Verification and certification report form for CDM project activities

(Version 03.0)

BASIC INFORMATION	
Title and UNFCCC reference number of the project activity	ESTRE's Paulínia Landfill Gas Project (EPLGP) UNFCCC reference number 0165
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the verification and certification report	1.0
Completion date of the verification and certification report	15/04/2020
Monitoring period number and duration of this monitoring period	28th monitoring period 01/10/2019 – 31/12/2019
Version number of the monitoring report to which this report applies	2.0
Crediting period of the project activity corresponding to this monitoring period	2nd 7-year renewable crediting period (period from 14/09/2013 to 13/09/2020)
Project participants	ESTRE Ambiental S/A Nordic Environment Finance Corporation
Host Party	Brazil
Applied methodologies and standardized baselines	ACM0001 - "Flaring or use of landfill gas" (version 13.0.0)
Mandatory sectoral scopes	13 - Waste handling and disposal
Conditional sectoral scopes, if applicable	Not applicable.
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	155,674 tCO_2e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	73,017 tCO_2e
Name and UNFCCC reference number of the DOE	EPIC Sustainability Services Pvt. Ltd. (EPIC) UNFCCC reference number E-0062
Name, position and signature of the approver of the verification and certification report	Mr. K. S. Murthy (Managing Director)

SECTION A. Executive summary

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Brief summary of the project activity and performed verification assessment:

EPIC Sustainability Services Pvt. Ltd. (EPIC) performed the 28th periodic verification assessment for the registered CDM project activity titled "ESTRE's Paulínia Landfill Gas Project (EPLGP)", hereafter termed the "project activity". The project activity was registered by the UNFCCC on 03/03/2006 as CDM project activity with registration no. 0165 and it is currently under its 2nd 7-year renewable crediting period (period from 14/09/2013 to 13/09/2020).

The performed verification assessment encompassed the monitoring period from 01/10/2019 to 31/12/2019 (including both days) and it was performed on the basis of (i) document comprehensive review of the Monitoring Report, registered version of the Project Design Document (PDD) + supporting documents; (ii) conducted interviews with representatives of the host-country project participant and project owner/operator ESTRE Ambiental S/A; (iv) use other standard auditing techniques for validation or verification, as referred to in section 9.1.3 of the CDM Validation and Verification Standard for Project Activities (CDM-VVS-PA) /1/, in light of the decision agreed by the CDM Executive Board (CDM-EB) (in March/2020) to relax mandatory site visits by DOEs for a 3-month period (from 23/03/2020 to 23/06/2020) because of COVID-19 pandemic /93/ (v) resolution of all identified outstanding issues (identified Corrective Action Requests (CARs) and Clarification Requests (CLs)) and, finally, (vi) issuance of the Verification Report.

During the considered monitoring period, the project design encompassed collection and destruction (through combustion) of landfill gas (LFG) under efficient and controlled conditions at the CGR Paulínia landfill. As part of the operation of the project activity, LFG has been combusted in the installed set of 6 high temperature enclosed flares for the unique purposes of avoiding emissions of methane (CH_4) into the atmosphere (that would otherwise occur in the absence of the project activity (baseline scenario)).

CH_4 is a powerful greenhouse gas (GHG). In accordance with the project design as per the registered PDD, no commercial or economic utilization of collected LFG was ever promoted as a result of the operation of the project activity prior or during the considered monitoring period other than methane destruction aiming potential generation of Certified Emission Reductions (CERs).

LFG (which is rich in CH_4) has been historically generated at the CGR Paulínia landfill as result of the anaerobic decomposition of municipal solid waste (MSW) disposed in the site using appropriate MSW landfilling techniques and procedures.

Also in accordance to the project design, all project's electricity demand has been met during the considered monitoring period through imports of electricity sourced by the National Electricity Grid of Brazil and also through electricity sourced by the 2 backup captive off-grid electricity generators (fuelled by diesel) (that, under conformance with the project design, were only utilized within the considered monitoring period during planned or unplanned temporary interruptions in the supply of grid-sourced electricity to the project activity).

The CGR Paulínia landfill is located in the city of Paulínia. This municipality is located within the limits of the Metropolitan Region of Campinas, which is formed by 18 municipalities. The CGR Paulínia landfill is located at Estrada Municipal PLN 190, s/no., Parque da Represa, Paulínia – SP, Brazil. The geographical coordinates of the project site are as follows:

- -22.773506
- -47.196161

Scope of the verification:

The verification assessment shall ensure that reported GHG emission reductions for the considered monitoring period are deemed complete and sufficiently accurate in order to be certified. The verification assessment, as an independent and objective review, shall verify and

confirm whether the implementation of the project activity as well as measures taken to monitor and report achieved emission reductions for a considered monitoring period comply with applicable CDM criteria/rules and relevant guidance provided by the CMP and the CDM Executive Board (CDM-EB). The verification assessment of the registered CDM project activity is based on comprehensive and detailed review of information made available in (i) the registered PDD (version 04.5, dated 29/02/2016 /2/), (ii) the Monitoring Report /3/ (incl. emission reduction calculation spreadsheets /5/ that are enclosed to the Monitoring Report) and (iii) all other supporting documents made available to the EPIC verification team + review of information collected through performance of interviews.

Furthermore, as part of the verification assessment, publicly available information is considered and reviewed as far as available and required.

The verification assessment was carried out on the basis of the following rules and requirements that are applicable for the CDM project activity:

- Article 12 of the Kyoto Protocol /9/,
- Guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 /9/ and subsequent decisions made by the Executive Board and COP/MOP,
- Other relevant rules, including applicable and valid host country legislation/regulations,
- The CDM validation and verification standard for project activities (CDM-VVS-PA) version 02.0 /1/,
- The monitoring plan of the registered PDD applicable for the 2nd 7-year renewable crediting period (PDD version 04.5, dated 29/02/2016 /2/).
- The CDM baseline and monitoring methodology ACM0001 “Flaring or use of landfill gas” (version 13.0.0) /7/,
- Monitoring Report (all versions) /3/ /4/,
- The following methodological tools, which are referred in the Monitoring Report /3/:
    - “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” (version 01) /13/
    - “Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion” (version 02) /15/
    - "Tool to calculate the emission factor for an electricity system” (version 3.0.0 /16/)
    - "Project emissions from flaring" (version 02.0.0) /12/
    - "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/
- Decision agreed by the CDM Executive Board (CDM-EB) (in March/2020) to relax mandatory site visits by DOEs for a 3-month period (from 23/03/2020 to 23/06/2020) because of COVID-19 pandemic /93/

Verification process:

The verification process is based on applicable verification guidelines described in the latest version of the CDM validation and verification standard for project activities (CDM-VVS-PA) /1/. In addition to that, standard auditing techniques have been applied by the appointed EPIC verification team[1]. As part of the verification assessment, the EPIC verification team initially performed a desk review on all verification related documents, followed by interviews with representatives of the project participant ESTRE Ambiental S/A in order to review the project implementation and its operation.

For all identified inconsistencies and lack of clarity, related findings (list of outstanding issues) are raised. The next steps are to close out the findings through direct communication with the project participants and receipt of updated version of the Monitoring Report /3/ and/or supporting documents and finally preparing the Verification Report. The draft version of the Verification Report undergoes a technical review by EPIC prior to its submission to the CDM-EB.

Verification assessment conclusion and summary of the verification opinion:

As part of the conducted verification assessment, the EPIC verification team identified a set of outstanding issues that were appropriately/sufficiently addressed and resolved by the host-country project participant ESTRE Ambiental S/A (*inter alia* through revision of the Monitoring Report and supporting documents) as part of the performed verification assessment.

As an outcome of the performed assessment, the EPIC verification team was able to confirm that GHG emission reductions achieved by the project activity during the considered monitoring period are correctly calculated and reported in the latest version of the Monitoring Report (version 2.0, dated 08/04/2020). As outlined in such latest version of the Monitoring Report, reported emission reductions are correctly determined in accordance with applicable monitoring requirements and GHG calculation approaches as per the registered PDD and applied CDM baseline and monitoring methodology and methodological tools.

Therefore, EPIC certifies the emission reductions for the monitoring period from 01/10/2019 to 31/12/2019 (including both days) are correctly determined and reported as 73,017 tCO_2e. EPIC thus requests the CDM Executive Board (CDM-EB) to issue equivalent amount of CERs for the project activity.

[1] Section D.2 includes details for additional checking's/assessments (complementary auditing measures) which were performed as per applicable guidance of the Decision agreed by the CDM Executive Board (CDM-EB) (in March/2020) to relax mandatory site visits by DOEs for a 3-month period (from 23/03/2020 to 23/06/2020) because of COVID-19 pandemic /93/.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader / Technical Expert	EI	Ratton	Marco	EPIC - Central Office	X	-	X	X

EI: External individual

Demonstration how the appointed verification team meets the competence required for the performance of the verification assessment is included in Appendix 2.

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Radhamadhavan	Vijayaraghavan	EPIC - Central office
2.	Approver	IR	Murthy	Suryanarayana	EPIC - Central office

IR: Internal resource

Demonstration how the appointed technical reviewer and approver of the Verification Report meet the competence required for the performance of the verification assessment is included in Appendix 2

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

By acknowledging that, as an outcome of the verification assessment, an individual or an aggregate of undetected error(s), omission(s) and misinterpretation(s) could potentially undermine the possibility of achieving a verification opinion under reasonable and fair level assurance, applicable aspects of the concept of materiality were thus effectively considered in the context of the verification assessment as required by both the "Guideline - Application of materiality in verification" (version 02.0) /51/ and the CDM validation and verification standard for project activities (CDM-VVS-PA) version 02.0 /1/.

In the context of the verification planning, while aiming to minimize the risk of material discrepancies not being detected in the course of the verification assessment (detection risk), EPIC performed an identification and analysis of risks that could potentially lead to quantitative material errors, omissions and misstatements in its verification opinion.

Furthermore, the identification of actions to be performed by the appointed EPIC verification team during the verification assessment as responses to such identified risks were also included/considered in both the verification planning phase and later performed in the subsequent phases of the verification assessments (e.g. document desk review, interviews with representatives of the project participant, identification/addressing of findings and reporting).

In order to ensure a deemed complete, transparent and timely execution of the verification assessment, the appointed EPIC verification team (that holds sufficient experience and expertise in CDM verification assessments for project activities encompassing LFG collection and destruction/utilization) planned a complete sequence of assessment events that were regarded as necessary to detect existent major potential material errors, omissions and discrepancies and, upon addressing of such outstanding issues, arrive at a substantiated and reasonable final verification opinion (with the risks that could lead to quantitative material errors, omissions and misstatements in its verification opinion being thus sufficiently identified and addressed).

By taking into account applicable guidance from both the "Guideline - Application of materiality in verification" (version 02.0) /51/ and the CDM-VVS-PA version 02.0 /1/, the threshold of materiality for the performed verification assessment was evaluated and it was concluded that such threshold applicable to the project activity (based on actual emission reductions reported as achieved during the considered monitoring period as per the initial version of the Monitoring Report and the length of the considered monitoring period) is defined as 0.5%[2].

[2] As indicated in the PDD valid the 2nd 7-year renewable crediting of the project activity, ex-ante emission reductions for the whole year of 2019 (year which encompasses the considered monitoring period) were previously estimated as 617,621 tCO_2e. Such annual emission reduction estimates result in a threshold of materiality of 0.5%. This assumption is in accordance with applicable guidance of the CDM-VVS.

As part of the verification planning, no sampling approach was considered as required for monitoring and cross-checking of data against primary data source (no sampling-based monitoring or no data cross-checking based on sampling)[3]. While it was later confirmed that no sampling approach was indeed required in the context of assessment of monitoring data, risks related to sampling for these particular aspects were thus not identified and, therefore, no design of sampling plan for addressing such aspects was considered in the context of the verification planning.

The table below summarizes the following elements of the verification planning:

- Identified risks that could lead to material errors, omissions or misstatements (including their assessment details)

- Summary of the responses/actions to such identified risks that were later considered during the performance of the verification assessment.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Inadequate installation/configuration or malfunction in measuring instruments/equipment (e.g. insufficient accuracy or inappropriateness of installed equipment/instruments)	High	Potential generation of measurement and data errors/inconstancies due to inappropriate installation/configuration or malfunction in related measuring instruments/equipment. This risk might lead to material error in calculation and reporting of achieved emission reductions.	The EPIC verification team shall confirm whether modern/state-of-the art and/or best-practice monitoring instruments/equipment are appropriately installed/configured as part of the implementation and operation of the project activity. By taking into account the significantly rate of monitoring data being recorded (LFG and flaring related measurements being recorded/reported with an every-minute frequency), ideally, it is expected that a reliable process control automation is in place for typical CDM project activities encompassing LFG collection and destruction/utilization. Moreover, it should be confirmed whether trained personnel staff are in charge of operation of the project's monitoring system and that

[3] The EPIC verification team was also able to confirm that no sampling approach for monitoring and cross-checking of data against primary data source was applicable/required for the verification assessment covered by this Verification Report since:

- (i) as per the monitoring and GHG calculation approaches applied for the project activity (as established in the registered PDD and applied CDM baseline and monitoring methodology + applicable methodological tools), no sampling procedure and no sampling-based monitoring are valid/required for the determination of emission reductions achieved by the project activity during a given monitoring period;
- (ii) there is a possibility for cross-checking/reproducing all reported LFG and flaring measurement records valid for the considered monitoring period against the related primary data sources (with all reported related monitoring data being cross-checked/reproduced (instead of having selected samples of data being cross-checked/reproduced)). Further related assessment details valid for the performed verification assessment encompassed by this Verification Report are included in Section E.6.2, under *Data authenticity checking*.

				there are related QA/QC procedures in place. Moreover, for minimizing the risk of having incorrect monitoring data (measurement records) being considered in the context of the calculation and reporting of achieved emission reductions (in a way that calculated emission reductions are overestimated), the verification assessment ideally shall encompass a comprehensive and deemed sufficient checking of all reported data (e.g. checking of authenticity of monitoring data). Finally, it shall also be ensured that, in case of identification of uncertainties related to correctness/reasonability of reported monitoring data for a particular time period (e.g. measurements of LFG or flaring related monitoring for a particular minute), no emission reductions for such particular time period are accounted/claimed under such circumstances (thus minimizing risks of overestimations of claimed GHG emission reductions).
2.	Inadequate accuracy and lack of correctness of monitoring data and or evaluations supplied by independent 3rd parties (e.g. measurements of residual outgoing methane in the flares for the determination of project emissions of methane through the flares; evaluation of the compliance of management practices of the landfill as per previously established design and operation requirements for the landfill)	High	Potential generation of measurement and data errors/inconsistencies due to inappropriate installation / configuration or malfunction in related measuring instruments and/or inappropriate evaluation procedures being applied by company(ies) in charge of related measurements and evaluations to be performed by independent 3rd party inspection service company(ies). These risks might lead to material error in calculation/determination and reporting of baseline emissions.	The EPIC verification team shall confirm whether all measurements performed by independent 3rd parties are performed by company (ies) with required accreditation. It shall also be confirmed whether modern/state-of-the art and/or best-practice equipment/instruments and/or procedures are appropriately applied for related 3rd party measurements and/or evaluations. Moreover, it should be confirmed whether there are related QA/QC procedures in place. Finally, it shall also be ensured that, in case of identification of uncertainties related to correctness/reasonability of reported monitoring data for a particular time period (e.g. measurements of residual outgoing methane in the flares for the determination of project emissions of methane through

				the flares valid for a particular time period); no emission reductions for such particular time period are accounted/claimed under such circumstances (thus minimizing risks of overestimations of claimed GHG emission reductions).
3.	Inadequate installation/configuration or malfunction in installation/configuration of data processing/management equipment such as programmable logic controller unit (PLC unit) and data storage infrastructure (database for monitoring records).	High	Potential recording and reporting of monitoring data with errors and/or inconsistencies due to inappropriate installation/configuration or malfunction in related data management/processing equipment (PLC unit and/or database for monitoring records). This risk might lead to material error in calculation and reporting of achieved emission reductions.	The EPIC verification team shall confirm whether modern, state-of-the art and best practice data management/processing infrastructure (PLC unit and database for monitoring records) is appropriately installed/configured as part of the project activity implementation and operation. By taking into account the significantly rate of monitoring data being recorded (LFG and flaring related measurements being recorded/reported with an every-minute frequency), ideally, the risk response details included under item 1 above (risk of "Inadequate installation/configuration or malfunction in measuring instruments/equipment") related to process control automation, training of personnel staff in charge of operation of the project's monitoring system and related QA/QC procedures are all also applicable. Moreover, for minimizing the risk of having incorrect monitoring data (measurement records) being considered in the context of the calculation and reporting of achieved emission reductions (in a way that calculated emission reductions are overestimated), the risk response details included under item 1 above (risk of "Inadequate installation/configuration or malfunction in measuring instruments/equipment") related to comprehensive and deemed sufficient checking of all reported data (e.g. checking of authenticity of monitoring data) are also applicable. Finally, it shall also be ensured that, in case of identification of

				uncertainties related to correctness/reasonability of reported monitoring data for a particular time period (e.g. measurements of LFG or flaring related monitoring for a particular minute), no emission reductions for such particular time period are accounted/claimed under such circumstances (thus minimizing risks of overestimations of claimed GHG emission reductions).
4.	Errors and inconsistencies in the procedure(s) of transferring of monitoring data to monthly and summarized aggregated reporting forms/spreadsheets used for the determination of emission reductions.	High	Potential recording and reporting of monitoring data with errors and/or inconsistencies due to occurrence of errors and inconsistencies in the procedure(s) of transferring of monitoring data to monthly and summarized aggregated reporting forms/spreadsheets used for the determination of emission reductions. This risk might lead to material error in calculation and reporting of achieved emission reductions.	The EPIC verification team shall confirm whether appropriate and reliable procedure(s) of transferring of monitoring data to monthly and summarized aggregated reporting forms/spreadsheets are in place. By taking into account the significantly rate of monitoring data being recorded (LFG and flaring related measurements being recorded/reported with an every-minute frequency), ideally, it is expected that a reliable process control automation (or at least a semi-automated procedure(s)) are in place for transferring of monitoring data to monthly and summarized aggregated reporting forms/spreadsheets used for the determination of emission reductions. Moreover, it should be confirmed whether trained personnel staff are in charge of transferring of monitoring data to monthly and summarized aggregated reporting forms/spreadsheets and that there are related QA/QC procedures in place. Moreover, for minimizing the risk of having incorrect monitoring data (measurement records) being considered in the context of the calculation and reporting of achieved emission reductions (in a way that calculated emission reductions are overestimated), the risk response details included under item 1 above (risk of “Inadequate installation/configuration or malfunction in measuring

				instruments/equipment") related to comprehensive and deemed sufficient checking of all reported data (e.g. checking of authenticity of monitoring data) are also applicable. Finally, it shall also be ensured that, in case of identification of uncertainties related to correctness/reasonability of reported monitoring data for a particular time period (e.g. measurements of LFG or flaring related monitoring for a particular minute), no emission reductions for such particular time period are accounted/claimed under such circumstances (thus minimizing risks of overestimations of claimed GHG emission reductions).
5.	Errors and/or inconsistencies (e.g. human mistakes) in the procedure(s) for entering the values of ex-ante determined parameters and entering/applying calculation formulas to monthly and summarized aggregated reporting forms/spreadsheets used for the determination of emission reductions + reporting of such information in the Monitoring Report.	High	Potential reporting of monitoring data and GHG calculations with errors and/or inconsistencies due to occurrence of errors and/or inconsistencies (e.g. human mistakes) in the procedure(s) for entering the values of ex-ante determined parameters and entering/applying calculation formulas to monthly and summarized aggregated reporting forms/spreadsheets used for the determination of emission reductions + reporting of such information in the Monitoring Report. This risk might lead to material error in calculation and reporting of achieved emission reductions.	The EPIC verification team shall confirm whether appropriate and reliable procedure(s) for entering the values of ex-ante determined parameters and entering/applying calculation formulas to monthly and summarized aggregated reporting forms/spreadsheets used for the determination of emission reductions are in place. The EPIC verification team shall also confirm whether appropriate and reliable procedure(s) for checking the correctness of such data entries and /or application of calculation formulas are in place. This may be checked through evaluation of the project's related working/operational procedures (incl. QA/QC procedures) and through performance of recalculations and detailed inspection in such forms/spreadsheets by the verification team. Moreover, it should be confirmed whether trained personnel staff are in charge of entering the values of ex-ante determined parameters and entering/applying calculation formulas to such monthly and summarized aggregated

				reporting forms/spreadsheets.

C.2. Consideration of materiality in conducting the verification

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By taking into account applicable guidance from the "Guideline - Application of materiality in verifications" (version 02.0) /51/, materiality was considered in conducting the verification.

As part of the performance of the verification assessment, the previously elaborated verification plan was applied without being revised for having potentially detected errors, omissions or misstatements being addressed through additional (and not previously planned) audit/verification procedures during the sub-sequential phases of the performance of verification assessment (e.g. document desk review, interviews with representatives of the project participant, identification and resolution of outstanding issues (CARs and CLs), etc.).

As per the monitoring and QA/QC procedures adopted as part of operation of the project activity, as confirmed by the EPIC verification team, emission reductions are per se accounted only for monitoring data that is deemed correct, authentic and reliable (based proof of measurements performed by calibrated and well maintained monitoring equipment/instruments, checking of correctness and reasonability in recorded/reported monitoring data (e.g. data values within an acceptable/plausible range)).

In this context it is also crucial to note that, as also confirmed by the EPIC verification team, in case of identification of uncertainties related to correctness/reasonability of reported monitoring data for a particular time period (e.g. continuous measurements related monitoring for a particular minute) as part of the monitoring of the project activity, the monitoring procedure applied by the project participant ESTRE Ambiental S/A ensures that no emission reductions for such particular time period are claimed/accounted under such circumstances (thus minimizing risks of overestimations of claimed GHG emission reductions).

Furthermore, it is also crucial to note that as per the monitoring and GHG calculation approaches that are valid for the project activity (as established in the PDD /2/ and applied CDM baseline and monitoring methodology + applicable methodological tools /13/ /15/ /17/ /12/ /14/ /16/) no sampling procedure and no sampling-based monitoring are valid/required for the determination of achieved emission reductions. Finally, it is also relevant to note that, as a response to risks identified during the planning phase of the verification, for minimizing the risks of having incorrect monitoring data (measurement records) being considered in the context of the calculation and reporting of achieved emission reductions (in a way that calculated emission reductions are overestimated), the verification assessment encompassed the performance of a checking of authenticity of all LFG and LFG flaring/utilization related monitoring data.

Data authentic check: As part of the performed verification assessment, the EPIC verification team was able to confirm that the monthly emission reduction calculation spreadsheets /5/ completed by the host country project participant ESTRE Ambiental S/A are basically MS-Excel spreadsheets that, in theory, could have recorded data being easily edited/modified (intentionally or unintentionally). Thus, these spreadsheets, if inappropriately edited, could potentially tamper reported monitoring records, thus resulting in unreal and incorrect calculation and reporting of emission reductions achieved by the project activity during the considered monitoring period. In order to ensure that all emission reductions calculations are entirely and correctly based on authentic and real monitoring records valid for the considered monitoring period, a *data authentic checking* was performed as part of the verification assessment. Such checking aimed to ensure that only authentic and unmodified monitoring data records were used by the project participant for performing the emission reduction calculation for the considered monitoring period (thus ensuring that measurement records made available in the MS-Excel format "raw data" input files /6/ and measurement records reported in the monthly emission reduction spreadsheets were not

intentionally or unintentionally edited/modified during the generation or handling of these files). Assessment details for the performed data authenticity check are included in Section E.6.2, under *Data authenticity checking.*

SECTION D. Means of verification

D.1. Desk/document review

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The EPIC verification team conducted a comprehensive and detailed desk review of all documents initially provided by ESTRE Ambiental S/A + other publicly available documents that are relevant for the verification assessment. The main assessed documents are listed below:

- The latest version of the PDD /2/ for the 2nd 7-year renewable crediting period of the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)", including the corresponding Validation Report for the Renewal of crediting period /10/;
- The initial version of the Monitoring Report for the 28th verification of the project activity /4/;
- The applied CDM baseline and monitoring methodology ACM0001 "Flaring or use of landfill gas" (version 13.0.0) /7/ + the following methodological tools:
    - "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) /13/
    - "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02) /15/
    - "Tool to calculate the emission factor for an electricity system" (versions 3.0.0 /16/)
    - "Project emissions from flaring" (version 02.0.0) /12/
    - "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/
- Relevant decisions, clarifications and guidance from the CMP of the Kyoto Protocol and the CDM Executive Board (CDM-EB)[4];
- Any other information and references relevant to the project activity's resulting emission reductions (e.g., IPCC reports, data on electricity generation in the national grid or laboratory analysis and national regulations).

Besides the above-mentioned documents, the EPIC verification team also assessed other additional documents that were required to assess the accuracy of the emission reduction calculations presented in the Monitoring Report /3/.

A detailed list of all assessed documents is included in Appendix 3 (Documents reviewed or referenced) of this Verification Report.

The desk review for the initial version of the Monitoring Report for the 28th verification of the project activity /4/ and the registered version of the PDD /2/ included the following assessments:

[4] Relevant decisions and guidance from the CDM-EB includes inter alia the the decision agreed by the CDM Executive Board (CDM-EB) (in March/2020) to relax mandatory site visits by DOEs for a 3-month period (from 23/03/2020 to 23/06/2020) because of COVID-19 pandemic /93/.

- a review of data and information presented in the Monitoring Report to verify their completeness
- a review of the monitoring plan of the latest version of the registered PDD /2/ and applied CDM baseline and monitoring methodology (ACM0001 (version 13.0.0) /7/), paying particular attention to the required frequency for measuring, recording and reporting of monitoring data. Requirements related to the quality of monitoring instruments/equipment (including calibration requirements, and the QA/QC procedures) were also observed.
- an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

Through the process of the verification, the latest version of the Monitoring Report /3/ + registered version of the PDD /2/ + supporting documents were evaluated to confirm the actions taken by the project participants to address the raised CARs and CLs.

D.2. On-site inspection

Duration of on-site inspection: N/A				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	N/A			

No on-site inspection (with presence of the EPIC verification team) was conducted as part of the performed verification assessment.

Regardless of none of the conditions/requirements which are established by paragraph 339 of the CDM-VVS-PA /1/ were valid/applicable for the particular case of the verification assessment for the considered monitoring period, it was anyway previously mutually agreed between EPIC and ESTRE Ambiental S/A that an on-site inspection to the project site was to be performed as part of the verification assessment for the considered monitoring period (with such on-site inspection being previously planned and scheduled to occur within the first week of April/2020).

In March/2020, as a result of raised travelling restrictions related to the COVID-19 pandemic, the EPIC verification team proposed to the project participant ESTRE Ambiental S/A to, as an alternative, consider postponing such on-site visit by taking into account not only travelling restriction related official decisions and recommendations from local authorities (i.e. restrictions and recommendations from the Government of São Paulo State and Federal Government of Brazil), but also related travelling restriction policy announced by EPIC's central office due to the COVID-19 pandemic. As an answer to such proposal from EPIC, the representatives of ESTRE Ambiental S/A highlighted to the EPIC verification team that they were not in a position to accept any postponing of on-site visit that would result on delay on submission of CER issuance request for the considered monitoring period since the company has a contractually agreed valid CER delivery/forwarding commitment for CERs for the considered monitoring period (as reflect in a valid CER delivery/forwarding schedule for the project activity /95/ with is based on a previously established Emission Reduction Purchase Agreement (ERPA) between ESTRE Ambiental S/A and the Annex I project participant Nordic Environment Finance Corporation (contractual agreement dated 17/06/2015). The veracity of such contractually agreed CER delivery/forwarding schedule and related obligations from ESTRE Ambiental S/A to achieve delivery/forwarding of CERs for the considered monitoring period (under conformance with a previously defined schedule) was confirmed by the EPIC verification team.

Based on its assessment of such CER delivery/forwarding schedule, the EPIC verification team is of the opinion that, as alleged by ESTRE Ambiental S/A, the occurrence of any representative delay on performing and processing the verification assessment (as a result of postponing of the previously considered on-site inspection) would indeed result on having ESTRE Ambiental S/A performing related CER forwarding not sufficiently on time for meeting the previously mutually agreed CER delivery/forwarding schedule.

Due to that, for the particular case of the considered monitoring period, by taking into account the contractual obligations that the project participant ESTRE Ambiental S/A has to meet in terms of delivery/forwarding of CERs generated by project activity (as established in the assessed valid CER delivery/forwarding schedule for the project activity /95/ with is based on a previously established ERPA), EPIC assumed as deemed reasonable that the previously planned on-site inspection could not be postponed due to contractual reasons in the context of a previously established commercialization agreement for CERs generated by the project activity.

By acknowledging that the previously planned physical on-site inspection could not be performed as part of the verification assessment due to related travelling restrictions because of the COVID-19 pandemic, by also assuming that such on-site inspection could not be postponed (due to the above-summarized contractual reasons), and finally by taking into consideration all guidance and requirements of the CDM-EB recently agreed relaxing of the rule requiring mandatory on-site inspection by DOEs for a 3-month period (from 23/03/2020 to 23/06/2020) because of COVID-19 pandemic /93/); the EPIC verification team thus performed its document review and interviews with representatives of the project participant ESTRE Ambiental S/A (of which details are included in Sections D.1 and D.3 respectively) by incorporating the following additional checking's/assessments (complementary auditing measures):

- *Remotely (online) watching by the EPIC verification team of live video (movie) produced by member of project operational staff located on-site (allowing remote complete and comprehensive assessment and observations for the project activity):*
  Upon previous request from the EPIC verification team, the representatives of the project participant ESTRE Ambiental S/A organized the production of a sufficiently complete live video (movie) /94/ filmed online in the project site with the goal of making it possible to the EPIC verification team to remotely assess and confirm the implementation and operation of the project activity (as if the verification team were on-site).
  The live video (movie) /94/ was watched online by the EPIC verification team while being produced on 03/04/2020 and were later fully made available to EPIC for further assessment/watching and archiving as auditing evidence. By watching (more than once) the content of the live video (movie) /94/, the EPIC verification team was able to have a comprehensive and complete remote assessment of the project activity as if the team were on-site. The produced live video (movie) /94/ (recorded as .mp4 video format files) includes/shows the following:
    i) details of the whole project's infrastructure promoting collection and combustion of LFG (e.g. LFG pipeline, centrifugal blowers, high temperature enclosed flares, backup captive off-grid electricity generators, etc.);
    ii) details about all monitoring instruments/equipment (of which the latest version of the Monitoring Report /3/ refers to),
    iii) details about the functioning of the project's database and monitoring data gathering and processing infrastructure, etc.)

  Watching the live video (movie) /94/ sufficiently and successfully provided to the appointed EPIC verification team the following assessment outcomes:

  - The possibility of having a complete and transparent remote visualization of the current implementation and operation of the project activity (as if the EPIC verification team were on site), thus making it possible to the verification team to confirm the correctness of information included in the Monitoring Report and registered PDD regarding both the implementation of the project activity (project design) and its operation.

  - The possibility of having a complete and transparent remote visualization of the implementation and operation of available information and data flows/procedures for generating, gathering, aggregation, recording and reporting data for the ex-post determined monitoring parameters (as if the EPIC verification team were on site), thus making it possible to the verification team to confirm the correctness and

appropriateness of related data gathering, processing, recording and data recording by the available project's monitoring infrastructure as well as to confirm correctness of related information included in the Monitoring Report and registered PDD[5].

- The possibility of providing to the EPIC verification team the opportunity to perform a reliable and complete cross-checking of information and data provided (as provided in the Monitoring Report /2/ and emission reduction calculation spreadsheets /3/) vis-à-vis data and information retrieved from the project site on 03/04/2020 (as if the EPIC verification team were on site). As watched online in the live video (movie) /94/, a set of primary monitoring data valid for the considered monitoring period /22/ was directly retrieved from the project's database and immediately stored/archived in a cloud remote server by the project's operation staff using a PC avalialble on-site. All of such data retrieving and storing/archiving process was remotely confirmed by the EPIC verification team while watching the live video (movie) /94/ online. In this particular aspect, it is crucial to note that the occurred retrieval of set of primary monitoring data records from the project's database and its immediate archiving in a remote cloud server (which was immediately remotely accessed by the EPIC verification team through PC) were instrumental to ensure the performance of the assessment named as "*Data authenticity checking*" (as described in Section E.6.2) by the EPIC verification team (as if the team were on site).
  By having the possibility of remotely fully reproducing part of the approach and assumptions previously applied/considered by the project participants for determining emission reductions valid for the considered monitoring period, the performed "*Data authenticity checking*" ensures confirmation that only authentic (not edited / not modified) data are used as a basis for the emission reduction calculations, thus confirming the correctness and appropriateness of the data acquisition process and related procedures (including the process for retrieval of new set of raw data monthly files that are used as input data (raw data) for the calculation of emission reductions) as well as correctness of related information included in the Monitoring Report and registered PDD.

- The possibility of performing a remote (but comprehensive) checking of all project's monitoring instruments/equipment (including confirmation of occurred performance of appropriated related calibration events in such instruments/equipment) as well as checking of monitoring practices as part of the operation of the project activity vis-à-vis related requirements of the registered PDD, the applied CDM baseline and monitoring methodology + applicable methodological tools (as if the EPIC verification team were on site). Such checking included confirmation of existence and storing in the project site of original documents (e.g. certificates of calibration) in the project site + additional documentation used for cross-checking of calculation and information, with electronic format copies of such documents and evidences being also made available to the EPIC verification team for its remote assessment (as part of the performed desk review assessment phase).

- The possibility of performing a comprehensive checking of the project's quality control and quality assurance (QA/QC) procedures in place to prevent and/or identify and/or correct errors or omissions in the reported monitoring parameters (as if the EPIC verification team were on site).

[5] By watching online the content of the produced live video (movie) /94/, the EPIC verification team was also able to remotely visualize monitoring figures displayed in the screen of the project's data supervisory system (in the project activity's control room) and compare displayed values against figures displayed in the displays existent in selected monitoring equipment/instruments (for the same time instant) at the time of its production on 03/04/2020. Such data checking/comparison sufficiently confirmed correct data processing and recording by the project's PLC unit and monitoring equipment respectively (at the time of the production of the live video (movie) /94/). Further assessment details are included in Section E.6.2.

- *Review of finding's and observations from the previously performed latest periodic verification assessment for the project activity (monitoring period from 01/07/2019 to 30/09/2019):*
  While the previous and latest concluded verification assessment for the project activity was also performed by EPIC (monitoring period from 01/07/2019 to 30/09/2019), it is relevant to note that, as outlined in the Verification Report /60/ for this particular previously concluded CDM assessment, the appointed EPIC verification team previously performed a complete on-site inspection to the project site on 18/12/2019 (13 days prior to the end of the considered monitoring period). Thus, by taking into consideration guidance and requirements of the CDM-EB recently agreed relaxing of the rule requiring mandatory on-site inspection by DOEs (valid for the period from 23/03/2020 to 23/06/2020 and because of COVID-19 pandemic) /93/ as well as by taking into consideration principles and guidance from the CDM-VVS-PA /1/, it is reasonable to assume that related findings and observations previously gathered by the EPIC verification team while performing such on-site inspection to the project activity on 18/12/2019 are, upon a certain limit, also representative and relevant in the context of the verification assessment for the considered monitoring period (for which a physical on-site inspection was not performed due to travelling restrictions associated the COVID-19 pandemic).

Based on its accumulated expertise and experience not only with previous CDM verification assessments for the project activity, but also with CDM assessments for other similar project-based initiatives, it is EPIC opinion that objectives to be expected for a physical on-site inspection to the project site were sufficiently reached by the EPIC verification team through (i) watching online (and later re-watching for further assessment/review) of the live video (movie) /94/ produced on-site by project operational staff on 03/04/2020 and (ii) by consideration by the EPIC verification team of findings and observations from the last previously verification assessment for the project activity (including inter-alia, all findings and observations resulted from the previously performed physical on-site inspection to the project activity on 18/12/2019).

In summary, by taking all above-presented aspects into account vis-à-vis applicable requirements established in CDM-VVS-PA (version 02.0) /1/ and by also taking into account the CDM-EB recently agreed relaxing of the rule requiring mandatory on-site inspection by DOEs (valid for the period from 23/03/2020 to 23/06/2020 and because of COVID-19 pandemic) /93/; the EPIC verification team judged that performing the above-described additional checking's/assessments (complementary auditing measures) instead of performing the previously scheduled physical on-site inspection to the project site is deemed acceptable and sufficient to have the overall quality and completeness of the performed verification assessment not being negatively affected.

D.3. Interviews

No.	Interviews			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Silva	Lucas, (Mr.)	ESTRE Ambiental S/A	03/04/2020	Interviews remotely performed using WhatsApp application and encompassing the following topics (+ production of live video (movie) to allow confirmation/assessment of the EPIC verification team for the topics): - General implementation and operational aspects of the project activity; - Technical equipment and operational issues for installed equipment; - Changes in the project activity since CDM validation and commissioning dates; - Specifications and operation of monitoring and measurement equipment/ instruments; Remaining issues from the previously performed validation and verifications assessments; - Calibration procedures for installed monitoring	Marco A. Ratton
2.	Braga	Robson, (Mr.)	ESTRE Ambiental S/A	03/04/2020		
3.	Giovani	Ferreira, (Mr.)	ESTRE Ambiental S/A	03/04/2020		
4.	Barbosa	Nuno, (Mr.)	UniCarbo - Energia e Biogás Ltda. [6]	03/04/2020		

[6] As confirmed by the EPIC verification team, UniCarbo Energia e Biogás Ltda. is a CDM consulting and advisory service company that has supported the host-country project participant Estre Ambiental S/A with CDM related issues (inter alia completion of the Monitoring Report). This CDM consulting and advisory service company is confirmed as not being a project participant.

					instruments/ equipment; - Quality management system and related compliance with valid QA/QC procedures (including the possibility of performing a comprehensive checking of the project's quality control and quality assurance (QA/QC) procedures in place to prevent and/or identify and/or correct errors or omissions in the reported monitoring parameters); Involved operational and management personnel and responsibilities ;Training and practice of the operational and management personnel; Implementation and operation of the project's monitoring plan; - Monitoring data handling and management (incl. data gathering, recording and reporting); - Data uncertainty and residual risks; - Performance of emission reduction calculations;	

					- Procedural aspects of the verification; - Performance of related maintenance and repair events; - Compilation of CDM documentation (incl. the Monitoring Report).	

D.4. Sampling approach

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Not applicable. No sampling approach was applied for the verification assessment[7].

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	-	-
Compliance of the project implementation and operation with the registered PDD	-	CAR 1 CAR 2	-
Post-registration changes	-	-	-
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	CAR 3	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	-	3	-

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	The EPIC verification team has assessed whether the latest and valid version of the Monitoring Report Form (CDM-MR-FORM, version 07.0) /89/ was applied and was correctly completed as part of the elaboration of the Monitoring Report /3/. The EPIC assessment included checking whether the form was not changed in its formatting.

[7] As confirmed by the EPIC verification team, as per the monitoring and GHG calculation approaches that are valid for the project activity (as established in the PDD and applied CDM baseline and monitoring methodology + applicable methodological tools), no sampling procedure and no sampling-based monitoring are valid/required for the determination of achieved emission reductions for the considered monitoring period. Moreover, as assessed in Section E.6.2 (under *Data authenticity checking*), cross-checking/reproducing for all reported LFG and flaring measurement records valid for the considered monitoring period against primary data sources was performed (with all reported related monitoring data being cross-checked/reproduced instead of having selected data being cross-checked/reproduced on a sampling basis).

Findings	No related findings were raised. No CARs and CLs were raised by the EPIC verification team regarding the compliance of the Monitoring Report with the Monitoring Report form (incl. compliance with guidelines/instructions for the completion of the Monitoring Report form):
Conclusion	The EPIC verification team confirmed that the latest version of the Monitoring Report /3/ was correctly completed by applying the latest and valid version of the Monitoring Report Form /89/ and by also sufficiently taking into consideration all applicable requirements and guidance for its completion.

E.2. Remaining forward action requests from validation and/or previous verifications

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By assessing the previously issued report "*Validation of the renewal of crediting period of an existing CDM project: ESTRE's Paulínia Landfill Gas Project (EPLGP)"* /10/ that was previously issued by the DOE responsible for the validation assessment for renewal of crediting period of the project activity (Validation Report for renewal of crediting period), the EPIC verification team identified no missing steps or open issues from the validation phases (including validation assessment for renewal of the crediting period for the project activity) that would need to be addressed or observed in the context of subsequent verification assessments within the 2nd 7-year renewable crediting period for the project activity.

Furthermore, through review of the available Verification Reports for the previous periodic verifications for the project activity /33/ /29/ /30/ /90/ /91/ /88/ /27/ /28/ /31/ /32/ /42/ /79/ /83/ /84/ /81/ /38/ /55/ /62/ /80/ /46/ /41/ /92/ /59/ /60/, the EPIC verification team identified that one FAR was raised as part of the previous 21st periodic verification (monitoring period from 01/07/2017 to 30/09/2017) which is to be considered for the present monitoring period as follows:

FAR 1:
On 04/05/2018, the installed LFG flow meter for Flare 5 did not any longer include legible label that would allow the identification of its model and serial number (S/N). Furthermore, at the same date, the electronic display of this particular LFG flow meter was found not functional. Although the lack of legible label and functional display in the LFG flow meter per se would not promote any material impact over the operationalization of the project's monitoring system, the DOE performing the 21st periodic verification for the project activity (monitoring period from 01/07/2017 to 30/09/2017) raised a FAR related to such issues in the LFG flow meter on 04/05/2018.

In order to have this previously raised FAR being addressed, the service representative from the manufacturer of the LFG flow meter for Flare 5 was inquired about the possibility of providing a new instrument specification label (that would allow the identification of its model and serial number (S/N)). The service representative from the manufacturer of the LFG flow meter for Flare 5 was also inquired about the possibility of repairing/replacing the electronic display of the instrument. As responses to the raised inquires, a new label was provided and attached to the instrument and the instrument electronic display was also replaced on 06/08/2018. This was also confirmed by the EPIC verification team while watching online (and further later assessing/reviewing) the live video (movie) /94/ produced by operational staff of the project activity on 03/04/2020 that allowed the EPIC verification team performing remote visual assessment and observations of the project activity.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	During the performed document desk review and while watching online (and later further assessing/reviewing) the live video (movie) /94/ produced by operational staff of the project activity on 03/04/2020 (that allowed the EPIC verification team performing remote visual assessment and observations of the project activity), the

	EPIC verification team assessed whether all physical features of the project activity (including, technology, project equipment and monitoring and metering equipment) as described in the registered PDD /2/ were in place and that project activity has been operated by ESTRE Ambiental S/A during the considered monitoring period under conformance with its technical design description as outlined in the PDD.
Findings	Two CARs were raised by the EPIC verification team regarding the Compliance of the project implementation and operation with the registered project design document /2/: The installed LFG flow meter for Flare 5 does not any longer include legible label that would allow the identification of its model and serial number (S/N). Furthermore, the electronic display of this particular LFG flow meter was found not functional. Although the lack of legible label and functional display in the LFG flow meter *per se* do not promote any material impact over the operationalization of the project's monitoring system, the DOE performing the subsequent verification is may confirm whether appropriate QA/QC measures are taken by the project participant within future monitoring periods for addressing such operational limitations. **CAR 1:** The Monitoring Report does not include sufficient details about relevant operational aspects of the project activity within the considered monitoring period. **CAR 2:** The number of LFG collection wells encompassed by the project's LFG collection system during the considered monitoring period presented in the initial version of the Monitoring Report is incorrect.
Conclusion	As a result of performed document desk review and watching online (and later further assessing/reviewing) of the live video (movie) /94/ produced by operational staff of the project activity on 03/04/2020 (that allowed the EPIC verification team performing remote visual assessment and observations of the project activity), the verification team was able to confirm that all physical features of the project activity (including, technology, project equipment and monitoring & metering equipment) were in place as described in both the registered PDD /2/ and the latest version of the Monitoring Report /3/. The EPIC verification has also confirmed that the project activity was operated during the considered monitoring period under conformance with its technical design description as generically outlined in the registered PDD and described with more details in the latest version of the Monitoring Report /3/. Moreover, the EPIC verification team was informed in further details about the overall operational performance of the project activity during the latest 12 years (with detailed assessment being performed regarding the project's operational performance during the considered monitoring period). As confirmed by the EPIC verification team, the project activity was temporarily out of operation during different short time periods along the considered monitoring period due to different operational reasons (e.g. scheduled equipment maintenance, performance of calibration events in monitoring instruments/equipment, draining of accumulated condensate in LFG pipeline, etc.). Such temporary interruptions in the project activity operation were confirmed by the EPIC verification team through assessment of a service and maintenance log book /24/ (with historical of service and maintenance interventions in the project activity infrastructure) and are sufficiently summarized in the latest version of the Monitoring Report /3/. As also established by the PDD /2/ and described in the Monitoring Report /3/, the project activity's electricity demand was met during the considered monitoring period mostly through imports of grid electricity (with supply of electricity from the 2 existing backup captive off-grid electricity generator (fuelled by diesel) being made only during very short periods in which supply of grid-sourced electricity to the project activity was temporarily interrupted).

	In summary, upon closure of the raised CARs, the EPIC verification team was able to confirm that the project activity was implemented and has operated during the considered monitoring period under conformance with project design details as per the registered PDD /2/.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents[8]

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The EPIC verification team has confirmed that, as correctly outlined in Section B.2.1 of the Monitoring Report /3/, there are no temporary deviations from the registered monitoring plan and/or applied methodology applicable specifically for the considered monitoring period.

EPIC has confirmed that, as established by the Attachment Instructions for completing the Monitoring Report of the latest and valid version of the Monitoring Report Form (CDM-MR-FORM, version 07.0) /89/, the revised Monitoring Report (version 2.0) correctly refers to temporary deviations from the registered monitoring plan and/or applied methodology that are applicable/valid for previous monitoring periods (including appropriate indication of PRC reference and related approval date).

E.4.2. Corrections

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The EPIC verification team has confirmed that, as correctly outlined in Section B.2.2 of the Monitoring Report /3/, there are no Corrections (in information that do not affect the project design) applicable specifically for the considered monitoring period.

EPIC has also confirmed that, as established by the Attachment Instructions for completing the Monitoring Report of the latest and valid version of the Monitoring Report Form (CDM-MR-FORM, version 07.0) /89/, the Monitoring Report correctly refers to Corrections (in information that do not affect the project design) that are applicable/valid for previous monitoring periods (including appropriate indication of PRC reference and related approval date).

E.4.3. Changes to the start date of the crediting period

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The EPIC verification team has confirmed that, as correctly outlined in Section B.2.3 of the Monitoring Report /3/, there are no changes to the start date of the crediting period of the project activity.

E.4.4. Inclusion of a monitoring plan

>>
The EPIC verification team has confirmed that, as correctly outlined in Section B.2.4 of the Monitoring Report /3/, there are no inclusion of monitoring plan applicable for the project activity and/or for the considered monitoring period.

[8] Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

>>
The EPIC verification team has confirmed that, as correctly outlined in Section B.2.5 of the Monitoring Report /3/, there are no permanent changes from the registered monitoring plan and/or from the applied methodology applicable specifically for the considered monitoring period.

EPIC has also confirmed that, as established by the Attachment Instructions for completing the Monitoring Report of the latest and valid version of the Monitoring Report Form (CDM-MR-FORM, version 07.0) /89/, the Monitoring Report correctly refers to permanent changes to the registered monitoring plan (revision of the monitoring plan) that are applicable/valid for previous monitoring periods (including indication of PRC references and related approval date).

E.4.6. Changes to the project design

>>
The EPIC verification team has confirmed that, as correctly outlined in Section B.2.2. of the Monitoring Report /3/, there are no changes to the project design applicable specifically for the considered monitoring period.

EPIC has confirmed that, as established by the Attachment Instructions for completing the Monitoring Report of the latest and valid version of the Monitoring Report Form (CDM-MR-FORM, version 07.0) /89/, the Monitoring Report correctly refers to changes to the project design that are applicable/valid for previous monitoring periods (including appropriate indication of PRC reference and related approval date).

E.4.7. Changes specific to afforestation and reforestation project activities

>>
Not applicable.

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	As part of the performed document review and while watching online (and later further assessing/reviewing) the live video (movie) /94/ produced by operational staff of the project activity on 03/04/2020 (that allowed the EPIC verification team performing remote visual assessment and observations of the project activity) the EPIC verification team has reviewed the application of the implemented monitoring plan along the monitoring period from 01/10/2019 to 31/12/2019 vis-à-vis the monitoring requirements of the registered PDD /2/. The application of the monitoring plan during the considered monitoring period was also verified against all applicable requirements of the monitoring methodology ACM0001 (version 13.0.0) /7/ and applied methodological tools /12/ /13/ /14/ /15/ in order to confirm its compliance.
Findings	No related findings were raised. No CARs and CLs were raised by the EPIC verification team regarding the compliance of the monitoring plan with applied monitoring methodology and methodological tools.
Conclusion	Based on the performed document desk review + watching online (and later further assessing/reviewing) the live video (movie) /94/ produced by operational staff of the project activity on 03/04/2020 (that allowed the EPIC verification team performing remote visual assessment and observations of the project activity), the verification team confirms that the monitoring plan was applied during the period from 01/10/2019 to 31/12/2019 under full conformance with the provisions of the PDD /2/. Moreover, as also confirmed by the EPIC verification team, the applied

	monitoring plan also sufficiently meets all applicable requirements of the baseline and monitoring methodology ACM0001 (version 13.0.0) /7/ and applicable methodological tools /12/ /13/ /14/ /15/.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification

The EPIC verification team assessed the Monitoring Report /3/ and emission reduction calculation spreadsheets /5/ in order to confirm whether all ex-ante determined (fixed) parameters (that are applicable for the calculations of achieved emission reductions by the project activity) were correctly reported in the latest version of the Monitoring Report /3/ and correctly applied/considered (as per the provisions of the PDD) in related emission reduction calculations valid for the considered monitoring period.

The following ex-ante determined parameters were correctly applied/considered in the context of emission reduction calculations for the considered monitoring period:

Parameter	Applied value
Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline ($OX_{top\ layer}$)	0.1
Global Warming Potential of CH_4 (GWP_{CH4})	25 tCO_2e/tCH_4
Universal ideal gases constant (R_u)	8,314 $Pa.m^3/kmol.K$
Molecular mass of gas *k* (MM_k) (For the particular case of the project activity, *k* = N_2)	28.01 kg/kmol
Molecular mass of greenhouse gas *i* (MM_i) (For the particular case of the project activity, *i* = CH_4)	16.04 kg/kmol
Atmospheric pressure at reference conditions (P_{ref})	101,325 Pa
Temperature at reference conditions (T_n)	273.15 K
Molecular mass of water (MM_{H2O})	18.0152 kg/kmol
Average technical transmission and distribution losses for grid sourced electricity consumed by the project activity ($TDL_{grid,y}$)	0.20 (20%)
Weighting of build margin emissions factor (w_{BM})	0.75 (75%)
Weighting of operating margin emissions factor (w_{OM})	0.25 (25%)
Build margin CO_2 emission factor in year *y* ($EF_{grid,BM,y}$)	0.2010 tCO_2/MWh
Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval ($SPEC_{flare}$)	$SPEC_{flare.\ Flare\ 1}$ / $SPEC_{flare.\ Flare\ 2}$ | Min. | Max.

Operational LFG flow for each flare (for continuous operation)	400 Nm^3/h	2,000 Nm^3/h
Required temperature of the exhaust gas of the flare (to ensure LFG destruction (combustion) under high CH_4 destruction efficiency):	850 ^oC	1,200 ^oC
Required minimum frequency for inspection and maintenance service in each flare:	7 days	

$SPEC_{flare, Flare 3}$ $SPEC_{flare, Flare 4}$ $SPEC_{flare, Flare 5}$ $SPEC_{flare, Flare 6}$	Min.	Max.
Operational LFG flow for each flare (for continuous operation)	500 Nm^3/h	2,500 Nm^3/h
Required temperature of the exhaust gas of the flare (to ensure LFG destruction (combustion) under high CH_4 destruction efficiency):	850 ^oC	1,200 ^oC
Required minimum frequency for inspection and maintenance service in each flare:	7 days	

Moreover, the EPIC verification team has also assessed that the following ex-ante determined parameters (which are also included/listed in the PDD) were not considered/used for the purpose of ex-post determination of baseline emissions and/or project emissions achieved by the project activity during the considered monitoring period:

- Waste composition

	- Efficiency of the LFG capture system that will be installed in the project activity (η_{PJ}) - Default value for model correction factor to account for model uncertainties ($\varphi_{default}$) - Oxidation factor (reflecting the amount of methane from 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 ($DOC_{f,default}$) - 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) As also appropriately outlined in the Monitoring Report /3/ and the PDD /2/, the above-listed parameters are only used in the context of ex-ante estimation of emission reductions to be achieved by the project activity during the 2nd 7-year renewable crediting period.
Findings	No related findings were raised. No CARs and CLs were raised by the EPIC verification team regarding the reporting and application/consideration (as per related provisions of the PDD) of parameters fixed ex-ante.
Conclusion	The EPIC verification team has confirmed that all ex-ante determined (fixed) parameters (which are applicable for the calculations of achieved emission reductions by the project activity) were correctly reported and applied as per the PDD during the monitoring period from 01/10/2019 to 31/12/2019.

E.6.2. Data and parameters monitored

Means of verification

The EPIC verification team has assessed whether all monitoring parameters of which monitoring ex-post is required as per the monitoring plan of the registered PDD were correctly monitored during the considered monitoring period.

The following tables include assessment details for parameters monitored ex-post during the monitoring period from 01/10/2019 to 31/12/2019:

Assessment details for the monitoring parameter "Management of the SWDS" (Management of SWDS):

Data / Parameter: (as per the monitoring plan of the PDD):	Management of the SWDS (Management of SWDS)
Measuring, recording and reporting frequencies:	The ex-post determination of the monitoring parameter "Management of the SWDS" is not based on measurements. As correctly outlined in the Monitoring Report /3/, management aspects of the CGR Paulínia landfill are compared against previously defined landfill management practices (as per the also previously conceived original construction and operational design of this particular landfill). This comparison aims to confirm that management and operation of the CGR Paulínia landfill (including relevant aspects related to landfilling practice) were not intentionally modified with the unique aim of increasing generation of methane on site and thus artificially increasing baseline emissions for the project activity.
Are measuring, recording and reporting frequencies	Yes. As per the monitoring plan of the PDD /2/, monitoring for the parameter "Management of

	in accordance with the monitoring plan and monitoring methodology? (Yes / No)	the SWDS" is to be performed on the basis of a technical assessment of the overall management and operation of the CGR Paulínia landfill with an every year frequency. Technical reports /78/ were prepared by the project participant ESTRE Ambiental S/A on 13/01/2020, 07/10/2019, 05/07/2019 and 08/01/2019 were sent to the environmental agency of the state of São Paulo (CETESB) as part of licencing & operating procedures/requirements valid for the CGR Paulínia landfill. The adopted frequency for the compilation of such technical reports sufficiently meets the applicable monitoring procedure for the parameter "Management of the SWDS". The content of the issued technical reports and their issuance frequency sufficiently confirm that the applied monitoring frequency is in accordance with both the monitoring plan of the PDD /2/ and ACM0001 (version 13.0.0) /7/.	
	Type of monitoring equipment/instrument:	Not applicable. While monitoring of the parameter "Management of the SWDS" is not performed based on measurements, there are no monitoring equipment/instruments utilized.	
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable. While monitoring of the parameter "Management of the SWDS" is not performed based on measurements, there are no monitoring equipment/instruments utilized.	
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	The outcome of the latest technical evaluations performed by the ESTRE Ambiental S/A are reported in technical reports /78/ issued by this company that are dated 13/01/2020, 07/10/2019, 05/07/2019 and 08/01/2019. These documents were made available and were assessed by the EPIC verification team. The assessed technical reports regarding the operational conditions of the CGR Paulínia landfill (by taking into account required reporting of operational conditions of the landfill as required in the valid Operational Licence for the CGR Paulínia landfill landfill) is titled "*Relatório de Atendimento das exigências técnicas LO parcial 37002080*" /78/ (translated into English language as "*Report of compliance of technical requirements as per Operational License 37002080*"). As confirmed by the EPIC verification team, the content of the reports /78/ confirms that the current design configuration and operational	

		conditions of the CGR Paulínia landfill are under conformance with all previously conceived design and operational conditions of the landfill (as previously established as part of the licensing process of the landfill prior to the implementation of the project activity). The EPIC verification team has verified that the issued technical reports /78/ sufficiently confirm that the original conceived design of the CGR Paulínia landfill has so far not been modified. No changes in the aspects, conditions and circumstances related to management of the landfill (e.g. operations related to waste disposal, waste covering, waste compacting, management of leachate, draining of rainwater, etc.) were promoted with an aim to deliberately increase methane generation on the project site.
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	The EPIC verification team was able to verify that related information included in the Monitoring Report /3/ is fully in accordance with the content of the technical reports issued by ESTRE Ambiental S/A dated 13/01/2020, 07/10/2019, 05/07/2019 and 08/01/2019 /78/. These technical reports were made available and were assessed by the EPIC verification team.
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are further assessed in the end of this Section. In the particular case of the monitoring parameter “Management of the SWDS”, there are no monitoring records (figures) to be considered/accounted in the context of emission reduction calculations for the considered monitoring period. However, the annual comparison of applied management aspects of the CGR Paulínia landfill against the defined landfill management practices as per the previously conceived original construction and operational design of the landfill; in order to confirm that management and operation of the CGR Paulínia landfill (including relevant aspects related to landfilling practice) were not intentionally modified with the unique aim of increasing generation of methane on site; is a monitoring requisite. As required by ACM0001 (version 13.0.0) /7/, any change in the management of the landfill after the implementation of the project activity is to be justified by referring to technical or regulatory specifications and related impacts of such eventual changes should be addressed in the determination of baseline emissions. In summary, monitoring information for the parameter “Management of the SWDS” is used for the determination/confirmation of baseline emissions and/or confirmation of the project’s implementation as per project design

	descriptions included in the PDD (in terms of operation and management conditions of the landfill from which LFG is combusted).

Assessment details for the monitoring parameter "Operation of the equipment that consumes the LFG" ($O_{pj,h}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Operation of the equipment that consumes the LFG ($O_{pj,h}$)
Measuring, recording and reporting frequencies:	The following is appropriately outlined in the latest version of the Monitoring Report /3/ under monitoring details for the parameter $O_{pj,h}$: *"In the particular case of the project activity, the operation of the flares is monitored continuously on the basis of measurements of temperature in the exhaust gas of the flares (measurements performed by the installed 6 thermocouples (1 for each enclosed flare))."* As correctly outlined in the latest version of the Monitoring Report /3/, while measurements of temperature in the exhaust gas of the enclosed flares are performed by installed 6 thermocouples (one for each individual installed flare), the monitoring parameter $O_{pj,h}$ is thus measured, recorded and reported on the basis of the following sub-parameters: - $O_{pj,h,flare-1}$: Operation of the Flare 1 - $O_{pj,h,flare-2}$: Operation of the Flare 2 - $O_{pj,h,flare-3}$: Operation of the Flare 3 - $O_{pj,h,flare-4}$: Operation of the Flare 4 - $O_{pj,h,flare-5}$: Operation of the Flare 5 - $O_{pj,h,flare-6}$: Operation of the Flare 6 Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).
Type of monitoring equipment/instrument:	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).
Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).

	equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Monitored data for the parameter $O_{pj,h}$ was cross-checked with monitored data for the parameter $T_{EG,m}$. The following is stated in the registered PDD /2/ regarding monitoring for the parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$): "*(…) For each equipment unit j using the LFG monitor that the plant is operating in hour h by the monitoring parameter below:* • *Temperature. Determine the location for temperature measurements and minimum operational temperature based on manufacturer's specifications of the burning equipment. The flare temperature meter (thermocouple) is located at the middle third of each of the 6 flares at the flare system. The minimum flare temperature which guarantees the operation of the equipment is 850ºC.* *$O_{pj,h}$ = 0 when:* • *One or more temperature measurements are missing or below the minimum threshold in hour h (instantaneous measurements are made at least every minute);* *Otherwise, $O_{pj,h}$ = 1* *The accuracy and uncertainty of the monitoring instrument will be in accordance with manufacturer specifications. (…)*" The EPIC verification team has confirmed that the above-quoted conditions from the registered PDD /2/ were correctly applied in the determination of every-minute values for the parameter $O_{pj,h}$ in the monthly emission reduction calculations spreadsheets /5/.
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Not applicable.
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are further assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

QA/QC processes in place?	

Assessment details for the monitoring parameter "Volumetric flow of the gaseous stream in time interval t on a wet basis" ($V_{t,wb}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (monitored as per Option C of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/).
Measuring, recording and reporting frequencies:	During the considered monitoring period, continuously measurements of the monitoring parameter $V_{t,wb}$ were recorded/reported with an every minute frequency. As correctly outlined in the latest version of the Monitoring Report /3/, while measurements for $V_{t,wb}$ are performed by the installed 6 LFG flow meters (one flow meter for each individual installed flare), the monitoring parameter is thus measured, recorded and reported on the basis of the following sub-parameters: - $V_{t,wb,flare-1}$: Volumetric flow of LFG to Flare 1 - $V_{t,wb,flare-2}$: Volumetric flow of LFG to Flare 2 - $V_{t,wb,flare-3}$: Volumetric flow of LFG to Flare 3 - $V_{t,wb,flare-4}$: Volumetric flow of LFG to Flare 4 - $V_{t,wb,flare-5}$: Volumetric flow of LFG to Flare 5 - $V_{t,wb,flare-6}$: Volumetric flow of LFG to Flare 6 This is deemed correct, acceptable and under conformance with the requirements of ACM0001 (version 13.0.0) /7/ and the applicable methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/. It is important to note that, as further assessed in Section E.8.1., while measurements for $V_{t,wb}$ are performed by the installed 6 LFG flow meters in Nm^3/h on the basis of the sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$, such sub-parameters are thus equivalent to the calculation sub-parameters $V_{t,wb,n,flare-1}$, $V_{t,wb,n,flare-2}$, $V_{t,wb,n,flare-3}$, $V_{t,wb,n,flare-4}$, $V_{t,wb,n,flare-5}$ and $V_{t,wb,n,flare-6}$.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, continuous measurements of $V_{t,wb}$ are to be recorded and reported every minute. Moreover, as per the applicable guidance of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/ (which is applied in accordance to ACM0001 (version 13.0.0) /7/), monitoring of $V_{t,wb}$ should be performed continuously if not specified in the underlying methodology. While ACM0001 (version 13.0.0) /7/ does not specify any monitoring frequency for $V_{t,wb}$, the applied measuring, recording and reporting frequencies

for Volumetric flow of the gaseous stream in time interval *t* on a wet basis are thus in accordance with both ACM0001 (version 13.0.0) /7/ and the PDD /2/.

Type of monitoring equipment/instrument:

Measurements of $V_{t,wb}$ are performed by 6 installed LFG flow meters (one for each installed high temperature enclosed flare) on the basis of the sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$.

Instruments with the following specifications were applied for performing measurements of $V_{t,wb}$ (on the basis of measurements of the sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) during the considered monitoring period:

Flow meter used for measuring the sub-parameter $V_{t,wb,flare-1}$:

Specifications of the flow meter used for measuring the sub-parameter $V_{t,wb,flare-1}$	
Manufacturer	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
Model	FT2
Serial Number	1505000326
Accuracy:	±1.0%

Source: /63/

Flow meter used for measuring the sub-parameter $V_{t,wb,flare-2}$:

Specifications of the flow meter used for measuring the sub-parameter $V_{t,wb,flare-2}$	
Manufacturer	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
Model	FT2
Serial Number	1505000325
Accuracy:	±1.0%

Source: /63/

Flow meter used for measuring the sub-parameter $V_{t,wb,flare-3}$:

Specifications of the flow meter used for measuring the sub-parameter $V_{t,wb,flare-3}$	
Manufacturer	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
Model	FT2
Serial Number	1507000470
Accuracy:	±1.0%

Source: /63/

Flow meter used for measuring the sub-parameter $V_{t,wb,flare-4}$:

Specifications of the flow meter used for measuring the sub-parameter $V_{t,wb,flare-4}$	
Manufacturer	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
Model	FT2
Serial Number	1505000328
Accuracy:	±1.0%

Source: [63]

Flow meter used for measuring the sub-parameter $V_{t,wb,flare-5}$:

Specifications of the flow meter used for measuring the sub-parameter $V_{t,wb,flare-5}$	
Manufacturer	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
Model	FT2
Serial Number	1505000327
Accuracy:	±1.0%

Source: [63]

Flow meter used for measuring the sub-parameter $V_{t,wb,flare-6}$:

Specifications of the flow meter used for measuring the sub-parameter $V_{t,wb,flare-6}$	
Manufacturer	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
Model	FT2
Serial Number	1505000329
Accuracy:	±1.0%

Source: [63]

Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	The PDD [72] and ACM0001 (version 13.0.0) [77] do not specify any accuracy requirement for the LFG flow meters installed at the project site. The accuracy range for the installed 6 LFG flow meters is ±1.0%. It is EPIC contention that the use of the installed instruments represents good practice for monitoring of LFG flow.
If applicable, has the	Not applicable.

	reported monitoring data been cross-checked with other available data or source?	
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Figures of LFG flow sent to each flare (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3,}$ $V_{t,wb,flare-4,}$ $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) as visualized by the EPIC verification team in the screen of the project's data supervisory system (in the project activity's control room) were compared with figures displayed by each one of the installed 6 LFG flow meters (for the same time instant) at the time of the production of the live video (movie) /94/ on 03/04/2020 (of which details are provided in Section D.2). Such data checking/comparison confirmed correct data processing and recording by the project's PLC unit and monitoring equipment respectively (of the production of the live video (movie) /94/ on 03/04/2020). Further assessment details about recording of values measured at the project site are included in the end of this Section. Furthermore, a *data authenticity checking* was performed for all every minute basis measurement records of the following LFG and flaring related monitoring parameters (incl. sub-parameters) in order to demonstrate and ensure that only authentic/not modified monitoring data was used as input data for the emission reduction calculations for the considered monitoring period: - Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3,}$ $V_{t,wb,flare-4,}$ $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) - Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$) - Temperature of the gaseous stream in time interval *t* (T_t) - Pressure of the gaseous stream in time interval *t* (P_t) - Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3,}$ $T_{EG,m,flare-4,}$ $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$) - Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2,}$ $Flame_{m,flare-3,}$ $Flame_{m,flare-4,}$ $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) - Quantity of electricity consumed from the grid by the project activity during the

	year *y* ($EG_{EC1,y} = EC_{PJ1,y}$) - Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$) The performed checking aimed to ensure that monitoring data were not intentionally or unintentionally edited/modified by anyone prior of being used as primary data input for the processing of emission reduction calculations. The performed checking also aimed to ensure that the emission reduction calculation spreadsheets /5/ include only authentic monitoring records. Details about the performed *data authenticity checking* (which is valid for above-listed LFG and flaring related monitoring data) are included in the end of this Section.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are further assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Volumetric fraction of greenhouse gas methane in a hourly time interval t on a wet basis" ($v_{i,t,wb}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Volumetric fraction of greenhouse gas methane in a hourly time interval t on a wet basis ($v_{i,t,wb}$) (monitored as per Option C of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/)
Measuring, recording and reporting frequencies:	During the monitoring period from 01/10/2019 to 31/12/2019, continuously measurements for the monitoring parameter $v_{i,t,wb}$ were recorded/reported with an every minute frequency. As part of performed continuous measurements, samples of collected LFG continuously pass through the infrared cell of the installed continuous CH_4 content gas analyzer unit as a gas stream. Each every-minute reported value of $v_{i,t,wb}$ corresponds to a measurement actually performed at the last time instant the minute in question. While it takes about 5 seconds for the collected gas to go through the filtering/cooling process prior of reaching the infra-red cell (according to information provided by the equipment manufacturer), each individual every-minute

		measurement that is recorded/reported for a specific time instant (for example, 12:03:00) actually represents the concentration of the gas that entered the gas analyzer pump five seconds before (e.g. 12:02:55). This is deemed reasonable and acceptable.
	Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD [/2/], continuous measurements of $v_{i,t,wb}$ are to be recorded and reported every minute. Moreover, as per the applicable guidance of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) [/14/] (which is applied in accordance to ACM0001 (version 13.0.0) [/7/]), monitoring of $v_{i,t,wb}$ should be performed continuously if not specified in the underlying methodology. While ACM0001 (version 13.0.0) [/7/] does not specify any monitoring frequency for $v_{i,t,wb}$, the applied measuring, recording and reporting frequencies for $v_{i,t,wb}$ are thus in accordance with both ACM0001 (version 13.0.0) [/7/] and the PDD [/2/].
	Type of monitoring equipment/instrument:	During the monitoring period from 01/10/2019 to 31/12/2019, continuously measurements of the monitoring parameter $v_{i,t,wb}$ were performed by a CH_4 content gas analyzer unit for which main specifications are summarized below: Specifications of installed continuous CH_4 content gas analyzer unit Manufacturer: SIEMENS AG Model: ULTRAMAT 23 Serial Number: N1-UN-0653 Accuracy: ±0.5% Source: [/70/] It is important to note that EPIC was able to confirm by watching online (and later further assessing/reviewing) the produced live video (movie) [/94/] (of which details are included in Section D.2) that the implemented LFG collection process ensures that LFG passing through the installed flow meters and through the installed continuous CH_4 content gas analyzer unit are measured on the same basis/conditions (wet basis). The installed CH_4 content gas analyzer unit is installed in the main LFG collection pipeline right before it splits to the 6 high temperature flares, where the LFG flow meters are installed.
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument	The PDD [/2/] and ACM0001 (version 13.0.0) [/7/] do not specify any accuracy requirement for the CH_4 content gas analyzer unit installed at the project site. The accuracy range for the installed instrument is ±0.5%. It is EPIC contention that the use of the installed instrument represents good practice for monitoring of CH_4 content of LFG.

	represents good monitoring practice?	
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Figures of CH_4 content in the collected LFG as visualized by the EPIC verification team in the screen of the project's data supervisory system (in the project activity's control room) were compared with figures displayed in the display of the installed CH_4 content gas analyzer unit (for the same time instant) at the time of the production of the live video (movie) /94/ on 03/04/2020 (of which details are included in Section D.2). Such data checking/comparison confirmed correct data processing and recording by the project's PLC unit and monitoring equipment respectively (at the time the production of the live video (movie) /94/ on 03/04/2020). Further assessment details about recording of values measured at the project site are included in the end of this Section. Furthermore, a *data authenticity checking* was performed for all every minute basis measurement records of the following LFG and flaring related monitoring parameters (incl. sub-parameters) in order to demonstrate and ensure that only authentic/not modified monitoring data was used as input data for the emission reduction calculations for the considered monitoring period: - Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) - Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$) - Temperature of the gaseous stream in time interval *t* (T_t) - Pressure of the gaseous stream in time interval *t* (P_t) - Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$) - Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) - Quantity of electricity consumed from

	the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$) - Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$) The performed checking aimed to ensure that monitoring data were not intentionally or unintentionally edited/modified by anyone prior of being used as primary data input for the processing of emission reduction calculations. The performed checking also aimed to ensure that the emission reduction calculation spreadsheets /5/ include only authentic monitoring records. Details about the performed *data authenticity checking* (which is valid for above-listed LFG and flaring related monitoring data) are included in the end of this Section.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Temperature of the gaseous stream in time interval t" (T_t):

Data / Parameter: (as per the monitoring plan of the PDD):	Temperature of the gaseous stream in time interval *t* (T_t)
Measuring, recording and reporting frequencies:	During the considered monitoring period, continuously measurements of the monitoring parameter T_t were recorded/reported with an every-minute frequency. It is noteworthy that, while the installed LFG flow meters automatically convert and report values of LFG flow in normalized cubic meters (Nm^3) by considering standard temperature and pressure (STP) conditions, monitoring of T_t is thus not required as per the monitoring plan of the PDD /2/. Nonetheless, continuously measurements of T_t were recorded/reported for sake of completeness.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, continuous measurements of T_t are to be recorded and reported every minute. Moreover, as per the applicable guidance of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/ (which is applied in

		accordance to ACM0001 (version 13.0.0) [7], monitoring of T_t should be performed continuously if not specified in the underlying methodology. While ACM0001 (version 13.0.0) [7] does not specify any monitoring frequency for T_t, the applied measuring, recording and reporting frequencies for T_t are thus in accordance with both ACM0001 (version 13.0.0) [7] and the PDD [2].
	Type of monitoring equipment/instrument:	During the considered monitoring period, continuously measurements of T_t were performed by an installed LFG temperature sensor of which main specifications details are summarized below: Specifications of installed LFG temperature sensor Manufacturer: ABB S.p.A. Model: TSP321 Serial Number: 210000516854001 Accuracy: ±0.35% Source: [69]
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	The PDD [2] and ACM0001 (version 13.0.0) [7] do not specify any accuracy requirement for the LFG temperature sensor installed at the project site. The accuracy range for the installed instrument is ±0.35%. It is EPIC contention that the use of the installed instrument represents good practice for monitoring of LFG temperature.
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Figures of LFG temperature as visualized by the EPIC verification team in the screen of the project's data supervisory system (in the project activity's control room) were compared with figures displayed by LFG temperature indicators (which are located next to the LFG temperature sensor) (for the same time instant) at the time the production of the live video (movie) [94] on 03/04/2020 (of which details are included in Section D.2). Such data checking/comparison confirmed correct data processing and recording by the project's PLC unit and monitoring equipment respectively (at the time of the production of the live video (movie) [94] on 03/04/2020). Further assessment details about recording of values measured at the project site are included in the end of this Section. Furthermore, a *data authenticity checking* was performed for all every minute basis measurement records of the following LFG and

		flaring related monitoring parameters (incl. sub-parameters) in order to demonstrate and ensure that only authentic/not modified monitoring data was used as input data for the emission reduction calculations for the considered monitoring period: - Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) - Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$) - Temperature of the gaseous stream in time interval *t* (T_t) - Pressure of the gaseous stream in time interval *t* (P_t) - Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$) - Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) - Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$) - Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$) The performed checking aimed to ensure that monitoring data were not intentionally or unintentionally edited/modified by anyone prior of being used as primary data input for the processing of emission reduction calculations. The performed checking also aimed to ensure that the emission reduction calculation spreadsheets /5/ include only authentic monitoring records. Details about the performed *data authenticity checking* (which is valid for above-listed LFG and flaring related monitoring data) are included in the end of this Section.	
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.	

reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	

Assessment details for the monitoring parameter "Pressure of the gaseous stream in time interval t" (P_t):

Data / Parameter: (as per the monitoring plan of the PDD):	Pressure of the gaseous stream in time interval *t* (P_t)
Measuring, recording and reporting frequencies:	During the considered monitoring period, continuously measurements of the monitoring parameter P_t were recorded/reported with an every-minute frequency. It is noteworthy that, while the installed LFG flow meters automatically convert and report values of LFG flow into normalized cubic meters (Nm^3) by considering standard temperature and pressure (STP) conditions, monitoring of P_t is not required as per the monitoring plan of the PDD /2/. Nonetheless, continuously measurements of P_t were recorded/reported for sake of completeness.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, continuous measurements of P_t are to be recorded and reported every minute. Moreover, as per the applicable guidance of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/ (which is applied in accordance to ACM0001 (version 13.0.0) /7/), monitoring of P_t should be performed continuously if not specified in the underlying methodology. While ACM0001 (version 13.0.0) /7/ does not specify any monitoring frequency for P_t, the applied measuring, recording and reporting frequencies for P_t are thus in accordance with both ACM0001 (version 13.0.0) /7/ and the PDD /2/.
Type of monitoring equipment/instrument:	During the considered monitoring period, continuous measurements of Pressure of the gaseous stream in time interval *t* (P_t) were performed by an installed LFG pressure sensor of which main specifications are presented below: Specifications of installed LFG pressure sensor Manufacturer: ABB S.p.A. Model: 2600T Serial Number: 6410001002 Accuracy: ±0.075% Source: /68/
Is the accuracy of the monitoring equipment/instrument as	The PDD /2/ and ACM0001 (version 13.0.0) /7/ do not specify any accuracy requirement for the LFG pressure sensor installed at the project site.

	stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	The accuracy range for the installed instrument is ±0.075%. It is EPIC contention that the use of the installed instrument represents good practice for monitoring of LFG pressure.	
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.	
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Figures of LFG pressure as visualized by the EPIC verification team in the screen of the project's data supervisory system (in the project activity's control room) were compared with figures displayed by LFG pressure indicators (which are located next to the LFG pressure sensor) (for the same time instant) at the time of the production of the live video (movie) /94/ on 03/04/2020 (of which details are included in Section D.2). Such data checking/comparison confirmed correct data processing and recording by the project's PLC unit and monitoring equipment respectively (at the time of the production of the live video (movie) /94/ on 03/04/2020). Further assessment details about recording of values measured at the project site are included in the end of this Section. Furthermore, a *data authenticity checking* was performed for all every minute basis measurement records of the following LFG and flaring related monitoring parameters (incl. sub-parameters) in order to demonstrate and ensure that only authentic/not modified monitoring data was used as input data for the emission reduction calculations for the considered monitoring period: - Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) - Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$) - Temperature of the gaseous stream in time interval *t* (T_t) - Pressure of the gaseous stream in time interval *t* (P_t) - Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and	

	$T_{EG,m,flare-6}$) - Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) - Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$) - Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$) The performed checking aimed to ensure that monitoring data were not intentionally or unintentionally edited/modified by anyone prior of being used as primary data input for the processing of emission reduction calculations. The performed checking also aimed to ensure that the emission reduction calculation spreadsheets /5/ include only authentic monitoring records. Details about the performed *data authenticity checking* (which is valid for above-listed LFG and flaring related monitoring data) are included in the end of this Section.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Saturation pressure of H_2O at temperature T_t in time interval t" ($P_{H2O,t,sat}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Saturation pressure of H_2O at temperature T_t in time interval *t* ($P_{H2O,t,sat}$)
Measuring, recording and reporting frequencies:	The determination of applicable value for the monitoring parameter $P_{H2O,t,sat}$ is not based on measurements. As correctly indicated in the Monitoring Report /3/, $P_{H2O,t,Sat}$ is determined as a function of the LFG temperature (T_t) and it is only used in the context of the determination of the methane mass flow in the residual gas (in a dry basis) for each minute *m* of the two time periods in year *y* during which the flare efficiency is measured (parameter $F_{CH4,RG,t}$).

Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Not applicable. The determination of applicable value for the monitoring parameter $P_{H2O,t,sat}$ is not based on measurements.
Type of monitoring equipment/instrument:	Not applicable. The determination of applicable value for the monitoring parameter $P_{H2O,t,sat}$ is not based on measurements.
Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable. The determination of applicable value for the monitoring parameter $P_{H2O,t,sat}$ is not based on measurements.
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	EPIC verification team has confirmed that the values of $P_{H2O,t,sat}$ as reported in the FE calculation spreadsheet /5/ and Monitoring Report /3/ were indeed calculated as per the applicable guidance of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/, which refers to the literature "Fundamentals of Classical Thermodynamics" /87/.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Not applicable.

Assessment details for the monitoring parameter "Combined margin emission factor for the grid in year y" ($EF_{grid,CM,y}$)

Data / Parameter: (as per the monitoring plan of the PDD):	Combined margin emission factor for the grid in year *y*" ($EF_{grid,CM,y}$)

	Measuring, recording and reporting frequencies:	The selected values for $EF_{grid,CM,y}$ valid for the considered monitoring period represent the values which are calculated as the weighted averages of the operating margin and build margin emission factors. To weight these two emission factors, the default weighting factor values applicable to the 2nd crediting period of CDM project activities are correctly applied. The values of $EF_{grid,CM,y}$ valid for the considered monitoring period are thus obtained as follows: $EF_{grid,CM,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y}$ Where: w_{OM} Weighting of operating margin emissions factor. w_{OM} is ex-ante selected as 0.25%. w_{BM} Weighting of operating margin emissions factor. w_{BM} is ex-ante selected as 0.75%. $EF_{grid,OM}$ Operating margin CO_2 emission factor in year *y*. As per the applied monitoring procedure, the selected values for the monitoring parameter $EF_{grid,OM,y} = EF_{grid,OM-DD,y}$ represent the official average values for the months of year (vintage) 2019 encompassed by the considered monitoring period as calculated and made public available by the DNA of Brazil as follows: Month / Value October 2019 / 0.2850 tCO_2/MWh November 2019 / 0.2938 tCO_2/MWh December 2019 / 0.3007 tCO_2/MWh . $EF_{grid,BM}$ Build margin CO_2 emission factor in year *y*. $EF_{grid,BM}$ is ex-ante determined as 0.2010 tCO_2/MWh. Details about the above-listed ex-ante determined parameters and monitoring parameters are included below in this Section and above in Section E.6.1.
	Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.
	Type of monitoring equipment/instrument:	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.
	Is the accuracy of the monitoring equipment/instrument as	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.

	stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?		
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.	
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	As confirmed by the EPIC verification team, the DNA of Brazil has regularly calculated values of $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ for the National Electricity Grid of Brazil by applying classified information and data on dispatch of electricity by grid-connected power plants within the National Electricity Grid of Brazil. The EPIC verification team also confirmed as part of its performed assessment that, for applicable cases, *ex-post* determined values for $EF_{grid,OM,y}$ and Build margin CO_2 emission factor ($EF_{grid,BM,y}$) in applicable cases based on information published by the DNA of Brazil /73/ have been systematically selected and applied for the determination of both baseline and project emissions related to electricity generation and consumption respectively in CDM projects hosted in Brazil with full acceptance both from the DOEs involved in the assessments and from the CDM-EB. The selected 2019 vintage monthly values for the monitoring parameter $EF_{grid,CM,y}$ were confirmed by the EPIC verification to correctly represent the official values for $EF_{grid,CM,y}$ for the months of year 2019 encompassed by the considered monitