
01/01/2022	31/12/2022	384,582 tCO ₂ e
01/01/2023	31/12/2023	410,347 tCO ₂ e
01/01/2024	31/12/2024	383,366 tCO ₂ e
01/01/2025	30/07/2025	188,962 tCO ₂ e

¹ Average of employees directly involved in the operation of the GS project activity during the considered monitoring period.

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The Gold Standard (GS) project activity “Macaúbas Landfill Gas Project” encompasses collection of landfill gas (LFG) generated at the CTR Macaúbas landfill and its destruction through flaring and/or utilization of collected LFG as gaseous fuel for electricity generation.

The CTR Macaúbas landfill is located in the municipality of Sabará, in the State of Minas Gerais, Brazil. The landfill receives Municipal Solid Waste (MSW) from several cities, with an average of about 125,000 metric ton of MSW per month.

The CTR Macaúbas landfill started its MSW permanent disposal activities in the year 2005 and it has received all necessary environmental licenses/permits for its operation.

LFG is generated at the CTR Macaúbas landfill as a result of anaerobic decomposition of MSW historically disposed at the landfill. The GS project activity encompasses the following operational components/infrastructure:

- (i) Capturing of LFG through a set of vertical LFG collecting wells that are interconnected through an LFG collection pipeline network.
- (ii) Destruction/combustion of all collected LFG (which is collected by the LFG collecting wells and transported through the LFG collection pipeline network) primarily through its utilization as gaseous fuel for electricity generation in a set of 7 engine-generator sets² (with individual nameplate installed capacity of 1.426 MW totalizing 9.98 MW of nameplate installed capacity for the project’s electricity generation infrastructure), with excess of collected LFG

² In accordance with the occurred implementation schedule for the project’s electricity generation infrastructure, the operational start date of its engine-generator sets is summarized as follows:

- Engine-generator sets 1 and 2: 30/06/2017
- Engine-generator sets 3 and 4: 12/07/2017
- Engine-generator set 5: 27/07/2018
- Engine-generator sets 6 and 7: 19/01/2022.

being destroyed/combusted in the installed high temperature enclosed flare under efficient and controlled conditions.

The amount and quality of collected LFG which is sent to the engine-generator sets and to the high temperature enclosed flare are continuously measured, recorded and reported. During the monitoring period, monitoring activities encompassed continuous measurements of LFG flow sent to the engine-generator sets and to the flare, CH₄ content of collected LFG, LFG temperature, LFG pressure, temperature of the exhaust gas of the flare, operational status/conditions of each engine-generator sets (monitored in an individual basis) and operational status/conditions of the flare.

The baseline scenario for the GS project activity represents the release of LFG directly to the atmosphere since there are no laws/regulations, nor regulatory or market incentives to enforce collection and destruction/utilization of LFG rich methane from landfill sites. Moreover, in the absence of the GS project activity (baseline scenario), equivalent amount of electricity generated by the project's electricity generation infrastructure is assumed as being otherwise generated by existing power generation sources connected to the Brazilian National Electricity Grid (SIN) (including fossil fuel fired power plants) and addition of new electricity generation sources.

It is relevant to note that, prior to being successfully migrated to GS4GG in year 2025, the GS project activity was previously registered, gradually/phased implemented and it operated as a project-based initiative under the UNFCCC's Clean Development Mechanism (CDM) and has successfully issued 679,500 CDM Certified Emission Reductions (CDM CERs) along a set of chosen monitoring periods from year 2013 to year 2020.

There is no double counting between the current registry under the GS4GG and also under the CDM for the same time period. Moreover, as seen in Appendix 1 the Project developer confirms that the GS Project activity will not issue both certified emission reductions (CERs) under the CDM (and/or other compliance unit under the Paris

Agreement) jointly with GS VERs for the same vintage (for the considered and also for future monitoring periods under the GS4GG) ³.

³ The GS project activity is not registered nor has not previously sought registration under the VCS, as seen at the weblink: <https://registry.verra.org/app/projectDetail/VCS/3010>. The status of the project at the Verra's database is indicated as "Units Transferred from Approved GHG Program". Moreover, the VCS Registration and Issuance Process (version 4.4) in Section 4.2.18, Item 2) also confirms that the conversion from CERs to VCUs does not require the project registration under the VCS as follows: "Where the project is registered under the CDM, those documents required for project registration and Certified Emission Reduction (CER) issuance under the CDM shall be provided to the Verra Registry. Verra creates a project record on the Verra Registry, noting that such record shall have the status credits transferred from other GHG program. Such projects are not considered to be registered under the VCS Program and are not eligible for verification under the VCS Program without first conforming with the procedures for registration with the VCS Program and an approved GHG program set out in Section 4.2.15".

Contributions to sustainable development

As per the project design, the baseline scenario for the GS project activity represents direct emissions of LFG rich in methane into the atmosphere, adversely contributing to climate change and its harmful consequences.

Technology and measures encompassed by the GS project activity completely changes the identified baseline scenario, promoting real and permanent GHG emission reductions. Additionally, the GS project activity also promotes generation of electricity from renewable energy source, therefore displacing electricity that would have otherwise been produced by existing grid-connected power generation sources (including fossil fuel fired power plants) and addition of new electricity generation sources. Due to that the GS project activity also promotes real and permanent CO₂ emission reductions from displacement of electricity with electricity generated using renewable energy source.

Besides climate change mitigation, the GS project activity provides other important local environmental benefits: LFG contains trace amounts of volatile organic compounds, which are regarded as local air pollutants. Capturing LFG using an active forced collection system and its combustion thus also promotes reduction of emission of local pollutants.

Capacity building and job creation

As part of the GS project activity, the project developer has invested in training and capacity building activities to get properly skilled staff (engineers, technicians, operators, etc.) able to conduct the implementation and management of the GS project activity.

Electricity generation from renewable energy source

Electricity generated by the GS project activity has contributed towards to the country efforts to increase the participation of renewable energy in the Brazilian electricity generation matrix.

A.2. Location of project

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Host Party:

- Brazil

Region/State/Province:

- Minas Gerais

City/Town/Community:

- Sabará

Physical/Geographical location:

- The CTR Macaúbas Landfill is located in the city of Sabará (the capital of Minas Gerais State), at MG-05 Highway at kilometer 8, under the following geographical coordinates:
 - Latitude: 19° 51' 23" S (-19.856389)
 - Longitude: 43° 50' 40" W (-43,844444)

The location of the CTR Macaúbas landfill site is shown in the following image:



Figure 1. Location of the CTR Macaúbas landfill within Brazil

Source: Google Earth application (2024)

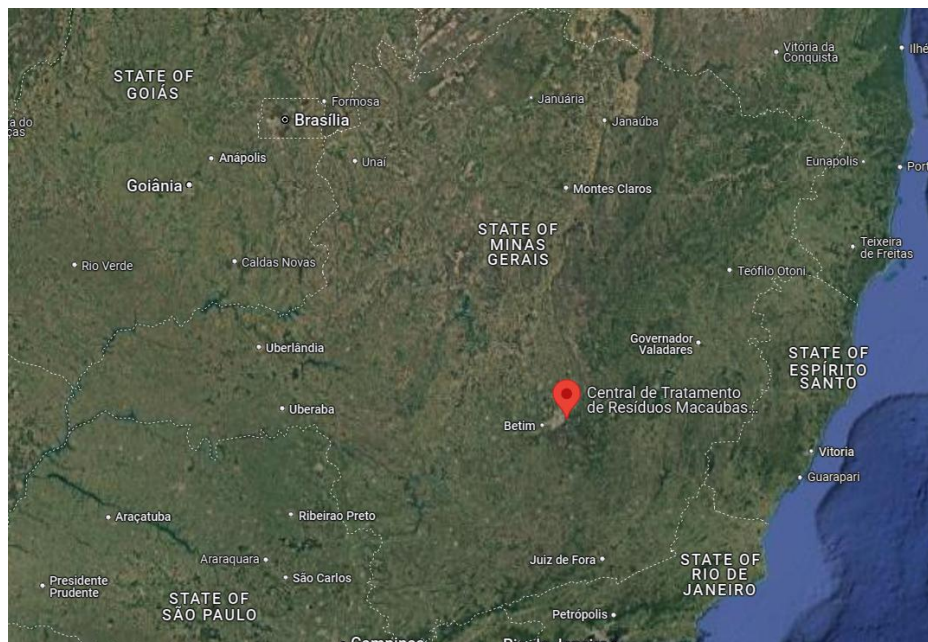


Figure 2. Location of the CTR Macaúbas landfill within Minas Gerais State

Source: Google Earth application (2024)

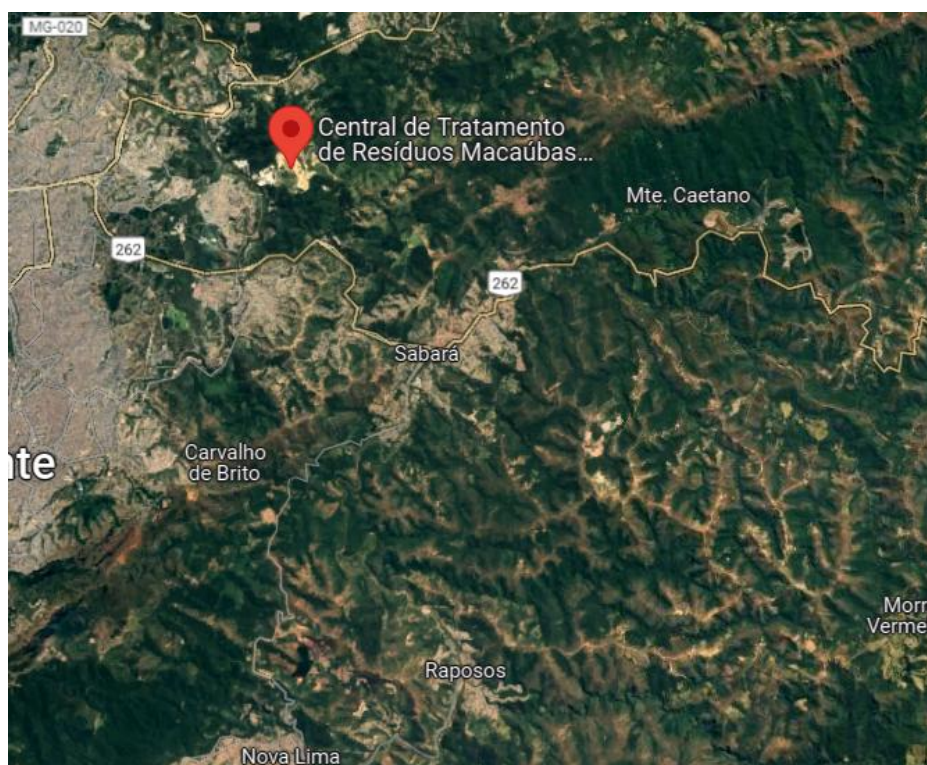


Figure 3. Location of the CTR Macaúbas landfill within Sabará municipality

Source: Google Earth application (2024)

A.3. Reference of applied methodology

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The GS project activity applies the following CDM baseline and monitoring for its 1st crediting period under GS4GG which encompasses the considered monitoring period:

- ACM0001 - “Flaring or use of landfill gas” (version 19.0)

The following CDM methodological tools are also applied for the determination of GHG emission reductions achieved by the GS project activity during the considered monitoring period:

- Tool 04 - Emissions from solid waste disposal sites (version 08.0).
- Tool 05 - Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0).
- Tool 06 - Project emissions from flaring (version 04.0).
- Tool 08 - Tool to determine the mass flow of a greenhouse gas in a gaseous stream (version 03.0).
- Tool 07 - Tool to calculate the emission factor for an electricity system (version 07.0).

A.4. Crediting period of project

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The 2 crediting periods for the project activity under the CDM were previously defined as follows:

1st CP: from 31/07/2013 to 30/07/2020

2nd CP: from 31/07/2020 to 30/07/2027

Under the GS4GG, the GS project activity will have the following crediting periods:

2nd CP: from 31/07/2020 to 30/07/2025

3rd CP: from 31/07/2025 to 30/07/2030

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The CTR Macaúbas landfill is regarded as a very well-designed and well-managed landfill. It currently applies the best practices available in Brazil in terms of MSW landfilling from both design and operation perspectives. As established by the valid environmental and operational permits for the landfill site, all disposed MSW is covered and levelled with the use of heavy equipment (excavators, compacting equipment, etc.). Furthermore,

safety requirements are defined and addressed as part of the operation of the landfill by using a preventative approach.

Under conformance with the project design, LFG collected at the CTR Macaúbas landfill has been used as gaseous fuel for electricity generation and/or flared, thus avoiding methane emissions into the atmosphere.

Employed technology encompasses appropriate LFG destruction infrastructure (through flaring of LFG in a high temperature enclosed flare) and in infrastructure for utilization of collected LFG as gaseous fuel for electricity generation at the CTR Macaúbas landfill. Collection of LFG occurs through an active LFG collection system encompassed by appropriate and well-designed LFG vertical collection wells, LFG transportation pipeline network with methane destruction and utilization occurring through combustion of collected LFG in the high temperature enclosed flare and in the engine-generator sets of the project's electricity generation infrastructure, respectively.

The GS project activity includes infrastructure for collecting LFG encompassing the following main components:

- Set of vertical LFG collection wells installed across the MSW disposal area of the CTR Macaúbas landfill with optimized well spacing for allowing high LFG collection rate.
- Condensate extraction and storage systems (strategically positioned at low level points within the project's LFG collection pipeline network).
- Moisture traps to remove moisture and other impurities from collected LFG.
- A centrifugal blower system used to cause negative pressure in the LFG transportation pipeline (before the blowers) and positive pressure (after the blowers) in order to direct collected LFG to the project's LFG destruction/utilization devices (high temperature enclosed flare and engine-generator sets).

LFG flaring infrastructure:

The GS project activity encompasses the following characteristics to promote efficient and controlled combustion of collected LFG through flaring:

- Safe and low emission combustion of LFG guaranteed by the utilization of high temperature enclosed flare that allow safe, controlled and efficient combustion of LFG.
- Use of best practice safety devices for the flare (such as flame detector and slam shut valve).
- Continuous measurement of temperature of the exhaust gas of the flare (with continuous monitoring of the flare status. While the applied CDM baseline and monitoring methodology ACM0001 (version 19.0) and applicable methodological tools require ex-post monitoring on whether flaring equipment combusting LFG operates under compliance with operational requirements and recommendations of the equipment manufacturer, the main operational characteristics and specifications of the high temperature enclosed flare currently installed as part of the GS project activity are defined as follows:

Characteristics/specifications of the installed flare
Manufacturer: Biotechnogás s.r.l. Model: BTG2500 HT Min. LFG flaring capacity (for continuous operation): Flow rate of 500 Nm³/h Max. LFG flaring capacity (for continuous operation): Flow rate of 2,500 Nm³/h Required min. temperature of the exhaust gas of the flare (to ensure LFG destruction under high CH₄ destruction efficiency): 850 °C Required max. temperature of the exhaust gas of the flare (to ensure LFG destruction under high CH₄ destruction efficiency): 1,200 °C

Source: Equipment technical declarations made available by Biotechnogás s.r.l.

Electricity generation infrastructure:

As part of the GS project activity, methane is to be destroyed through combustion of collected LFG in a set of up to 7 engine-generator sets fully fueled by LFG which represent the major components of the project's electricity generation infrastructure. The installed engine-generator sets are manufactured by GE Jenbacher GmbH & Co OHG and have individual nameplate power generation capacity of about 1.426 MW each. The engine-generator sets are assembled under a container-based modular power generation package set design. Each container includes ancillary equipment (cooling fan, coolant radiator, etc.).

Details about monitoring instruments/equipment utilized within the considered monitoring period are described in Section C.

During the whole considered monitoring period, the GS project activity has operated in full conformance with the technical project description as per the completed GS4GG Transition Request Form + PDD (GS4GG TRF + PDD). From an operational perspective, there were no changes to the project design during the considered monitoring period.

During the considered monitoring period, the GS project activity also faced events when it became temporarily out of operation due to different reasons (occurred temporarily interruption of supply of collected LFG to the flare and/or engines, temporarily interruption in the supply of electricity to the GS project activity, occurrence of previously planned or unplanned equipment maintenance/repair events, performance regular calibration events in monitoring instruments/equipment, draining of excess of condensate material from the project's LFG pipeline, identification of unexpected problems in the PLC panel, data communication problems, etc.).

The milestones for the project activity are presented on the table below:

Date	Milestone
31/07/2013	Registration under the CDM
31/07/2013	Start date of the 1 st crediting period under the CDM
03/07/2017	Start of operation of the project activity (commissioning date of the 1 st engine-generator set)
30/07/2020	End date of the 1 st crediting period under the CDM
31/07/2020 ⁴	Start date of the 5-year crediting period under the GS4GG
29/10/2023	Submission of email communications to identified stakeholders with invitations for the physical meeting of the GS4GG Local Stakeholder Consultation to be held on 28/11/2023
28/11/2023	GS4GG Local Stakeholder Consultation (LSC) audience/meeting
13/03/2024	Submission of the initial documents for the GS4GG preliminary review stage

⁴ It is relevant to note that, although the crediting period of the project activity under the GS4GG starts on 31/07/2020, since the project activity has already issued CERs under the CDM up to 31/12/2020, GS CERs will only be claimed for the period from 01/01/2021 onwards.

30/07/2025	End date of the 1 st 5-year crediting period under the GS4GG
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B.1.1 Forward Action Requests

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The following FARs were previously raised during the validation for the successfully occurred transition of the project activity from the UNFCCC's Clean Development Mechanism (CDM) to Gold Standard for Global Goals (GS4GG):

"FAR 01: The project developer should include a declaration in the Monitoring Reports submitted to the GS4GG that the project will not issue both CERs/other compliance units under the Paris Agreement and a GSVER for the same vintage. Moreover, the project developer should agree to comply with all future UNFCCC COP/CMP decisions including adjustment of GWP values."

Consideration/addressing of the raised FAR:

A declaration confirming that the GS project activity will not jointly claim/issue CDM CERs (and/or other compliance GHG emission reduction units under the Paris Agreement) and GS VER for the same vintage (for the considered monitoring period and also for future monitoring periods under GS4GG) is included in Appendix 1 of the Monitoring Report.

"FAR 02: Projects transitioning to the GS4GG are required to demonstrate Ongoing Financial Need (OFN) as per the relevant GS4GG rules and requirements available at the time of renewal of crediting period. Project developer shall demonstrate OFN during the crediting period renewal submission."

Consideration/addressing of the raised FAR:

The demonstration of Ongoing Financial Need (OFN) is to be included in the GS4GG PDD valid for the last crediting period of the project activity under the GS4GG in the context of the project's Design Certification Renewal.

B.2. Post-Design Certification changes

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B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

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There are no temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline encompassed specifically by the considered

monitoring period. Moreover, no temporary deviations were ever addressed for the GS project activity during previous monitoring periods (under the CDM).

B.2.2. Corrections

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There are no corrections (in information that do not affect the project design) encompassed specifically by the considered monitoring period. Moreover, no corrections were ever addressed for the GS project activity during previous monitoring periods (under the CDM).

B.2.3. Changes to start date of crediting period

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There are no changes to start date of crediting period of the GS project activity.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

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There are no permanent changes from the Design Certified monitoring plan, applied CDM methodology or applied standardized baseline encompassed specifically by the considered monitoring period. However, the following changes to the project design were previously addressed for the GS project activity during its previous monitoring periods under the CDM:

Ref of CDM-PRC processes so far encompassed by the GS project activity Ref of CDM-PRC processes so far encompassed by the GS project activity	Approval date	Description of the post-registration change(s) under the category " <i>Changes to project design of approved project</i> "
PRC-9063-001	02/04/2020	- Methodology Update: Permanent changes to the project design have occurred due to a voluntary update of the applied methodology version to ACM0001 (version 19.0). - Emission Reduction Calculations: Permanent changes to the emission reduction calculations have been implemented as a direct consequence of the changes in the methodology version.

		- Monitoring Plan: The description of the registered monitoring plan has undergone permanent changes due to consequential changes from the methodology update. - Installed Capacity and Additionality: A permanent change to the project design was identified, where the Landfill Gas (LFG) power plant is expected to install approximately 9.982 MW upon project completion. It is confirmed that this change does not affect additionality, as the capacity remains below the 10 MW threshold defined in the Methodological Tool 32: 'Positive lists of technologies'. - Demonstration of Additionality: The demonstration of additionality has been permanently changed to consider the simplified procedure for identifying the baseline scenario and demonstrating additionality, in accordance with Methodological Tool 32 ('Positive lists of technologies'), due to changes in the project design and the methodology version update. - Emission Reduction Estimates: The annual estimates of emission reductions in tCO₂e have been revised due to the changes in the project design and the methodology version update. - Justification for Capacity: The permanent change in the installed capacity of the electricity generation plant (revised from 12.8 MW to 9.982 MW) is justified by LFG availability and the increase in waste disposal. - Ex-Ante Parameters and GWP: Appendix 4 (Further background information on ex ante calculation of emission reductions) has been revised to reflect changes in the project design. This includes the update of the Global Warming Potential (GWP) for methane from 21 to 25, and the revision of the power plant's installed capacity from 12.8 MW to 9.982 MW. - Flare Efficiency: Permanent changes were identified in the determination of flare efficiency, which has adopted Option A (Default value), in accordance with the methodological tool 'Project emissions from flaring', consistent with the project design changes.
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B.2.5. Changes to project design of approved project

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There are no changes to project design that occurred as part of the operation of the GS project activity during the considered monitoring period.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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Instrumentation:

The process diagram for the project infrastructure implemented during the considered monitoring period is summarized in the schematic diagram below:

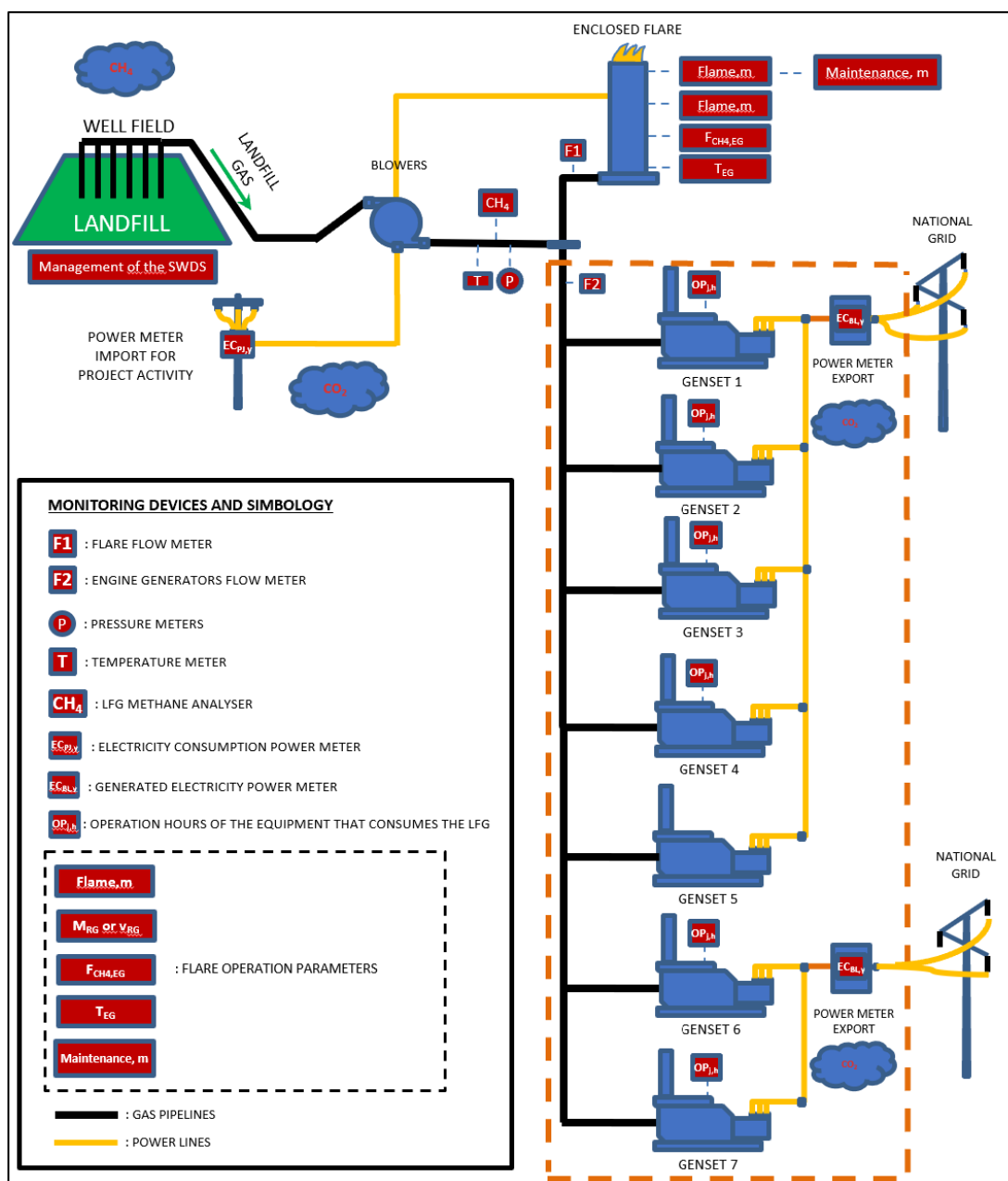


Figure 4: Schematic instrumentation diagram of the project's monitoring system valid for the considered monitoring period

CH₄ fraction gas analyzer unit:

A CH₄ fraction gas analyzer unit is used to continuously measure the CH₄ fraction in collected LFG which is sent to the project's methane destruction/utilization devices.

LFG flow meters:

LFG flow meters are used to continuously measure the flow of LFG sent to the project's methane destruction and utilization devices (i.e. flow of LFG to the flare and flow of LFG to the engine-generator sets). Differential pressure flow meters that deliver flow measurements in standard (normalized) temperature and pressure conditions (with measurements being directly processed and recorded in normal cubic meter per hour (Nm³/h per hour)) are installed.

Thermocouples:

The temperature of exhaust gases of the high enclosed temperature flare is continuously measured by appropriate a thermocouple located in the upper section of the high temperature enclosed flare.

Electricity meters:

Appropriate bi-directional electricity meters are used to continuously measure the consumption of grid-sourced electricity by the GS project activity and the amount of electricity generated by the GS project activity that is exported through the electricity grid the GS project activity is connected to.

Data Acquisition, storage and management system:

As part of the monitoring process for the GS project activity, all continuous measurements of LFG related monitoring parameters (including measurements of temperature of exhaust gas of the flare and status of the flare) and also monitoring of operation status of each of the project's engine-generator sets were recorded/reported every minute during the considered monitoring period in an installed data acquisition unit and archiving solution (database).

As part of the operation of the GS project activity, monitoring data has been recorded by the utilized data acquisition and archiving infrastructure (database). Recorded monitoring data are regarded as "raw data" for processing emission reduction calculations valid for the considered monitoring period. Such "raw data" is exported into

MS-Excel spreadsheet format for generating 56⁵ MS-Excel format monthly emission reduction calculation spreadsheets which are enclosed to this Monitoring Report.

The project's operational staff for both the LFG destruction and electricity generation infrastructure are trained for all related operation, maintenance and safety procedures. Related training certificates for operational staff were issued and are kept achieved. All relevant operational events (emergency, failures, maintenance, etc.) for both the LFG destruction and electricity generation infrastructure are registered in operation workbooks. All performed maintenance and/or repair events applicable for the critical pieces of equipment for both project components (flare, centrifugal blowers, CH₄ fraction gas analyzer unit, air compressor, engine-generator modular package sets, control systems, etc.) are also registered in the project's operation workbooks.

Records and documented evidence for performed calibration events in monitoring instruments/equipment are also registered in workbooks. The calibration certificates and registries for all performed calibration events are also kept in files. Calibration procedures are performed in accordance with applicable recommendations and requirements as established by equipment manufacturers and are also under conformance with applicable CDM and GS4GG requirements. The project's maintenance manual also includes related calibration procedures, requirements and instructions.

Working procedures to handle problems with gathering/processing, transferring, recording and/or storing (archiving) of monitoring data are available with records of measurement of monitoring data being transferred to local drivers/server for additional/complementary archiving with daily data backup procedure being in place.

⁵ It is relevant to note that for the month of August/2023, two (2) monthly emission reduction spreadsheets were generated due to alterations implemented in the project's supervisory system and database during the referred period, thus resulting in 56 monthly emission reduction spreadsheets.

Managerial Responsibilities:

Operation of the whole project activity under compliance with all applicable CDM and GS4GG requirements is the responsibility of the operational manager of Vital Engenharia Ambiental S.A., who is also assisted/supported by hired technical consultants from the hired technical consultancy/advisory service company UniCarbo – Energia and Biogás Ltda. The operational manager is responsible for ensuring the correct application of the monitoring plan.

Under an operational perspective, the operational manager and the operational supervisor are in charge of performing all field monitoring activities and ensuring appropriate monitoring data logging and recording (always with assistance/support from by hired technical consultants from UniCarbo – Energia and Biogás Ltda.). They are also responsible for the performance of related calibration events as well as all applicable planned or unplanned maintenance and repair events.

Preventative maintenance events are executed by field technicians in order to ensure that monitoring instruments/equipment are fully operating. The technical team of Vital Engenharia Ambiental S.A. is also in charge of partial operation of the monitoring plan for the project's electricity generation infrastructure and it is supervised by the operational manager.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

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SDG 13 - Climate Action

Data/parameter	OX_{top_layer}
Unit	Dimensionless
Description	Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline
Source of data	Consistent with how oxidation is accounted for in the CDM methodological tool "Emissions from solid waste disposal sites" (version 08.0)
Value(s) applied	0.1
Choice of data or Measurement methods and procedures	Default value as per the applied CDM baseline and monitoring methodology ACM0001 - "Flaring or use of landfill gas" (version 19.0)
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data/parameter	GWP_{CH4}
Unit	tCO ₂ e/tCH ₄
Description	Global Warming Potential of CH ₄
Source of data	Table 1 in Box 3.2 - Greenhouse Gas Metrics and Mitigation Pathways of the 5th Assessment Report of the Intergovernmental Panel on Climate Change, based on the effects of greenhouse gases over a 100-year time horizon. Available at: https://archive.ipcc.ch/pdf/assessmentreport/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf
Value(s) applied	28

Choice of data or Measurement methods and procedures	Shall be updated according to any future COP/MOP decisions.
Purpose of data	Calculation of baseline emissions.
Additional comment	Shall be updated according to any future COP/MOP decisions.

Data/parameter	R_u
Unit	Pa.m ³ /kmol.K
Description	Universal ideal gases constant
Source of data	Default value as per the CDM methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream"
Value(s) applied	8,314
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data/parameter	MM_i								
Unit	kg/kmol								
Description	Molecular mass of greenhouse gas <i>i</i>								
Source of data	Default value as per the CDM methodological tool “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”								
Value(s) applied	The following value of molecular mass are applicable for CH ₄ (the only GHG which is considered): <table><tr><th>Compound</th><th>Structure</th><th>Molecular mass (kg/kmol)</th></tr><tr><td>Methane</td><td>CH₄</td><td>16.04</td></tr></table>			Compound	Structure	Molecular mass (kg/kmol)	Methane	CH ₄	16.04
Compound	Structure	Molecular mass (kg/kmol)							
Methane	CH ₄	16.04							

Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data/parameter	P_n
Unit	Pa
Description	Total pressure at normal conditions
Source of data	Default value as per the CDM methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream"
Value(s) applied	101,325
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data/parameter	T_n
Unit	K
Description	Temperature at normal conditions
Source of data	Default value as per the CDM methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream"
Value(s) applied	273.15
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data/parameter	SPEC _{flare}														
Unit	Temperature - °C Flow rate - Nm³/h Maintenance schedule - number of days														
Description	Manufacturer's flare specifications for temperature, flow rate and maintenance schedule														
Source of data	Project implementer														
Value(s) applied	<table><tr><th>Flare 1</th><th>Min.</th><th>Max.</th></tr><tr><td>Operational LFG flow (for continuous operation):</td><td>500 Nm³/h</td><td>2,500 Nm³/h</td></tr><tr><td>Required temperature of the exhaust gas of the flare (to ensure LFG destruction (combustion) under high CH₄ destruction efficiency):</td><td>850 °C</td><td>1,200 °C</td></tr><tr><td>Required minimum frequency for inspection and maintenance service (incl. inspection in the conditions of the flare)</td><td colspan="2">Min. every 6 months</td></tr></table>			Flare 1	Min.	Max.	Operational LFG flow (for continuous operation):	500 Nm³/h	2,500 Nm³/h	Required temperature of the exhaust gas of the flare (to ensure LFG destruction (combustion) under high CH ₄ destruction efficiency):	850 °C	1,200 °C	Required minimum frequency for inspection and maintenance service (incl. inspection in the conditions of the flare)	Min. every 6 months	
Flare 1	Min.	Max.													
Operational LFG flow (for continuous operation):	500 Nm³/h	2,500 Nm³/h													
Required temperature of the exhaust gas of the flare (to ensure LFG destruction (combustion) under high CH ₄ destruction efficiency):	850 °C	1,200 °C													
Required minimum frequency for inspection and maintenance service (incl. inspection in the conditions of the flare)	Min. every 6 months														

	<table border="1"> <tr> <td>isolation ceramics revetment material)</td><td></td></tr> </table>	isolation ceramics revetment material)	
isolation ceramics revetment material)			
Choice of data or Measurement methods and procedures	The thermocouple and the flow meter will also follow the measurement methods and procedures described for T_{flare} and $LFG_{\text{flare},y}$		
Purpose of data	Monitored continuously		
Additional comment	-		

Data/parameter	w_{BM}
Unit	%
Description	Weighting of build margin emissions factor
Source of data	Applicable default value as per the CDM methodological tool "Tool to calculate the emission factor for an electricity system"
Value(s) applied	0.75 (75%)
Choice of data or Measurement methods and procedures	The applicable value for the 1 st GS crediting period of the GS project activity as per the CDM methodological tool "Tool to calculate the emission factor for an electricity system" is selected.
Purpose of data	Calculation of project emissions.
Additional comment	The ex-ante determined default value for w_{BM} is to be used for the determination of both baseline and project emissions due to generation of electricity and consumption of grid-sourced electricity by the project activity respectively ($BE_{EC,y}$ and $PE_{EC,grid,y}$ respectively) while and/or if applying option A.1 as per the CDM methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation".

Data/parameter	W_{OM}
Unit	%
Description	Weighting of operating margin emissions factor
Source of data	Applicable default value as per the CDM methodological tool "Tool to calculate the emission factor for an electricity system"
Value(s) applied	0.25 (25%)
Choice of data or Measurement methods and procedures	The applicable value for the 1 st GS crediting period of the GS project activity as per the CDM methodological tool "Tool to calculate the emission factor for an electricity system" is selected.
Purpose of data	Calculation of project emissions.
Additional comment	The ex-ante determined default value for w_{BM} is to be used for the determination of both baseline and project emissions due to generation of electricity and consumption of grid-sourced electricity by the project activity respectively ($BE_{EC,y}$ and $PE_{EC,grid,y}$ respectively) while and/or if applying option A.1 as per the CDM methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation".

Data/parameter	EF_{grid,BM,y}
Unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor in year y
Source of data	Selected value valid for the 1 st GS crediting period of the GS project activity represents the value previously applied for the currently expired 2 nd CDM crediting period and also the 1 st CDM crediting period of the project activity (value applicable for year 2018) (EF _{grid,BM,2018}) as outlined in the Transition Request Form + GS4GG PDD.
Value(s) applied	0.1370

Choice of data or Measurement methods and procedures	Data is determined as per applicable guidance of the CDM methodological tool "Tool to calculate the emission factor for an electricity system".
Purpose of data	Calculation of project emissions.
Additional comment	-

Ex-ante determined parameters not used in the context of ex-post determination and calculation of emission reductions achieved by the GS project activity during the considered monitoring period:

The following ex ante parameters, listed in the registered Transition Request Form + GS4GG PDD, will not be used in this monitoring period and thus not presented in the tables below since have been not used in the calculation of emission reductions:

- Efficiency of the LFG capture system that will be installed in the project activity (η_{PJ})
- Molecular mass of greenhouse gas k (MM_k)
- Molecular mass of water (MM_{H_2O})
- Default value for the model correction factor to account for model uncertainties (Φ_{default})
- Oxidation factor (reflecting the amount of methane from the considered SWDS that is oxidized in the soil (or other material covering the waste)) (OX)
- Fraction of methane in the SWDS gas (volume fraction) (F)
- Default value for the fraction of degradable organic carbon (DOC) in MSW that decomposes in the SWDS ($DOC_{f,\text{default}}$)
- Methane correction factor (MCF_{default})
- Fraction of degradable organic carbon in the waste type j (weight fraction) (DOC_j)
- Decay rate for the waste type j (k_j)
- Weight fraction of the waste type j (W_j)

D.2 Data and parameters monitored

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SDG 13 - Climate Action

Data / Parameter	Management of SWDS
Unit	-
Description	Management of SWDS
Source of data	Technical evaluations of the CTR Macaúbas landfill valid/applicable for the considered monitoring period were performed by the independent 3rd party engineering company "CEPOLLINA ENGENHEIROS CONSULTORES LTDA." on 18/01/2021, 17/01/2022, 16/01/2023, 15/01/2024, 13/01/2025 and 16/10/2025. As part of the performed annual technical evaluations, the current configuration and operational conditions/status of the CTR Macaúbas landfill were compared against the previously conceived design and operational conditions of this landfill which were defined prior to the occurred implementation of the GS project activity on the basis of different sources, including <i>inter alia</i>: - Original design documents of the landfill (as described in the documentation required for all phases of the environmental licensing for the CTR Macaúbas landfill); - Applicable local or national regulations - Expertise and experience of "CEPOLLINA ENGENHEIROS CONSULTORES LTDA." with the CTR Macaúbas landfill. CEPOLLINA ENGENHEIROS CONSULTORES LTDA has performed regular technical inspections at the CTR Macaúbas landfill (as part of the continuously performed

	assessment/control of geotechnical stability monitoring for the landfill cells). As required by the competent environmental authority from Minas Gerais State (<i>Secretaria de Estado e Meio Ambiente e Desenvolvimento Sustentável</i> – (SEMAD)), such particular assessments/controls performed by “CEPOLLINA ENGENHEIROS CONSULTORES LTDA .” are performed on a regular basis as a prerequisite for the compliance with related environmental monitoring as a requisite for the maintenance of the validity of the environmental and safety permit/licensing issued for the CTR Macaúbas landfill.
Value(s) applied	As outlined in the latest issued technical evaluation/declaration reports (issued on 18/01/2021, 17/01/2022, 16/01/2023, 15/01/2024, 13/01/2025 and 16/10/2025), the previously conceived original design of the landfill (that was conceived prior to the occurred implementation of the GS project activity) is confirmed as not to being modified during the whole period from year 2005 (when the CTR Macaúbas landfill started to operate) until the issuance date of the latest technical report (thus completely covering the monitoring period from 01/01/2021 to 30/07/2025⁶). This most recently issued technical evaluation report confirms that no practices/measures to deliberately increase methane generation at the CTR Macaúbas landfill were performed (when compared to management and MSW landfilling practices prior to implementation of the GS project activity or after its occurred implementation).

⁶ It is relevant to note that, although the crediting period of the project activity under the GS4GG starts on 31/07/2020, since the project activity has already issued CERs under the CDM up to 31/12/2020, GS CERs will only be claimed for the period from 01/01/2021 onwards.

Aspects, conditions and circumstances related to management of the landfill site (e.g. waste disposal, waste covering, waste compacting, management of leachate, draining of rainwater, etc.) were therefore not changed with an aim to increase methane generation on site.

It is relevant to note that MSW management business (collection and disposal of MSW) in Brazil has its own economics, dynamics, policies and related regulations. That makes MSW disposal activity for the CTR Macaúbas landfill (like other similar/comparable landfills in Brazil) completely independent from the previously occurred registration of the GS project activity under the CDM and/or its later occurred transition to GS4GG and/or promotion of revenues due to commercialization of Certified Emission Reductions (CERs) (issued under the CDM) and/or GS Voluntary Emission Reductions (GS VERs) (to be potentially issued under GS4GG) by the GS project activity promoting collection and destruction/utilization of LFG .

In the particular case of the CTR Macaúbas landfill, it is important to note that this particular landfill was previously designed, and it has operated *inter alia* as per previously defined terms, conditions and requirements for MSW disposal as part of public service concession contracts previously established between the owner/operator of the landfill and the Administration of the Municipality of Minas Gerais and other Municipalities in the region of the landfill.

Moreover, the design and operation of this particular landfill is also in conformance with previously set terms, conditions and requirements as part of the environmental licensing of the landfill. Some of such terms, conditions and requirements are regularly monitored by the competent environmental authority from Minas Gerais State (SEMAD).

	While the occurrence of changes in the quantitative or qualitative condition related to MSW disposal at the CTR Macaúbas landfill are completely independent from GS project activity, the operation of the GS project activity <i>per se</i> does not represent any incentive for promoting a change in the management of the landfill (in order <i>inter alia</i> to increase the amount of methane generated in the site). Furthermore, the GS project activity does not encompass any MSW management related measures. Currently, there is still no climate change or waste management policy in Brazil which would provide an incentive and/or a mandate or requirement to have MSW being disposed in landfills with better/improved LFG collection / destruction systems (such as the project's LFG collection and destruction system currently implemented at the CTR Macaúbas landfill as part of the GS project activity).
Measurement methods and procedures	Not applicable. No measuring equipment is used for monitoring management of the CTR Macaúbas landfill.
Monitoring frequency	Annually
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data / Parameter	$V_{t,wb}$
Unit	m ³ wet gas/h
Description	Volumetric flow of LFG stream in time interval <i>t</i> on a wet basis
Source of data	Measurements by the project developer using appropriate LFG flow meters.

Value(s) applied	The monthly emission reduction calculation spreadsheets (that are enclosed to this Monitoring Report) include all records of measurement data of LFG flow sent to the installed high temperature enclosed flare and LFG flow sent to the engine-generator sets during the considered monitoring period. While measurements are performed by two LFG flow meters (one LFG flow meter for the high temperature enclosed flare and one flow LFG meter for the engine-generator sets), the monitoring parameter $V_{t,wb}$ is thus measured, recorded and reported on the basis of the following sub-parameters: - $V_{t,wb,flare}$: Volumetric flow of LFG to the Flare - $V_{t,wb,engines}$: Volumetric flow of LFG to the engine-generator sets
Measurement methods and procedures	<u>Flow meters used to measure the volumetric flow to the flare ($V_{t,wb,flare}$):</u> Two flow meters were used alternately during the considered monitoring period for measuring flow of LFG sent to the flare (due to calibration events schedule). The specifications of the utilized LFG flow meters are summarized as follows: <u>LFG flow meter unit in operation during the periods from 01/01/2021 to 15/01/2021; from 10/06/2022 to 10/01/2023, from 01/02/2024 to 08/05/2024 and from 02/09/2024 to 30/07/2025:</u> - Manufacturer: Fluid Components International (FCI) - Model: ST51-1F11C0003 - Accuracy: $\pm 2.0\%$ - Serial Number: 662114 - Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 18 months (545 days). - Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:

- Calibration event performed on 21/09/2020 by Hirsa Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 8862/2020). The performed calibration event is valid until 19/03/2022.
- Calibration event performed on 29/07/2021 by Hirsa Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 8150/2021). The performed calibration event is valid until 24/01/2023.
- Calibration event performed on 08/03/2023 by Hirsa Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 3109/2023). The performed calibration event is valid until 02/09/2024.
- Calibration event performed on 11/06/2024 by Hirsa Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 6033/2024). The performed calibration event is valid until 07/12/2025.

LFG flow meter unit in operation during the periods from 15/01/2021 to 10/06/2022; from 10/01/2023 to 01/02/2024 and from 08/05/2024 to 02/09/2024:

- Manufacturer: Fluid Components International (FCI)
- Model: ST51-AF31C0000
- Accuracy: $\pm 2.0\%$
- Serial Number: 671426
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 18 months (545 days).

- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 12/01/2021 by Hirsá Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 0227/2021). The performed calibration event is valid until 10/07/2022.
 - Calibration event performed on 04/08/2022 by Hirsá Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 8694/2022). The performed calibration event is valid until 30/01/2024.
 - Calibration event performed on 19/03/2024 by Hirsá Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 2719/2024). The performed calibration event is valid until 14/09/2025.

LFG flow meters used to measure the volumetric flow to the engine generators ($V_{t,wb,engines}$):

Four LFG flow meters were used alternately during the considered monitoring period for measuring flow of LFG which is sent to the engine generators (due to calibration events schedule). The specifications of the utilized LFG flow meters are summarized as follows:

LFG flow meter unit in operation during the periods from 01/01/2021 to 08/01/2021; from 03/11/2021 to 10/06/2022 and from 16/11/2022 to 16/12/2022:

- Manufacturer: Fluid Components International (FCI)
- Model: ST51-1F11FA003
- Accuracy: $\pm 2.0\%$
- Serial Number: 683687
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 18 months (545 days).
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 04/08/2020 by FCI Fluid Components International LLC. (as indicated in the Calibration Certificate Number C099800). The performed calibration event is valid until 30/01/2022.
 - Calibration event performed on 29/07/2021 by Hirsa Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 8149/2021). The performed calibration event is valid until 24/01/2023.
 - Calibration event performed on 04/08/2022 by Hirsa Sistemas de Automação e Controle Ltda. (as indicated in the Calibration Certificate Number LMH 8693/2022). The performed calibration event is valid until 30/01/2024.

LFG flow meter unit in operation during the period from 08/01/2021 to 03/11/2021:

- Manufacturer: Fluid Components International (FCI)

- Model: ST51-1F11FA003
- Accuracy: $\pm 2.0\%$
- Serial Number: 691386
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 18 months (545 days).
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 22/11/2020 by FCI Fluid Components International LLC. (as indicated in the Calibration Certificate Number C102508). The performed calibration event is valid until 20/05/2022.

LFG flow meter unit in operation during the period from 10/06/2022 to 16/11/2022; from 16/12/2022 to 13/09/2023; from 13/12/2023 to 04/12/2024 and from 03/02/2025 to 30/07/2025:

- Manufacturer: Contech
- Model: CTH-FT1
- Accuracy: $\pm 1.5\%$
- Serial Number: 2106000188
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 06/05/2022 by Contech. (as indicated in the Calibration Certificate Number 2106000188 0422 C7).

The performed calibration event is valid until 05/05/2023.

- Calibration event performed on 12/12/2022 by Contech. (as indicated in the Calibration Certificate Number 2106000188 0422 C7). The performed calibration event is valid until 11/12/2023.
- Calibration event performed on 06/12/2023 by Contech (as indicated in the Calibration Certificate Number 2106000188 1223 C7). The performed calibration event is valid until 04/12/2024.
- Calibration event performed on 23/01/2025 by Contech (as indicated in the Calibration Certificate Number 2106000188 0125 C7). The performed calibration event is valid until 22/01/2026.

LFG flow meter unit in operation during the periods from 13/09/2023 to 13/12/2023 and from 04/12/2024 to 03/02/2025:

- Manufacturer: Contech
- Model: Termal
- Accuracy: $\pm 1.5\%$
- Serial Number: 2212000148
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 21/12/2022 by Contech. (as indicated in the Calibration Certificate Number 2212000148 1222 C7).

	The performed calibration event is valid until 20/12/2023. Calibration event performed on 07/02/2024 by Contech. (as indicated in the Calibration Certificate Number 2212000148 0224 C7). The performed calibration event is valid until 05/02/2025.
Monitoring frequency	Continuous measurements of LFG flow are recorded and reported with an every-minute frequency.
QA/QC procedures	Periodic calibration events for the LFG flow meters are performed by using a reference primary device provided by a third party independent accredited calibration laboratory. Calibration events are performed in a frequency as per instrument specifications and/or instrument manufacturer's recommendations. Monitoring equipment/instrument(s) are subject to a regular maintenance and testing regime in accordance with appropriate national / international standards/requirements and/or best practice.
Purpose of data	Calculation of baseline emissions.
Additional comment	This parameter is monitored due to the Option C of the CDM methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" for the determination of $F_{CH_4, flared, y}$ and $F_{CH_4, EL, y}$.

Data / Parameter	$V_{CH_4, t, wb}$
Unit	m ³ CH ₄ /m ³ wet gas
Description	Volumetric fraction of CH ₄ in the collected LFG in time interval t on a wet basis
Source of data	Measurements by the project developer using continuous CH ₄ fraction gas analyzer unit.
Value(s) applied	The monthly emission reduction calculation spreadsheets (that are enclosed to this Monitoring Report) include all

	continuous records of measurement data of CH ₄ content in the collected LFG during the considered monitoring period.
Measurement methods and procedures	<u>CH₄ fraction gas analyzer unit in operation during the whole period from 01/01/2021 to 30/07/2025:</u> - Manufacturer: Siemens⁷ - Model: Ultramat 23 - Accuracy: ±2.0% - Serial Number: N1-J6-603 - Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 1 year. - Date(s) and validity of performed calibration event(s) valid for the considered monitoring period: - Calibration event performed on 12/05/2020 by Aselco Indústria Comércio Importação Exportação de Instrumentação Ltda. (as indicated in the Calibration Certificate Number 1979.1/20). The performed calibration event is valid until 11/05/2021. - Calibration event performed on 05/05/2021 by Aselco Indústria Comércio Importação Exportação de Instrumentação Ltda. (as indicated in the Calibration Certificate Number 2075.1/21). The performed calibration event is valid until 04/05/2022.

⁷ The installed CH₄ fraction gas analyzer unit continuously measures fractions of CH₄, oxygen (O₂) and carbon dioxide (CO₂) in the stream of collected LFG.

	- Calibration event performed on 19/04/2022 by Aselco Indústria Comércio Importação Exportação de Instrumentação Ltda. (as indicated in the Calibration Certificate Number 2274/22). The performed calibration event is valid until 18/04/2023. - Calibration event performed on 03/04/2023 by Aselco Indústria Comércio Importação Exportação de Instrumentação Ltda. (as indicated in the Calibration Certificate Number 2447/23). The performed calibration event is valid until 02/04/2024. - Calibration event performed on 01/04/2024 by Aselco Indústria Comércio Importação Exportação de Instrumentação Ltda. (as indicated in the Calibration Certificate Number 2568/24). The performed calibration event is valid until 31/03/2025. - Calibration event performed on 20/03/2025 by Aselco Indústria Comércio Importação Exportação de Instrumentação Ltda. (as indicated in the Calibration Certificate Number 2713/25). The performed calibration event is valid until 19/03/2026.
Monitoring frequency	Continuous measurements of CH ₄ fraction in collected LFG are recorded and reported with an every-minute frequency.
QA/QC procedures	The calibration frequency of this monitoring equipment should be according to the manufacturer's specifications.
Purpose of data	Calculation of baseline emissions.
Additional comment	This parameter is monitored due to the case Option C of the CDM methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 03.0) for the determination of $F_{CH_4, flared, y}$ and $F_{CH_4, EL, y}$.

Data / Parameter	T_t
Unit	K ⁸
Description	Temperature of the LFG stream in time interval t
Source of data	Measurements by the project developer using a temperature sensor.
Value(s) applied	The monthly emission reduction calculation spreadsheets (that are enclosed to this Monitoring Report) include all records of measurement data of temperature of collected LFG during the considered monitoring period.
Measurement methods and procedures	No separate monitoring is necessary when using flow meters that automatically measure the temperature and pressure, expressing LFG volumes in normalized cubic meters. Measurements of temperature of collected LFG are performed by an LFG temperature sensor that is installed in the main LFG pipeline within the flaring facility. <u>LFG temperature sensor in operation during the period from 01/01/2021 to 30/07/2025:</u> - Manufacturer: Ecil Produtos e Sistemas de Medição e Controle de Temperatura - Model: PT-100 - Accuracy: Max of $\pm 0.1K$ or $\pm 0.1\%$ of span - Serial Number: PI117146 - Calibration frequency (as per the application of the monitoring plan and/or recommendations from the

⁸ Measurements for T_t are recorded and reported in °C. and later converted to Kelvin.

	equipment manufacturer): Calibration events are to be performed every year. - Date(s) and validity of performed calibration event(s) valid for the considered monitoring period: - Calibration event performed on 24/11/2020 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number T-6418/20). The performed calibration event is valid until 23/11/2021. - Calibration event performed on 09/11/2021 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number T-6671/21). The performed calibration event is valid until 08/11/2022. - Calibration event performed on 26/10/2022 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number T-7189/22). The performed calibration event is valid until 25/10/2023. - Calibration event performed on 19/10/2023 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number T-7878/23). The performed calibration event is valid until 17/10/2024. - Calibration event performed on 25/09/2024 by CTJ Tecnologia e Confiabilidade. (as indicated in the Calibration Certificate Number T-7663/24). The performed calibration event is valid until 24/09/2025.
Monitoring frequency	Continuous measurements of LFG temperature are recorded and reported with an every-minute frequency.
QA/QC procedures	The calibration frequency of this monitoring equipment should be according to the manufacturer's specifications.
Purpose of data	Calculation of baseline emissions.

Additional comment	Provided all LFG measurement parameters are converted to normal conditions (Standard temperature and pressure conditions) as part of the monitoring process in place, monitoring of T_t is not required (except for the determination of moisture content).
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Data / Parameter	P_t
Unit	Pa
Description	Pressure of the LFG stream in time interval t
Source of data	Measurements by the project developer using a pressure meter
Value(s) applied	The monthly emission reduction calculation spreadsheets (that are enclosed to this Monitoring Report) include all records of measurement data of pressure of collected LFG during the considered monitoring period.
Measurement methods and procedures	No separate monitoring is necessary when using flow meters that automatically measure the temperature and pressure, expressing LFG volumes in normalized cubic meters. Measurements of pressure of collected LFG are performed by a LFG pressure sensor that is installed in the main LFG pipeline within the flaring facility. Four LFG pressure sensors were used alternately during the considered monitoring period for measuring pressure of collected LFG (due to calibration events schedule). Their specifications are as follows: <u>LFG pressure sensor in operation during the period from 01/01/2021 to 01/11/2021:</u> - Manufacturer: ABB - Model: 266HSH - Accuracy: $\pm 0.06\%$ - Serial Number: 3K646617022100

- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 1 year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 24/11/2020 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-7319/20). The performed calibration event is valid until 23/11/2021.

LFG pressure sensor in operation during the period from 01/11/2021 to 21/07/2022:

- Manufacturer: SMAR
- Model: LD301
- Accuracy: $\pm 0.075\%$
- Serial Number: U529059
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 1 year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 24/11/2020 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-7318/20). The performed calibration event is valid until 23/11/2021.
 - Calibration event performed on 09/11/2021 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-6896/21). The performed calibration event is valid until 08/11/2022.

LFG pressure sensor in operation during the period from 21/07/2022 to 24/08/2022:

- Manufacturer: SMAR
- Model: LD301
- Accuracy: $\pm 0.075\%$
- Serial Number: U504059
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 1 year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 09/11/2021 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-6898/21). The performed calibration event is valid until 08/11/2022.

LFG pressure sensor in operation during the period from 24/08/2022 to 30/07/2025:

- Manufacturer: ABB
- Model: 264HR
- Accuracy: $\pm 0.075\%$
- Serial Number: 6409016558
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 1 year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 10/11/2021 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-6908/21). The performed calibration event is valid until 09/11/2022.

	- Calibration event performed on 26/10/2022 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-8738/22). The performed calibration event is valid until 25/10/2023. - Calibration event performed on 19/10/2023 by CTJ Tecnologia e Confiabilidade (as indicated in the Calibration Certificate Number P-11160/23). The performed calibration event is valid until 17/10/2024. - Calibration event performed on 25/09/2024 by CTJ Tecnologia e Confiabilidade. (as indicated in the Calibration Certificate Number P-11402/24). The performed calibration event is valid until 24/09/2025.
Monitoring frequency	Continuous measurements of LFG pressure are recorded and reported with an every-minute frequency.
QA/QC procedures	The calibration frequency of this monitoring equipment should be according to the manufacturer's specifications.
Purpose of data	Calculation of baseline emissions.
Additional comment	Provided all LFG measurement parameters are converted to normal conditions (Standard temperature and pressure conditions) as part of the monitoring process in place, monitoring of P_t is not required.

Data / Parameter	EC_{PJ,grid,y}																		
Unit	MWh																		
Description	Amount of grid electricity consumed by the project activity during the year <i>y</i>																		
Source of data	Measurements by the project developer using appropriate electricity meter.																		
Value(s) applied	While measurements of consumption of grid-sourced electricity by the project activity are performed by two electricity meters (one electricity meter for the flaring station + engine-generator sets 1, 2, 3, 4 and 5, and one electricity meter for the engine-generator sets 6 and 7), the monitoring parameter EC_{PJ,grid,y} is thus measured, recorded and reported on the basis of the following sub-parameters: - EC_{PJ,grid-1,y}: Grid-sourced electricity consumption by the flaring station and engine-generator sets 1, 2, 3, 4 and 5; - EC_{PJ,grid-2,y}: Grid-sourced electricity consumption by the engine-generator sets 6 and 7. Monthly and accumulated total annual value of grid-sourced electricity consumed by the GS project activity during the considered monitoring period are as follows: <table border="1"> <thead> <tr> <th>Month</th><th>Electricity consumption for the flaring station and engine-generator sets 1, 2, 3, 4 and 5 (in MWh)</th></tr> </thead> <tbody> <tr> <td>January/2021</td><td>0.61</td></tr> <tr> <td>February/2021</td><td>0.58</td></tr> <tr> <td>March/2021</td><td>0.36</td></tr> <tr> <td>April/2021</td><td>0.63</td></tr> <tr> <td>May/2021</td><td>0.01</td></tr> <tr> <td>June/2021</td><td>0.21</td></tr> <tr> <td>July/2021</td><td>0.16</td></tr> <tr> <td>August/2021</td><td>0.17</td></tr> </tbody> </table>	Month	Electricity consumption for the flaring station and engine-generator sets 1, 2, 3, 4 and 5 (in MWh)	January/2021	0.61	February/2021	0.58	March/2021	0.36	April/2021	0.63	May/2021	0.01	June/2021	0.21	July/2021	0.16	August/2021	0.17
Month	Electricity consumption for the flaring station and engine-generator sets 1, 2, 3, 4 and 5 (in MWh)																		
January/2021	0.61																		
February/2021	0.58																		
March/2021	0.36																		
April/2021	0.63																		
May/2021	0.01																		
June/2021	0.21																		
July/2021	0.16																		
August/2021	0.17																		

September/2021	0.38
October/2021	0.26
November/2021	0.84
December/2021	0.62
January/2022	0.34
February/2022	0.16
March/2022	0.22
April/2022	0.16
May/2022	0.11
June/2022	0.48
July/2022	0.84
August/2022	0.29
September/2022	0.92
October/2022	1.75
November/2022	0.46
December/2022	0.27
January/2023	0.45
February/2023	0.67
March/2023	2.13
April/2023	0.40
May/2023	0.31
June/2023	0.61
July/2023	0.64
August/2023	0.42
September/2023	0.77
October/2023	1.18
November/2023	0.91
December/2023	0.19
January/2024	0.73
February/2024	0.27
March/2024	0.39
April/2024	0.29
May/2024	0.19
June/2024	0.15
July/2024	0.30
August/2024	0.34
September/2024	0.79
October/2024	9.30

November/2024	0.32
December/2024	0.72
January/2025	0.39
February/2025	0.12
March/2025	0.49
April/2025	0.58
May/2025	0.25
June/2025	0.27
July/2025	0.30
Total	36.00

Month	Electricity consumption for the engine-generator sets 6 and 7 (in MWh)
February/2022	0.00
March/2022	0.00
April/2022	0.00
May/2022	0.00
June/2022	1.40
July/2022	0.00
August/2022	0.00
September/2022	0.00
October/2022	1.40
November/2022	1.40
December/2022	1.40
January/2023	1.40
February/2023	1.40
March/2023	1.40
April/2023	0.00
May/2023	1.40
June/2023	0.00
July/2023	1.40
August/2023	1.40
September/2023	1.40
October/2023	1.40
November/2023	0.00
December/2023	1.40
January/2024	0.00

	February/2024	0.00
	March/2024	1.40
	April/2024	1.40
	May/2024	0.00
	June/2024	0.00
	July/2024	2.80
	August/2024	0.00
	September/2024	1.40
	October/2024	1.40
	November/2024	0.00
	December/2024	0.00
	January/2025	1.40
	February/2025	0.00
	March/2025	1.40
	April/2025	1.40
	May/2025	0.00
	June/2025	1.40
	July/2025	0.00
	Total	33.00
Measurement methods and procedures	<u>Electricity meter in operation for measuring grid-sourced electricity consumption of the flaring station and engine-generator sets 1, 2, 3, 4, and 5 during the whole period from 01/01/2021 to 30/07/2025:</u> - Manufacturer: Schneider Electric - Model: ION 8650 - Accuracy: $\pm 0.20\%$ - Serial Number: MW-1701A841-02 - Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 5 years. - Date(s) and validity of performed calibration event(s) valid for the considered monitoring period: - Calibration event performed on 07/03/2017 by 3C Services S.A. (as indicated in the Calibration Certificate Number 8704/Z-17).	

The performed calibration event is valid until 06/03/2022.

- Calibration event performed on 14/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 13/07/2026.
- Calibration event performed on 23/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 22/07/2026.
- Calibration event performed on 08/02/2022 by Metrum. (as indicated in the Calibration Certificate Number CC-0010-22). The performed calibration event is valid until 07/02/2027.
- Calibration event performed on 15/02/2024 by Metrum. (as indicated in the Calibration Certificate Number CC-0874-24). The performed calibration event is valid until 13/02/2029.

Backup electricity meter in operation for measuring grid-sourced electricity consumption of the flaring station and engine-generator sets 1, 2, 3, 4, and 5 during the whole period from 01/01/2021 to 30/07/2025:

- Manufacturer: Schneider Electric
- Model: ION 8650
- Accuracy: $\pm 0.20\%$
- Serial Number: MW-1701A941-02
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 5 years.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:

- Calibration event performed on 07/03/2017 by 3C Services S.A. (as indicated in the Calibration Certificate Number 8704/Z-17). The performed calibration event is valid until 06/03/2022.
- Calibration event performed on 14/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 13/07/2026.
- Calibration event performed on 23/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 22/07/2026.
- Calibration event performed on 08/02/2022 by Metrum. (as indicated in the Calibration Certificate Number CC-0011-22). The performed calibration event is valid until 07/02/2027.
- Calibration event performed on 15/02/2024 by Metrum. (as indicated in the Calibration Certificate Number CC-0875-24). The performed calibration event is valid until 12/02/2029.

Electricity meter in operation for measuring grid-sourced electricity consumption of the engine-generator sets 6 and 7 during the period from 19/01/2022⁹ to 30/07/2025:

- Manufacturer: Landis+Gyr
- Model: E650-A2E3
- Accuracy: $\pm 2.0\%$

⁹ It is important to note that measurement records of electricity generation and measurement records of consumption of grid-sourced electricity for engine-generator sets 6 and 7 are available from 19/01/2022 onwards since these particular engine-generator sets started to operate on this date.

- Serial Number: GPE228200168
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 5 years.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:

While the installed electricity meter is regarded as a regulated meter (e.g. the electricity is installed, maintained and calibrated as per practices and procedures of the local electricity distribution company Centrais Elétricas de Minas Gerais S.A. (CEMIG), the electricity meter is subject to regular maintenance, testing and calibration procedures as per the requirements set by the Brazilian federal metrology authority (INMETRO ¹⁰) and by the Brazilian Agency for Electricity (ANEEL ¹¹). Furthermore, while, under conformance with applicable regulations, CEMIG does not provide calibration registries and/or calibration certificates for the electricity meters installed by CEMIG, it is relevant to note that the electricity meter (new and tested/verified/approved unit (with

¹⁰ The Instituto Nacional de Metrologia, Qualidade e Tecnologia (INMETRO) (National Institute of Metrology, Quality and Technology) is the Brazilian governmental authority for metrology, quality assurance and standardization. Through its Ordinance no. 135/2016 dated 19/08/2016, INMETRO approved the use of the electricity meter Landis+Gyr model E650-A2E3 by electricity distribution companies operating within the national electricity grid of Brazil.

¹¹ Rules and regulatory aspects for testing, verification and calibration of electricity meters installed by electricity distribution companies in Brazil (such as CEMIG) and operated under their responsibility is shared between ANEEL and INMETRO, with execution of related testing, verification and/or calibration events being carried out by the electricity distribution companies.

Given the very large number of electricity meters installed for measuring the amount of electricity consumed and/or generated by consumers/generators connected to the electricity grid, testing, verification and calibration of electricity meters are regulated as being performed on a sampling basis. The sampling methodology for the periodic verification and calibration of electricity meters is regulated by specific INMETRO technical standards, such as INMETRO Ordinance No. 587/2012 (and its updates, such as INMETRO Ordinance No. 493/2021) and the NBR 5426 standard (Sampling plans and procedures in inspection by attributes), which are referenced in ANEEL regulations.

	verification/calibration event being performed as part of its manufacturing process ¹²)) was installed in the project site by CEMIG in year 2022. Since as per its manufacturer's recommendation, the installed electricity meter is required to be calibrated every 5 years, it is therefore assumed that it has operated under conformance with its calibration requirements since its installation (including the whole period encompassed by the considered monitoring period in which it was under operation).
Monitoring frequency	Continuous measurements of consumption of grid-source electricity are aggregated and reported monthly.
QA/QC procedures	The calibration frequency of the monitoring equipment should be according to the manufacturer's specifications.
Purpose of data	Calculation of project emissions.
Additional comment	The data will be archived throughout the crediting period and two years thereafter.

Data / Parameter	$EF_{grid,OM,y} = EF_{grid,OM-DD,y}$
Unit	tCO ₂ /MWh
Description	Operation margin CO ₂ emission factor in year y = Dispatch data analysis operating margin CO ₂ emission factor in year y

¹² As regulated by ANNEL/INMETRO electricity meters manufactured in Brazil, such as the Landis+Gyr model E650-A2E3 installed as part of the project activity, are tested and calibrated as part of their manufacturing process with related testing/calibration procedures being approved by ANNEL/INMETRO for each type/specification/model of electricity meter.

Source of data	Calculated (based on official annual value as calculated and published by the Brazilian DNA). The selected annual values of $EF_{grid,OM,y}$ valid for the years of 2021, 2022, 2023, 2024 and 2025 are calculated by the DNA of Brazil and are made public available at the website of the DNA of Brazil: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao
Value(s) applied	0.5985 (year 2021) 0.4069 (year 2022) 0.3786 (year 2023) 0.4473 (year 2024) 0.2366 (Jan/2025), 0.2478 (Feb/2025), 0.2146 (Mar/2025), 0.2895 (Apr/2025), 0.3087 (May/2025), 0.4549 (Jun/2025) and 0.5293 (Jul/2025).
Measurement methods and procedures	Value applicable for the considered monitoring period are calculated by the DNA of Brazil as per applicable guidance of the CDM methodological tool "Tool to calculate the emission factor for an electricity system".
Monitoring frequency	Yearly.
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of project emissions.
Additional comment	-

Data / Parameter	$EF_{grid,CM,y}$
Unit	tCO ₂ /MWh
Description	CO ₂ emission factor of the Brazilian grid electricity during the year y

Source of data	Calculated as per applicable guidance of the CDM methodological tool "Tool to calculate the emission factor for an electricity system" (version 03.0)
Value(s) applied	0.2524 (year 2021) 0.2045 (year 2022) 0.1974 (year 2023) 0.2146 (year 2024) 0.1619 (Jan/2025), 0.1647 (Feb/2025), 0.1564 (Mar/2025), 0.1751 (Apr/2025), 0.1799 (May/2025), 0.2351 (Jun/2025) and 0.1659 (Jul/2025).
Measurement methods and procedures	Value applicable for the considered monitoring period are calculated as per applicable guidance of the CDM methodological tool "Tool to calculate the emission factor for an electricity system".
Monitoring frequency	Yearly.
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of project and baseline emissions.
Additional comment	-

Data / Parameter	Op_{j,h}
Unit	-
Description	Operation of the equipment that consumes LFG (engine-generator sets of the electricity generation infrastructure)
Source of data	The electronic control system for each installed engine-generator set continuously monitors its operational status ("on" for under operation or "off" for not under operation).
Value(s) applied	While the operational status for each engine-generator set consuming LFG is independently monitored, the monitoring parameter Op _{j,h} is recorded and reported on the basis of the following sub-parameters:

	- $Op_{\text{engine-1},h}$: Operation of the engine-generator set 1 - $Op_{\text{engine-2},h}$: Operation of the engine-generator set 2 - $Op_{\text{engine-3},h}$: Operation of the engine-generator set 3 - $Op_{\text{engine-4},h}$: Operation of the engine-generator set 4 - $Op_{\text{engine-5},h}$: Operation of the engine-generator set 5 - $Op_{\text{engine-6},h}$: Operation of the engine-generator set 6 - $Op_{\text{engine-7},h}$: Operation of the engine-generator set 7 For each one of the 7 installed engine-generator sets, records for every-minute operational status of the engine (engine-generator sets under operation ("on") = 1 or not under operation ("off") = 0) are made available in the emission reduction calculation spreadsheets.
Measurement methods and procedures	For each equipment unit j using the LFG monitor that the plant is operating in hour h by the monitoring any one or more of the following two applicable parameters: (a) Temperature. Determine the location for temperature measurements and minimum operational temperature based on manufacturer's specifications of the equipment. Document and justify the location and minimum threshold in the Transition Request Form + GS4GG PDD. (b) Flame. Flame detection system is used to ensure that the equipment is in operation; I Products generated. Monitor the generation of steam for the case of boilers and air-heaters and glass for the case of glass melting furnaces. This option is not applicable to brick kilns. $Op_{j,h}=0$ when: (a) One of more temperature measurements are missing or below the minimum threshold in hour h (instantaneous measurements are made at least every minute);

	(b) Flame is not detected continuously in hour h (instantaneous measurements are made at least every minute); I No products are generated in the hour h. Otherwise, $O_{pj,h}=1$
Monitoring frequency	Once per minute
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of baseline emissions.
Additional comment	In the particular case of the GS project activity the only equipment that consumes LFG (and for which the monitoring parameter $O_{pj,h}$ is applicable to) are the engine-generator sets. As per ACM0001 (version 19.0), the monitoring parameter $O_{pj,h}$ is not applicable to the project's high temperature enclosed flare.

Data / Parameter	$T_{EG,m}$
Unit	°C
Description	Temperature in the exhaust gas of the enclosed flare in minute m
Source of data	Measurements performed by the project participants
Value(s) applied	The monthly emission reduction calculation spreadsheets (that are enclosed to this Monitoring Report) include all records of measurement data of temperature in the exhaust gas of the enclosed flare during the considered monitoring period.
Measurement methods and procedures	Four thermocouples were used alternately during the considered monitoring period for measuring temperature in the exhaust gas of the flare (due to calibration events schedule). Their specifications are as follows:

Thermocouple in operation during the period from 01/01/2021 to 21/09/2021:

- Manufacturer: Inor Process AB
- Model: APAQ-C130
- Accuracy: $\pm 0.15K$ or $\pm 0.15\%$ of spam
- Serial Number: N2034.972857/7438
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 03/10/2020 by Ecil Produtos e Sistemas de Medição e Controle Ltda. (as indicated in the Calibration Certificate Number T-7438/20). The performed calibration event is valid until 02/10/2021.

Thermocouple in operation during the period from 21/09/2021 to 19/09/2022:

- Manufacturer: Inor Process AB
- Model: APAQ-C130
- Accuracy: $\pm 0.15K$ or $\pm 0.15\%$ of spam
- Serial Number: 2045977774/1531
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 10/02/2021 by Ecil Produtos e Sistemas de Medição e Controle Ltda. (as indicated in the Calibration Certificate Number 1531/21). The performed calibration event is valid until 09/02/2022.

Thermocouple in operation during the periods from 19/09/2022 to 13/09/2023 and from 02/09/2024 to 18/10/2024:

- Manufacturer: Inor Process AB
- Model: APAQ-C130
- Accuracy: $\pm 0.15K$ or $\pm 0.15\%$ of spam
- Serial Number: 2220.014118/9735
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every year.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 31/08/2022 by Ecil Produtos e Sistemas de Medição e Controle Ltda. (as indicated in the Calibration Certificate Number 9735/22). The performed calibration event is valid until 30/08/2023.
 - Calibration event performed on 19/10/2023 by Calibracenter. (as indicated in the Calibration Certificate Number M03851/2023). The performed calibration event is valid until 17/10/2024.

Thermocouple in operation during the periods from 13/09/2023 to 02/09/2024 and from 18/10/2024 to 30/07/2025:

- Manufacturer: Inor Process AB
- Model: APAQ-C130
- Accuracy: $\pm 0.15K$ or $\pm 0.15\%$ of spam
- Serial Number: N2225.016182/3432
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every year.

- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 23/03/2023 by Ecil Produtos e Sistemas de Medição e Controle Ltda. (as indicated in the Calibration Certificate Number 3432/23). The performed calibration event is valid until 22/03/2024.
 - Calibration event performed on 10/09/2024 by Calibracenter. (as indicated in the Calibration Certificate Number M033108/2024). The performed calibration event is valid until 09/09/2025.

Relative delay ¹³ on performing calibration events for installed thermocouple occurred as follows:

Monitoring instrument/equipment identification	Temperature in the exhaust gas of the enclosed flare
Serial Number	2220.14118/9735
Date when the calibration event was to be performed	30/08/2023
Date when the delayed calibration event was performed	13/09/2023
Period Applied	30/08/2023 to 13/09/2023
Delayed period	14 days

¹³ Further details regarding the calibration delay periods applied can be found in the Macaucas_Calibration Control spreadsheet.

Monitoring frequency	Continuous measurements of temperature in the exhaust gas of the enclosed flare are recorded and reported with an every-minute frequency.
QA/QC procedures	The calibration frequency of this monitoring equipment should be according to the manufacturer's specifications.
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data / Parameter	Flame_m
Unit	Flame status "on" or flame status "off"
Description	Flame detection of flare in the minute <i>m</i>
Source of data	Whenever flame is detected in the flare, flame status "on" or "1" value is attributed. Whenever no flame is detected in the flare, flame status "off" or "0" is attributed.
Value(s) applied	The CERs calculation spreadsheet includes all records of measurement data of this parameter during the considered monitoring period.
Measurement methods and procedures	<i>UV Flame detector used for measuring Flame_m:</i> - Manufacturer: Honeywell - Model: UVS10 - Serial Number: N.A Calibration frequency: No calibration is required as the equipment has a self-checking function.
Monitoring frequency	Once per minute. Detection of flame recorded as a minute that the flame was on, otherwise recorded as a minute that the flame was off.
QA/QC procedures	Equipment shall be maintained and calibrated in accordance with manufacturer's recommendations
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data / Parameter	Maintenance_y
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Unit	Calendar dates
Description	Maintenance events completed in year y as monitored by the project participants.
Source of data	Maintenance logs
Value(s) applied	The following relevant maintenance events (inspection and maintenance services) are applicable for the installed high temperature enclosed flare for the considered monitoring period: Maintenance event dated 02/01/2021, 19/05/2021, 16/11/2021, 11/05/2022, 06/11/2022, 08/05/2023 30/10/2023, 24/04/2024, 20/10/2024 and 12/04/2025: General inspection/maintenance service on the installed high temperature enclosed flare (incl. inspection of the condition of the flare isolation ceramics revetment material, checking of conditions of the LPG supply valve for pilot flame, checking of condition/function of the air inlet dumpers, checking of the conditions of the thermocouples, checking of the condition of the UV flame detector, checking of the condition of the flame arrester valve, checking of the conditions of the LFG injectors, checking of painting conditions). As per the applied maintenance practice for the GS project activity, general inspection/maintenance services are opportunely performed in the flare during its planned or unplanned interruptions of operations within a time interval between 2 performed inspection/maintenance services events never higher than 6 months. The expected lifetime for the isolation ceramics revetment material for the flare is of at least 10 years (as established in detail for the ex-ante determined parameter "Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval" (SPEC_{flare})).

	Performed maintenance and overhauling services in the flare are performed under by specialized technical service team under conformance with maintenance requirements for the flare (as established by equipment manufacturer) and as required by the ex-ante determined parameter $SPEC_{flare}$.
Measurement methods and procedures	Records of maintenance logs include all aspects of the maintenance including the details of the person(s) undertaking the work, parts replaced, or needing to be replaced, source of replacement parts, serial numbers and calibration certificates.
Monitoring frequency	Maintenance services in the flare are performed regularly by specialized technical service team under conformance with maintenance requirements for the flare (as established by equipment manufacturer) and as required by the ex-ante determined parameter $SPEC_{flare}$ (which specify a maximum interval of 6 months between maintenance services).
QA/QC procedures	The maintenance event logs and documentation for the whole project activity are recorded as per requirement of the company's quality and control (QA/QC) system that is implemented for activities undertaken at the CTR Macaúbas landfill.
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data / Parameter	$TDL_{k,y}$
Unit	-
Description	Average technical transmission and distribution losses for providing electricity to the grid
Source of data	Applicable default value as per Option A1 of the CDM methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 03.0) is selected.

Value(s) applied	3%
Measurement methods and procedures	The value for $TDL_{k,y}$ is determined for the distribution and transmission networks of the electricity grid of the same voltage as the connection where the proposed GS project activity is connected to. The technical distribution losses should not contain other types of grid losses (e.g. commercial losses/theft).
Monitoring frequency	Annually.
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data / Parameter	$TDL_{j,y}$
Unit	-
Description	Average technical transmission and distribution losses for grid-sourced electricity consumption in year y
Source of data	Applicable default value as per Option A1 of the CDM methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 03.0) is selected.
Value(s) applied	20%
Measurement methods and procedures	The value for $TDL_{j,y}$ is determined for the distribution and transmission networks of the electricity grid of the same voltage as the connection where the proposed GS project activity is connected to. The technical distribution losses should not contain other types of grid losses (e.g. commercial losses/theft).
Monitoring frequency	Annually.

QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of project emissions.
Additional comment	-

Data / Parameter	Status of biogas destruction device(s)
Unit	-
Description	Operational status of biogas destruction device(s)
Source of data	Measurements by the project developer.
Value(s) applied	Not applicable.
Measurement methods and procedures	Records confirming the operational status for the installed high temperature enclosed flare are considered by continuous monitoring of the signal of the UV flame detector installed in the flare during the considered monitoring period, with related monitoring details included under details for the monitoring parameter "Flame detection of flare in the minute m" (Flame_m). The electronic control system for each engine-generator set continuously monitors and reports (via electronic signal) the operational status of each one of the engine-generator sets ("on" for under operation or "off" for not under operation). It is relevant to note that, for the particular case of the installed 7 engine-generator sets, the parameter "Status of biogas destruction device(s)" is monitored on the same basis as the monitoring parameter "Operation of the equipment that consumes LFG" (engine-generator sets of

	the electricity generation infrastructure ($Op_{j,h}$) (for each individual engine-generator through the sub-parameters $Op_{engine-1,h}$, $Op_{engine-2,h}$, $Op_{engine-3,h}$, (...), $Op_{engine-7,h}$) as reported in the monthly emission reductions calculation spreadsheets. It is also relevant to note that, for the particular case of the installed high temperature enclosed flare, the parameter "Status of biogas destruction device(s)" is monitored on the same basis as the monitoring parameter "Flame detection of flare in the minute m" ($Flame_m$), as reported in the monthly emission reductions calculation spreadsheets.
Monitoring frequency	Continuous
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Calculation of baseline emissions.
Additional comment	

SDG 7 and 13 – Affordable and Clean Energy and Climate Action

Data / Parameter	$EC_{BL,y}$
Unit	MWh
Description	Amount of electricity generated using LFG by the project activity in year y
Source of data	Continuous measurements of electricity generation are performed by using appropriate electricity meters.
Value(s) applied	While measurements are performed by two electricity meters (one electricity meter for the flaring station and engine-generator sets 1, 2, 3, 4 and 5, and one electricity

meter for the engine-generator sets 6 and 7), the monitoring parameter $EC_{BL,y}$ is thus measured, recorded and reported on the basis of the following sub-parameters:

- $EC_{BL-1,y}$: Electricity generated by the engine-generator sets 1, 2, 3, 4 and 5;
- $EC_{BL-2,y}$: Electricity generated by the engine-generator sets 6 and 7.

Monthly and accumulated annual value of grid-sourced electricity consumed by the GS project activity during the considered monitoring period are as follows:

Month	Electricity generation engine-generator sets 1, 2, 3, 4 and 5 (in MWh)
January/2021	4,365.48
February/2021	3,535.32
March/2021	4,427.68
April/2021	4,269.44
May/2021	4,591.10
June/2021	4,272.74
July/2021	4,406.13
August/2021	4,410.42
September/2021	3,976.60
October/2021	3,670.93
November/2021	3,469.22
December/2021	3,626.99
January/2022	3,585.95
February/2022	3,314.29
March/2022	4,586.99
April/2022	4,407.34
May/2022	4,496.26
June/2022	4,046.43
July/2022	4,460.52
August/2022	4,386.71
September/2022	4,094.42

October/2022	4,119.27
November/2022	4,388.09
December/2022	4,300.55
January/2023	4,608.69
February/2023	4,095.65
March/2023	4,414.43
April/2023	4,467.14
May/2023	4,601.87
June/2023	4,468.65
July/2023	4,603.44
August/2023	4,191.19
September/2023	4,317.72
October/2023	4,139.91
November/2023	4,172.87
December/2023	4,617.52
January/2024	4,507.78
February/2024	4,522.84
March/2024	4,334.95
April/2024	4,509.06
May/2024	4,677.32
June/2024	4,553.02
July/2024	4,591.86
August/2024	4,052.93
September/2024	4,131.16
October/2024	4,178.83
November/2024	4,023.51
December/2024	4,283.26
January/2025	4,460.42
February/2025	3,964.76
March/2025	4,280.55
April/2025	3,968.22
May/2025	3,329.90
June/2025	2,679.77
July/2025 (from 01/07/2025 to 30/07/2025)	2,747.51
Total	229,705

Month	Electricity generation engine-generator sets 6 and 7 (in MWh)
February/2022	2,056.60
March/2022	1,922.20
April/2022	1,852.20
May/2022	1,920.80
June/2022	1,821.40
July/2022	1,877.40
August/2022	1,891.40
September/2022	1,806.00
October/2022	1,765.40
November/2022	1,656.20
December/2022	1,810.20
January/2023	1,846.60
February/2023	1,164.80
March/2023	1,811.60
April/2023	1,842.40
May/2023	1,516.20
June/2023	1,792.00
July/2023	1,695.40
August/2023	1,864.80
September/2023	1,666.00
October/2023	1,829.80
November/2023	1,636.60
December/2023	1,726.20
January/2024	1,709.40
February/2024	1,687.00
March/2024	1,960.00
April/2024	1,685.60
May/2024	1,678.60
June/2024	2,032.80
July/2024	1,853.60
August/2024	1,709.40
September/2024	1,744.40
October/2024	1,722.00

	November/2024	1,587.60
	December/2024	1,804.60
	January/2025	1,771.00
	February/2025	1,695.40
	March/2025	1,633.80
	April/2025	1,650.60
	May/2025	1,506.40
	June/2025	1,761.20
	July/2025	1,764.00
	Total	73,729
Measurement methods and procedures	<u>Electricity meter in operation for measuring electricity generated by engine-generator sets 1, 2, 3, 4 and 5 during the whole period from 01/01/2021 to 30/07/2025:</u> - Manufacturer: Schneider Electric - Model: ION 8650 - Accuracy: $\pm 0.20\%$ - Serial Number: MW-1701A841-02 - Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 5 years. - Date(s) and validity of performed calibration event(s) valid for the considered monitoring period: - Calibration event performed on 07/03/2017 by 3C Services S.A. (as indicated in the Calibration Certificate Number 8704/Z-17). The performed calibration event is valid until 06/03/2022. - Calibration event performed on 14/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 13/07/2026. - Calibration event performed on 23/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 22/07/2026.	

- Calibration event performed on 08/02/2022 by Metrum. (as indicated in the Calibration Certificate Number CC-0010-22). The performed calibration event is valid until 07/02/2027.
- Calibration event performed on 15/02/2024 by Metrum. (as indicated in the Calibration Certificate Number CC-0874-24). The performed calibration event is valid until 13/02/2029.

Backup electricity meter in operation for measuring electricity generated by engine-generator sets 1, 2, 3, 4 and 5 during the whole period from 01/01/2021 to 30/07/2025:

- Manufacturer: Schneider Electric
- Model: ION 8650
- Accuracy: $\pm 0.20\%$
- Serial Number: MW-1701A941-02
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 5 years.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:
 - Calibration event performed on 07/03/2017 by 3C Services S.A. (as indicated in the Calibration Certificate Number 8704/Z-17). The performed calibration event is valid until 06/03/2022.
 - Calibration event performed on 14/07/2021 by Metrum. (as indicated in the Calibration Certificate Number 5572). The performed calibration event is valid until 13/07/2026.
 - Calibration event performed on 23/07/2021 by Metrum. (as indicated in the Calibration

Certificate Number 5572). The performed calibration event is valid until 22/07/2026.

- Calibration event performed on 08/02/2022 by Metrum. (as indicated in the Calibration Certificate Number CC-0011-22). The performed calibration event is valid until 07/02/2027.
- Calibration event performed on 15/02/2024 by Metrum. (as indicated in the Calibration Certificate Number CC-0875-24). The performed calibration event is valid until 12/02/2029.

Electricity meter in operation for measuring electricity generated by engine-generator sets 6 and 7 during the period from 19/01/2022 to 30/07/2025:

- Manufacturer: Landis+Gyr
- Model: E650-A2E3
- Accuracy: $\pm 2.0\%$
- Serial Number: GPE228200168
- Calibration frequency (as per the application of the monitoring plan and/or recommendations from the equipment manufacturer): Calibration events are to be performed every 5 years.
- Date(s) and validity of performed calibration event(s) valid for the considered monitoring period:

While the installed electricity meter is regarded as a regulated meter (e.g. the electricity is installed, maintained and calibrated as per practices and procedures of the local electricity distribution company Centrais Elétricas de Minas Gerais S.A. (CEMIG), the electricity meter is subject to regular maintenance, testing and calibration procedures as per the requirements set by the Brazilian federal metrology authority (INMETRO) and by the Brazilian

	Agency for Electricity (ANEEL). Furthermore, while, under conformance with applicable regulations, CEMIG does not provide calibration registries and/or calibration certificates for the electricity meters installed by CEMIG, it is relevant to note that the electricity meter (new and tested/verified/approved unit (with verification/calibration event being performed as part of its manufacturing process)) was installed in the project site by CEMIG in year 2022. Since as per its manufacturer's recommendation, the installed electricity meter is required to be calibrated every 5 years, it is therefore assumed that it has operated under conformance with its calibration requirements since its installation (including the whole period encompassed by the considered monitoring period in which it was under operation).
Monitoring frequency	Continuous measurements of consumption of grid-source electricity are aggregated and reported monthly.
QA/QC procedures	The calibration frequency of the monitoring equipment should be according to the manufacturer's specifications.
Purpose of data	Calculation of project emissions.
Additional comment	The data will be archived throughout the crediting period and two years thereafter.

SDG 8 – Decent work and Economic Growth

Data / Parameter	Total number of jobs
Unit	-
Description	Number of employees related to the operation of the GS project activity.
Source of data	Employment records.
Value(s) applied	6 employees related to the operation of the GS project activity during the year of 2021, 7 employees for year 2022,

	9 employees for year 2023, 11 employees for year 2024 and 12 for year 2025, an average of 9 employees for every year of the considered monitoring period and in year 2025 +3 compared to the previous ex-ante estimations as per the registered GS4GG TRF + PDD.
Measurement methods and procedures	In accordance with available records of employees related to the operation of the GS project activity (registered under the Brazilian Ministry of Labor). As an additional monitoring requirement, the quality of jobs created shall be monitored on the basis of: - Conformity with national Labor Laws - Availability of Personnel Protection Equipment and safety/health instructions and procedures - Control of personnel working hours and overtime pay The project developer Vital Engenharia Ambiental S.A. has strict policies regarding conformity with national Labour Laws for its employees. Regarding safety and health issues, there are rigid procedures implemented at both the CTR Macaúbas landfill and the GS project activity, as can be demonstrated at both company's guidelines "Programa de Controle Médico de Saúde Ocupacional" (translated as "Medical Control Program of Occupational Health") and "Programa de Gerenciamento de Riscos" (translated as "Risk Management Program"), which are updated every year. All these programs and procedures are under conformance with national Labor regulations. Regarding control of personnel working hours and overtime pay, all the company's employees must use the Employees Time Report, which shows the time each employee arrives and leaves the landfill. Any extra hours beyond those which are mandatory as per each individual contractual

	agreement are remunerated as extra hours. The company also provides its employees with thirteenth month pay and remunerated vacations. Available related procedures are also under conformance with national Labor regulations.
Monitoring frequency	Annual.
QA/QC procedures	Procedures related to collection/gathering, recording, storing and reporting of monitoring data for the GS project activity are performed in accordance with detailed working instructions.
Purpose of data	Determination of the monitoring indicator applicable for SDG 8.
Additional comment	-

The following monitored parameters (which are also listed in the Transition Request Form + GS4GG PDD) were not used for the calculation of emission reductions for the considered monitoring period and thus are not presented in the tables above:

- $V_{t,db}$: Volumetric flow of LFG stream in time interval t on a dry basis
- $v_{CH_4,t,db}$: Volumetric fraction of CH_4 in the collected LFG in time interval t on a dry basis
- $M_{t,db}$: Mass flow of the LFG stream in time interval t on dry basis
- $P_{H_2O,t,Sat}$: Saturation pressure of H_2O at temperature T_t in time interval t
- $F_{CH_4,EG,t}$: Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period t

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
NA	NA	NA
Not applicable as the GS project activity is a Renewable Energy Activity project (non-Community Service Activity).		

D.4. Implementation of sampling plan

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Not applicable.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

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SDG 7: Affordable and Clean Energy:

The baseline scenario represents the absence of the GS project activity, with no electricity being generated at the CTR Macaúbas landfill. Thus, it is directly assumed that, in the baseline scenario, the parameter $EC_{BL,y}$ (net amount of electricity generated by using LFG) is equal to 0.

SDG 8: Decent Work and Economic Growth:

The GS project activity has created employment opportunities which would not be created in the baseline scenario. Thus, it is directly assumed that, in the baseline scenario, the parameter "Total number of jobs" is equal to 0.

SDG 13 Climate Action:

The project contributes to reducing emissions of greenhouse gases. In the baseline scenario (absence of the project activity) methane would be freely emitted into the atmosphere as there are no regulations that make the flaring of methane in landfills mandatory in Brazil. Baseline emissions are calculated as follows:

Baseline emission calculation

Under conformance with provisions and calculation approaches of the Transition Request Form + GS4GG PDD, baseline emissions (BE_y) for the GS project activity are determined (in tCO_2e) for the considered monitoring period as follows:

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

Where:

$BE_{CH_4,y}$ Baseline emissions of methane from the SWDS¹⁴.

$BE_{EC,y}$ Baseline emissions associated with electricity generation in year y (in tCO_2/yr).

Determination of baseline emissions of methane from the SWDS in year y ($BE_{CH_4,y}$):

Baseline emissions of methane ($BE_{CH_4,y}$) are determined as follows:

$BE_{CH_4,y}$ Baseline emissions of methane from the SWDS in year y . As established by both the CDM baseline and monitoring methodology ACM0001 (version 19.0) and the Transition Request Form + GS4GG PDD, the determination of $BE_{CH_4,y}$ is based on the amount of methane that is actually captured and combusted as part of the GS project activity (through destruction of collected LFG in the flare and/or utilization of collected LFG as gaseous fuel for electricity generation in the engine-generator sets of the project's electricity generation infrastructure). Moreover, the amount of methane that would be otherwise captured and destroyed in the CTR Macaúbas landfill (by pre-project previously existent conventional LFG destruction system) in the absence of the GS project activity (baseline scenario) is also taken into account. In addition, the effect of methane oxidation (that, as per ACM0001 (version 19.0) is assumed as existing in the baseline and not in the project scenario) is also taken into account. $BE_{CH_4,y}$ is thus determined as follows:

$$BE_{CH_4,y} = ((1 - OX_{top_layer}) * F_{CH_4,PJ,y} - F_{CH_4,BL,y}) * GWP_{CH_4}$$

Where:

¹⁴ SWDS = Solid Waste Disposal Site. For the particular case of the GS project activity, the SWDS is the CTR Macaúbas landfill.

OX_{top_layer} Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline scenario. OX_{top_layer} is ex-ante determined as 10%. Further details about the selection of the value for OX_{top_layer} is included in Section D.1 and in the Transition Request Form + GS4GG PDD.

$GWP_{CH_4,y}$ Global warming potential of CH_4 . GWP_{CH_4} is ex-ante determined as 28 tCO₂/tCH₄. Further details about the selection of the value for GWP_{CH_4} are included in Section D.1 and in the Transition Request Form + GS4GG PDD.

$F_{CH_4,BL,y}$ Amount of methane in the LFG that would be flared in the baseline scenario (absence of project activity). As outlined in Section B.6.1 of the Transition Request Form + GS4GG PDD, $F_{CH_4,BL,y}$ is calculated as follows:

$$F_{CH_4,BL,y} = 0.2 * F_{CH_4,PJ,y}$$

Where:

$F_{CH_4,PJ,y}$ Amount of methane collected by the project activity. In the particular case of the GS project activity and for the considered monitoring period, while collected LFG was sent for combustion in both the high temperature enclosed flare and in the engine-generator sets of the project's electricity generation infrastructure, $F_{CH_4,PJ,capt,y}$ is thus determined as follows for such period:

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

Where:

$F_{CH_4,EL,y}$ Amount of methane in the LFG which is used for electricity generation in year y (in tCH₄/yr). Details for the determination of

every-minute values for $F_{CH_4,EL,y}$ are presented below (under “*Determination of every-minute values for the calculation parameters $F_{CH_4,sent_flare,y}$ and $F_{CH_4,EL,y}$* ”).

$F_{CH_4,sent_flare,y}$ Amount of methane in the LFG which is sent to the flare in year y (in tCH₄/yr). Details for the determination of every-minute values for $F_{CH_4,sent_flare,y}$ are presented below (under “*Determination of every-minute values for the calculation parameters $F_{CH_4,sent_flare,y}$ and $F_{CH_4,EL,y}$* ”).

For the considered monitoring period, the accumulated value for $F_{CH_4,BL,y}$ is calculated and reported as 16,415 tCH₄. All related calculations are presented in the monthly emission reduction calculation spreadsheets that are enclosed with this Monitoring Report.

$F_{CH_4,PJ,y}$ Amount of methane in the LFG which is flared and/or used in the project activity. In the particular case of the GS project activity, $F_{CH_4,PJ,y}$ is determined as follows:

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

Where:

$F_{CH_4,EL,y}$ Amount of methane in the LFG which is used for electricity generation in year y (in tCH₄/yr). Details for the determination of every-minute values for $F_{CH_4,EL,y}$ for each individual engine-generator during the considered monitoring

period are presented below (under “*Determination of every-minute values for the calculation parameters $F_{CH4,sent_flare,y}$ and $F_{CH4,EL,y}$* ”).

$F_{CH4,flared,y}$ Amount of methane in the LFG flared by the project activity (in tCH₄) during the whole monitoring period. In accordance with calculation guidance included in the Transition Request Form + GS4GG PDD and by following applicable guidance of the CDM methodological tool “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (version 03.0), for the flare every-minute values for $F_{CH4,flared,y}$ are determined as the difference between the amount of methane supplied to the flare and residual methane emissions from combustion of LFG in the flare, as follows:

$$F_{CH4,flared,y} = F_{CH4,sent_flare,y} - (PE_{flare,y} / GWP_{CH4})$$

Where:

$F_{CH4,sent_flare,y}$ Amount of methane in the LFG which is sent to the flare.
Details for the determination of every-minute values for $F_{CH4,sent_flare,y}$ for each individual flare are presented below (under “*Determination of every-minute values for the calculation parameters $F_{CH4,sent_flare,y}$ and $F_{CH4,EL,y}$* ”).

$PE_{flare,y}$ Project emissions from flaring of the residual gas stream. Details for

the determination of every-minute values for $PE_{flare,y}$ for each individual flare are presented below (under “*Determination of $PE_{flare,y}$* ”).

Determination of the calculation parameters $F_{CH4,sent_flare,y}$ and $F_{CH4,EL,y}$:

For the considered monitoring period, Option C of the CDM methodological tool “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (version 03.0) (where the gaseous stream the tool shall be applied to is the stream of collected LFG that is sent to the flare and to the electricity generation infrastructure) is the selected option for determination of values of $F_{CH4,sent_flare,y}$ (applicable for the flare) and values of $F_{CH4,EL,y}$ (applicable for the engine-generator sets of the project’s electricity generation infrastructure).

Determination of $F_{CH4,EL,y}$:

The flow of greenhouse gas i ($F_{i,t}$) ($i = CH_4$) to the set engine-generator sets of the project’s electricity generation infrastructure is determined as follows:

$$F_{CH4,EL,y} = V_{t,wb} * v_{i,t,wb} * \rho_{i,n}$$

Where:

$V_{t,wb}$	Volumetric flow of the gaseous stream (LFG) sent to the engine-generator sets in time interval t on a wet basis. For the considered monitoring period, every-minute values of the calculation parameter $V_{t,wb}$ are calculated and reported (in Nm ³ wet gas/h) in the monthly emission reduction calculation spreadsheets valid for the considered monitoring period (and enclosed to the Monitoring Report).
$v_{i,t,wb}$	Volumetric fraction of CH ₄ in the gaseous stream in time interval t on a wet basis. Further monitoring details about the monitoring parameter $v_{i,t,wb}$ are included above and in Section D.2.

$\rho_{i,n}$ Density of greenhouse gas i in the gaseous stream at normal conditions. For the considered monitoring period, value of $\rho_{CH_4,n}$ (kg CH₄ / m³ of wet CH₄) is calculated and reported in the monthly emission reduction calculation spreadsheets valid for the considered monitoring period (and enclosed to this Monitoring Report) as follows:

$$\rho_{i,n} = (P_n * MM_i) / (R_u * T_n)$$

Where:

P_n Absolute pressure at normal conditions. Further details about the ex-post monitored parameter P_t are included in Section D.2 and in the Transition Request Form + GS4GG PDD.

T_n Temperature at normal conditions. Further details about the ex-post monitored parameter T_t are included in Section D.2 and in the Transition Request Form + GS4GG PDD.

MM_i Molecular mass of greenhouse gas i ($i = CH_4$). MM_i ($i = CH_4$) is ex-ante determined as 16.04 kg/mol. Further details about the ex-ante determined parameter MM_i ($i = CH_4$) are presented in Section D.1 and in the Transition Request Form + GS4GG PDD.

R_u Universal ideal gases constant. R_u is ex-ante determined as 8,314 Pa.m³ /kmol.K. Further details about the ex-ante determined parameter R_u are presented in Section D.1 and in the Transition Request Form + GS4GG PDD.

$\rho_{CH_4,n}$ is calculated as 0.7160000 kgCH₄ / m³CH₄ as reported in the monthly emission reduction calculation spreadsheets valid for the considered monitoring period.

During the entire monitoring period, measurements of collected LFG supplied to the engine-generator sets were performed by a single LFG flow meter (under conformance with the alternative and simplified monitoring approach presented in the Option "Use of a single flow meter for multi-use of recovered biogas" of the Appendix of the CDM

methodological tool “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (version 03.0)).

The following applicable additional monitoring requirement specifically for the use of a single or reduced number of LFG flow meters as established in the tool was considered in the context of the determination of $F_{CH_4,EL,y}$ as follows:

- It is demonstrated that the engine-generator sets are all designed in such a manner that it is physically impossible for LFG passing through and being directly emitted into the atmosphere while the underlying engine-generator sets are under non-operational status. It is thus ensured/demonstrated that during the whole considered monitoring period, no collected LFG was able to be eventually directly emitted into (vented through) the atmosphere through a non-operational engine-generator set.

For the considered monitoring period, such confirmation was done through the following approaches:

- Records of electricity generated by the engine generator sets. It is demonstrated that electricity generation (as the output from operation of such devices) corresponds to the flow of LFG actually consumed by the devices (in energy basis).
- For any time, instants (minute m) where one or more engine-generator set(s) connected downstream to the utilized single LFG flow meter were under non-operational status, it is demonstrated that the set of remaining engine-generator sets under operational status have the quantitative capacity to combust the amount of LFG flow that was sent to the underlying engine-generator sets during the underlying minute m .

For the considered monitoring period, the accumulated value for $F_{CH_4,EL,y}$ is calculated as 64,415 tCH₄.

Determination of $F_{CH_4, sent_flare, y}$:

The flow of greenhouse gas i ($F_{i,t}$) ($i = CH_4$) for the installed flare during the whole considered monitoring period is determined as follows:

$$F_{CH_4, sent_flare, y} = F_{CH_4, t} = V_{t, wb} * v_{i, t, wb} * \rho_{i, n}$$

Where:

- $V_{t, wb}$ Volumetric flow of the gaseous stream in time interval t on a wet basis at normal conditions. For the considered monitoring period, every-minute values of the calculation parameter $V_{t, wb}$ are measured and reported (in Nm³ wet gas/h) in the monthly emission reduction calculation spreadsheets valid for the considered monitoring period (and enclosed to this Monitoring Report). Further monitoring details about the monitoring parameter $V_{t, wb}$ are included in Section D.2.
- $v_{i, t, wb}$ Volumetric fraction of greenhouse gas i in the gaseous stream in a time interval t on a wet basis. As per the applied monitoring procedure, every-minute values of the monitoring parameter $v_{i, t, wb}$ (in m³ of CH₄/m³ of wet LFG) are reported in the monthly emission reduction calculation spreadsheets valid for the considered monitoring period (and enclosed to this Monitoring Report). Further monitoring details about the monitoring parameter $v_{i, t, wb}$ are included in Section D.2.
- $\rho_{i, n}$ Density of greenhouse gas i in the gaseous stream in normal conditions. The determination approach of $\rho_{i, n}$ during the considered monitoring period is presented above.

Determination of $PE_{flare, y}$:

$PE_{flare, y}$ is determined for the installed flare by following the applicable stepwise guidance of the CDM methodological tool "Project emissions from flaring". For the considered monitoring period, every minute values for $PE_{flare, y}$ are determined as a function of every-minute records of mass flow of methane sent to the flare (for the installed flare, $F_{CH_4, RG, m} = F_{CH_4, sent_flare}$) as well as based on calculated values for flare efficiency ($\eta_{flare, m} = \eta_{flare, calc, y}$) for the installed flare as follows:

$$PE_{\text{flare},y} = GWP_{\text{CH}_4} * \sum F_{\text{CH}_4,\text{RG},m} * (1 - \eta_{\text{flare},m}) * 10^{-3}$$

Where:

$F_{\text{CH}_4,\text{RG},m}$ Methane mass flow in the residual gas for the considered flare. For each minute m of the considered monitoring period and for the installed flare, values for $F_{\text{CH}_4,\text{RG},m}$ are equal to every-minute reported measurement records of the calculation sub-parameter "Amount of methane in the LFG which is sent to the flare" ($F_{\text{CH}_4,\text{sent_flare}}$).

$\eta_{\text{flare},m}$ Flare efficiency in minute m . For the considered monitoring period, $\eta_{\text{flare},m}$ is determined based on the selection of default value as per Option A (application of default value for flare efficiency) of the CDM methodological tool "Project emissions from flaring" from which the following related guidance of the Transition Request Form + GS4GG PDD is applied:

"(...)

Option A: Application of default value:

For each one of the high temperature enclosed flare (s) installed as part of the project activity, the flare efficiency for each minute m ($\eta_{\text{flare},m}$) is 90% when the following two operational conditions/requirements are simultaneously met (in order to demonstrate that the flare is operating as per the recommendations and requirements set by the equipment manufacturer for the minute m in question):

(1) The temperature of the exhaust gases of the flare (monitoring parameter $T_{\text{EG},m}$) and the flow rate of LFG to the flare (monitoring parameter $F_{\text{RG},m}$) is within the manufacturer's specification/requirements for the flare (monitoring parameter $\text{SPEC}_{\text{flare}}$) in minute m

;

(2) Flame is detected in the flare in minute m (monitoring parameter Flame_m).

If for the minute m , conditions (1) and/or (2) are not met, $\eta_{flare,m}$ is set as 0% for the minute in question (...)"

The following requirement of the CDM methodological tool "Project emissions from flaring" is also considered by subtracting 0.10 (10%) in the 90% value referred above:

"For enclosed flares that are defined as low height flares, the flare efficiency in the minute m ($\eta_{flare,m}$) shall be adjusted, as a conservative approach, by subtracting 0.1 from the efficiency as determined in Options A or B. For example, the default value applied should be 80%, rather than 90%, and if for example the measured value was 99%, then the value to be used shall correspond to 89%."

In summary, for every minute m within the considered monitoring period, $\eta_{flare,m} = 0.80$ (80%) (upon demonstration of full compliance with operational and maintenance requirements for the flare) or 0% (in case full compliance with operational and maintenance requirements for the flare in question is not demonstrated). As defined by the *ex-ante* determined parameter "Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval" ($SPEC_{flare}$), compliance with operational temperature range, flow rate range and required maintenance schedule interval is considered for the determination of the selected default value of $\eta_{flare,m}$ for the determination of $F_{CH4,flared,y}$ and its application along every minute m the considered monitoring period. The selection and application of default value for $\eta_{flare,m}$ (80% or 0%) for each minute m of the considered monitoring period is presented in the monthly emission reduction spreadsheets.

Data records for the monitoring parameter "Flame detection of flare in the minute m " ($Flame_m$) are also considered for the determination and application of the values of $\eta_{flare,m}$ for the determination of values of $F_{CH4,flared,y}$ along the considered monitoring period. For the installed flare, the time the operational flare has operated is determined by monitoring the flame combustion status/condition by using an UV flame detector (of which status signal (flame status "on" or "off") is continuously recorded and reported).

Moreover, the monitoring requirements related to operational requirements/conditions for the flare (as established in the specifications for operational conditions defined by the flare's designer and manufacturer as per the ex-ante determined parameter $SPEC_{flare}$ (min. and max. flow of LFG to the flare + temperature of exhaust gas of the flare + meeting of maintenance requirements)) are also effectively considered in the context of the application of the default values for $\eta_{flare,m}$ along the considered monitoring period. As outlined in the monthly emission reduction spreadsheets, for each minute m of the considered monitoring period in which the flare has combusted LFG by not operating in accordance with all the operational criteria as established by the ex-ante estimated parameter $SPEC_{flare}$ (in terms of LFG flow, temperature of exhaust gas or maintenance practice), the 0% value is directly applied for $\eta_{flare,m}$ and no destruction of methane is therefore accounted for the flare in question during the minute m as part of the calculation value of $F_{CH4,flared,y}$.

For the considered monitoring period, the accumulated value for $F_{CH4,flared,y}$ is calculated as 17,536 tCH₄.

Determination of baseline emissions associated with electricity generation ($BE_{EC,y}$)

Baseline emissions associated with electricity generation ($BE_{EC,y}$) are determined as follows for the considered monitoring period:

$$BE_{EC,y} = EC_{BL,y} * EF_{EL,grid,y} * (1 + TDL_{k,y})$$

Where:

$EC_{BL,y}$ Amount of electricity generated using LFG in year y (in MWh). As per the applied monitoring procedure, monthly records of net electricity generated by the GS project activity (using collected LFG as gaseous fuel) for the considered monitoring period are summarized below:

Period	Net-amount of electricity generated using LFG by engine-generator sets 1, 2, 3, 4 and 5 ($EC_{BL-1,y}$) (MWh)	Net-amount of electricity generated using LFG by engine-generator sets 6 and 7 ($EC_{BL-2,y}$) (MWh)
2021 (From 01/01/2021 to 31/12/2021)	49,022	
2022 (From 01/01/2022 to 31/12/2022)	50,187	20,380
2023 (From 01/01/2023 to 31/12/2023)	52,699	20,392
2024 (From 01/01/2023 to 31/12/2023)	52,367	21,175
2025 (From 01/01/2025 to 30/07/2025)	25,431	11,782
Total	229,705	73,729
	303,434	

The total amount of electricity generated by the GS project activity during the considered monitoring period was 303,434 MWh. Additional monitoring details about the monitoring parameter $EC_{BL,y}$ are included in Section D.2.

$TDL_{k,y}$ Average technical transmission and distribution losses for providing electricity to the grid. Additional monitoring details about the monitoring parameter $TDL_{k,y}$ is included in Section D.2. $TDL_{k,y}$ is determined as 3% ($TDL_{grid,export,y}$).

$EF_{EL,grid,y}$ Emission factor for grid sourced electricity in year y (in tCO_2/MWh). $EF_{EL,grid,y}$ is determined as the combined margin emission factor ($EF_{grid,CM,y}$) that is calculated as the weighted average of the operating margin and

build margin emission factors. To weigh these two factors, the default values of w_{OM} and w_{BM} are applicable to both for the GS crediting period are applied. The combined margin emission factor is thus obtained as follows:

$$EF_{EL,grid,y} = EF_{grid,CM,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y}$$

Where:

w_{OM}	Weighting of operating margin emissions factor. w_{OM} is ex-ante selected as 0.25. Further details about the monitoring parameter w_{OM} are included in Section D.1.
w_{BM}	Weighting of operating margin emissions factor. w_{BM} is ex-ante selected as 0.75. Further details about the monitoring parameter w_{BM} are included in Section D.1.
$EF_{grid,OM,y}$	Operating margin CO ₂ emission factor in year y (in tCO ₂ /MWh). $EF_{grid,OM,y}$ is ex-post determined as 0.5985 tCO ₂ /MWh (for year 2021), 0.4069 tCO ₂ /MWh (for year 2022), 0.3786 tCO ₂ /MWh (for year 2023), 0.4473 tCO ₂ /MWh (for year 2024) and 0.2366 tCO ₂ /MWh (for Jan/2025), 0.2478 tCO ₂ /MWh (for Feb/2025), 0.2146 tCO ₂ /MWh (for Mar/2025), 0.2895 tCO ₂ /MWh (for Apr/2025), 0.3087 tCO ₂ /MWh (for May/2025), 0.4549 tCO ₂ /MWh (for Jun/2025) and 0.5293 tCO ₂ /MWh (for Jul/2025). Selected values for the monitoring parameter $EF_{grid,OM,y}$ represent the official average values for years 2021, 2022, 2023, 2024 and 2025 as calculated and published by the Brazilian DNA. Further details about the monitoring parameter $EF_{grid,OM,y}$ are included in Section D.2.
$EF_{grid,BM,y}$	Build margin CO ₂ emission factor in year y . $EF_{grid,BM}$ is ex-ante determined as 0.1370 tCO ₂ /MWh. Further details about the ex-ante determined parameter $EF_{grid,BM}$ are included in Section D.1.

As outlined in the summarized emission reduction calculation spreadsheet which is also enclosed to this Monitoring Report, for the considered monitoring period, $EF_{grid,CM,y}$ is calculated as follows:

- 0.1370 tCO₂/MWh

Baseline emissions associated with electricity generation in year y ($BE_{EC,y}$) for the considered monitoring period are calculated and reported as 65,402 tCO₂. Total baseline emissions (BE_y) for the considered monitoring period were calculated as 1,670,955 tCO₂e. All related calculations are presented in the emission reduction calculation spreadsheets that are enclosed with the Monitoring Report.

Table 6 – baseline emission calculation

Year	$BE_{CH_4,y}$ (tCO ₂ /year)	$BE_{EC,y}$ (tCO ₂ /yr)	BE_y (tCO ₂ /yr)
2021 (From 01/01/2021 to 31/12/2021)	290,916	12,737	303,653
2022 (From 01/01/2022 to 31/12/2022)	369,736	14,858	384,594
2023 (From 01/01/2023 to 31/12/2023)	395,477	14,853	410,330
2024 (From 01/01/2023 to 31/12/2023)	367,131	16,249	383,380
2025 (From 01/01/2025 to 30/07/2025)	182,264	6,705	188,969
Total	1,605,524	65,402	1,670,926

E.2. Calculation of project value or estimation of project situation of each SDG Impact

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SDG 7 (Affordable and Clean Energy)

Under conformance with provisions and calculation approaches of the Transition Request Form + GS4GG PDD, electricity generated by the GS project activity (in MWh) is measured by an appropriate electricity meter and the accumulated value for the considered monitoring period are as follows:

Year	Electricity generation (in MWh)
2021 (From 01/01/2021 to 31/12/2021)	49,022
2022 (From 01/01/2022 to 31/12/2022)	70,567
2023 (From 01/01/2023 to 31/12/2023)	73,091
2024 (From 01/01/2023 to 31/12/2023)	73,542
2025 (From 01/01/2025 to 30/07/2025)	37,214
Total	303,434

SDG 8 (Decent Work and Economic Growth)

6 employees related to the operation of the GS project activity during the year of 2021, 7 employees for year 2022, 9 employees for year 2023, 11 employees for year 2024 and 12 for year 2025, an average of 9 employees for every year of the considered monitoring period and in year 2025 +3 compared to the previous ex-ante estimations as per the registered GS4GG TRF + PDD.

SDG 13 (Climate Action)

During the considered monitoring period, project emissions for the GS project activity are the emissions associated with the consumption electricity ($PE_{EC,y}$). Project emissions for the considered monitoring period are therefore calculated as follows:

$$PE_y = PE_{EC,grid,y}$$

Where:

PE_y Project emissions in year y (tCO₂/yr)

$PE_{EC,grid,y}$ Emissions from consumption of electricity due to the project activity in year y (tCO₂/yr)

Calculation of $PE_{EC,grid,y}$ – project emission from consumption of electricity

Project emissions due to the consumption of grid-sourced electricity by the GS project activity ($PE_{EC,grid,y}$) are calculated as per the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” as follows:

$$PE_{EC,grid,y} = EC_{PJ,y} * EF_{EL,grid,y} * (1 + TDL_{j,y})$$

Where:

$TDL_{j,y}$ Average technical transmission and distribution losses for grid-sourced electricity consumed by the project activity in year y . Further details about $TDL_{j,y}$ are included in Section D.2. $TDL_{j,y}$ is determined as 20% ($TDL_{grid,import,y}$).

$EC_{PJ,grid,y}$ Quantity of grid sourced electricity consumed by the project activity in year y (in MWh). As per the applied monitoring procedure, monthly records of grid-sourced electricity consumption valid for the considered monitoring period are summarized below:

Year	Amount of grid-sourced electricity consumed by the flaring station and engine-generator sets 1, 2, 3, 4 and 5 ($EC_{PJ,grid-1,y}$) (MWh)	Amount of grid-sourced electricity consumed by the engine-generator sets 6 and 7 ($EC_{PJ,grid-2,y}$) (MWh)
2021 (From 01/01/2021 to 31/12/2021)	4.83	-
2022 (From 01/01/2022 to 31/12/2022)	6.00	5.60
2023 (From 01/01/2023 to 31/12/2023)	8.68	12.60
2024 (From 01/01/2023 to 31/12/2023)	13.79	8.40
2025 (From 01/01/2025 to 30/07/2025)	2.40	5.60
Total	36	33

Additional monitoring details about the monitoring parameter $EC_{PJ,y}$ are included in Section D.2.

$EF_{EL,grid,y}$ Emission factor for grid sourced electricity in year y (in tCO_2/MWh). $EF_{EL,grid,y}$ is determined as the combined margin emission factor ($EF_{grid,CM,y}$) that is calculated as the weighted average of the operating margin and build margin emission factors. To weight these two factors, the default values of w_{OM} and w_{BM} are applicable to both for the GS crediting period are applied. The combined margin emission factor is thus obtained as follows:

$$EF_{EL,grid,y} = EF_{grid,CM,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y}$$

Where:

w_{OM} Weighting of operating margin emissions factor. w_{OM} is ex-ante selected as 0.25. Further details about the monitoring parameter w_{OM} are included in Section D.1.

w_{BM} Weighting of operating margin emissions factor. w_{BM} is ex-ante selected as 0.75. Further details about the monitoring parameter w_{BM} are included in Section D.1.

$EF_{grid,OM,y}$ Operating margin CO_2 emission factor in year y (in tCO_2/MWh). $EF_{grid,OM,y}$ is ex-post determined as 0.5985 tCO_2/MWh (for year 2021), 0.4069 tCO_2/MWh (for year 2022), 0.3786 tCO_2/MWh (for year 2023), 0.4473 tCO_2/MWh (for year 2024) and 0.2366 tCO_2/MWh (for Jan/2025), 0.2478 tCO_2/MWh (for Feb/2025), 0.2146 tCO_2/MWh (for Mar/2025), 0.2895 tCO_2/MWh (for Apr/2025), 0.3087 tCO_2/MWh (for May/2025), 0.4549 tCO_2/MWh (for Jun/2025) and 0.5293 tCO_2/MWh (for Jul/2025). Selected values for the monitoring parameter $EF_{grid,OM,y}$ represent the official average values for years 2021, 2022, 2023, 2024 and 2025 as calculated and

published by the CDM DNA of Brazil. Further details about the monitoring parameter $EF_{grid,OM,y}$ are included in Section D.2.

$EF_{grid,BM,y}$ Build margin CO₂ emission factor in year y . $EF_{grid,BM}$ is ex-ante determined as 0.1370 tCO₂/MWh. Further details about the ex-ante determined parameter $EF_{grid,BM}$ are included in Section D.1.

For the considered monitoring period, project emissions due to the consumption of grid-sourced electricity by the project activity ($PE_{EC,grid,y}$) are thus calculated as 57 tCO₂ (rounded value).

The summarized emission reduction calculation spreadsheet (that is enclosed to this Monitoring Report) includes all calculations related to the determination of $PE_{EC,grid,y}$ for the considered monitoring period.

E.3. Calculation of leakage

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In accordance with the ACM0001 (version 19.0), no leakage effects need to be accounted for.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
7	Affordable and Clean Energy	-	303,434 MWh	303,434 MWh
8	Decent work and Economic Growth	-	12 jobs/year	12 jobs/year
13	Climate Action	-	1,670,869 tCO ₂ e	1,670,869 tCO ₂ e

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values achieved during this monitoring period
7	336,692 MWh	303,434 MWh
8	9 jobs/year	12 jobs/year
13	2,289,765 tCO ₂ e	1,670,869 tCO ₂ e

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

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SDG 7: Affordable and Clean Energy

The GS project activity is a renewable energy and it displaces electricity generated from fossil fuel sources. This increases the share of renewable energy in the national energy matrix. The amount of electricity to be generated by the GS project activity was ex-ante estimated based on the combined installed capacity of the 7 engine-generator sets of the project activity. The 336,692 MWh value was calculated as the share of the previously determined ex-ante estimates of electricity to be generated by the project activity valid for the 1672-day period from 01/01/2021 to 30/07/2025. Determination of the 336,692 MWh is presented in details in the summarized emission reductions calculation spreadsheet (folder "PDD vs Monitoring").

SDG 8: Decent work and Economic Growth

The GS project activity created employment opportunities which required both highly qualified and low qualified people. As a general principle, employment recruitments are made primarily from neighboring regions, especially for the labor-intensive jobs. The estimated number of jobs created by the project activity (9 jobs/year) was based on the actual number of employees of the project during the years of 2021, 2022, 2023, 2024 and 2025 (since the latest version of the Transition Request Form + GS4GG PDD was only completed during the year of 2025).

SDG 13: Climate Action

The 2,289,765 tCO₂e value is calculated as the sum of previously determined annual values for ex-ante estimates of emission reductions valid for the years 2021 (461,319

tCO₂e), 2022 (486,112 tCO₂e), 2023 (505,176 tCO₂e), 2024 (523,904 tCO₂e) and the ex-ante estimate of emission reductions valid for the period from 01/01/2025 to 30/07/2025 (313,254 tCO₂e) as reported in the Transition Request Form + GS4GG PDD.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

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SDG 7: Affordable and Clean Energy

Electricity generated by the GS project activity during the considered monitoring period are about 10% lower than related ex-ante estimation of electricity generation valid/applicable for the same period as per annual estimates included in the Transition Request Form + GS4GG PDD.

SDG 8: Decent work and Economic Growth

+3 jobs created compared to the previous estimate in the latest version of the Transition Request Form + GS4GG.

SDG 13: Climate Action

GHG emission reductions achieved by the GS project activity during the period are about 27% lower than related ex-ante estimation of emission reductions valid/applicable for the same period as per annual estimates included in the Transition Request Form + GS4GG PDD.

Uncertainties associated with the application of First Order Decay (FOD) multi-phased model for estimating the emission reductions in the Transition Request Form + GS4GG PDD:

Like other similar project activities encompassing LFG collection and destruction/utilization, the amount of methane to be generated by decomposition of MSW disposed at the CTR Macaúbas landfill and collected by the GS project activity was derived by applying the First Order Decay (FOD) model as per the CDM methodological tool "Emissions from Solid Waste Disposal Sites" (version 08.0) in the context of the determination of ex-ante estimated emission reductions to be achieved by the GS project activity. By taking in account all potential uncertainties associated with the application of such multi-phased decay model, it is reasonable to assume that, in the particular case of the GS project activity during the considered monitoring period, the

application of this model somehow overestimated the amount of LFG to be actually generated and collected by the GS project activity.

SECTION F. SAFEGUARDS REPORTING

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Principles	Mitigation Measures added to the Monitoring Plan
Principle 6.1 Labour Rights	Refer to the monitoring parameter "Total number of jobs" in Section D.2.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

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The project developer Vital Engenharia Ambiental S.A. has kept an open channel of communication through its website (<https://www.vitalambiental.com.br/>) and also through a phone number which is made available to local communities. All contacts received (including complains, suggestions or enquiries) are forwarded to the respective responsible department (e.g. operational staff of the landfill, operational staff of the GS project activity (e.g. electricity generation infrastructure), etc.) who then becomes responsible for giving feedback to such contact.

A grievance expression book is also made available to visitors at the main office of the CTR Macaúbas landfill for registering any complaints/suggestions regarding the GS project activity.

Nevertheless, since the implementation of the GS project activity, the project developer Vital Engenharia Ambiental S.A. has not received any complaints or comments regarding the implementation and operation neither of the CTR Macaúbas landfill nor the GS project activity.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

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Not applicable. No comments/suggestions were received regarding the implementation and operation of the CTR Macaúbas landfill nor the GS project activity.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

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Not applicable. No legal contests regarding the implementation and operation of the CTR Macaúbas landfill nor the GS project activity.

APPENDIX 1. DECLARATION FROM THE PROJECT DEVELOPER CONFIRMING THAT THE GS PROJECT ACTIVITY WILL NOT ISSUE BOTH CERTIFIED EMISSION REDUCTION (CERs) UNDER THE CDM (AND/OR OTHER COMPLIANCE UNIT UNDER THE PARIS AGREEMENT) JOINTLY WITH GS VER FOR THE SAME VINTAGE (FOR THE CONSIDERED AND ALSO FOR FUTURE MONITORING PERIODS WITHIN THE GS4GG)

To whom it may concern,

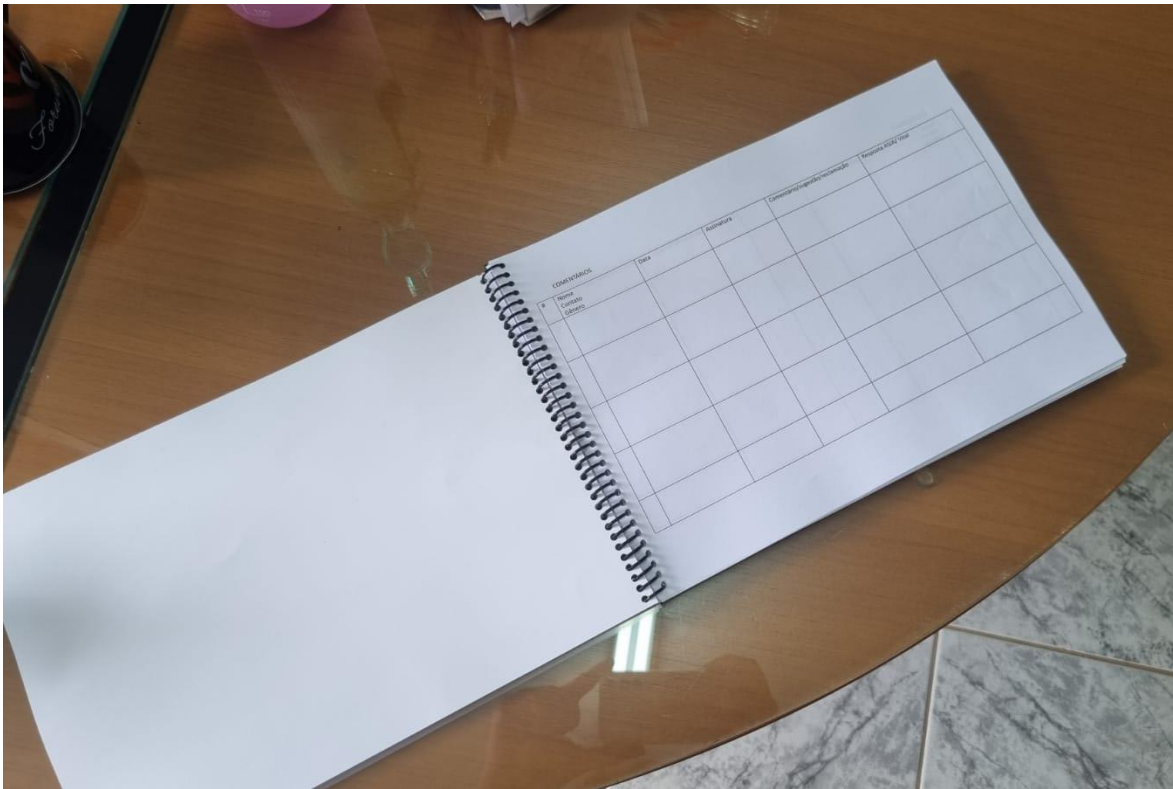
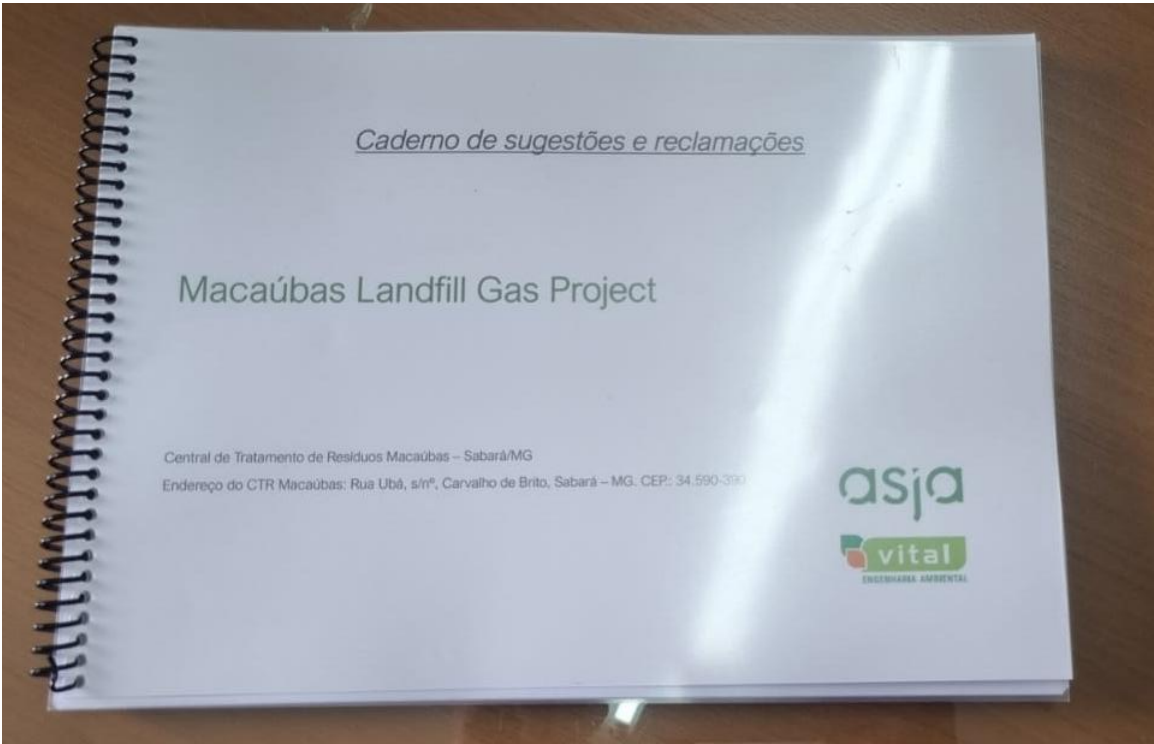
As the developer, owner and operator of the GS project activity "Macaúbas Landfill Gas Project" (ID GS12670), Vital Engenharia S.A. declares that no Certified Emission Reductions (CERs), and/or other compliance or voluntary units under the Paris Agreement or any voluntary carbon standard/scheme will be requested/issued for the same vintage as the present monitoring period (from 01/01/2021 to 30/07/2025) nor for future monitoring periods for which GS VERs will be issued.

We also agree to comply with all future UNFCCC COP/CMP decisions, including adjustment of GWP values.



Neiber Rodrigues da Silva
Business Development Engineer

APPENDIX 2. PICTURES OF THE GRIEVANCE BOOK



Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption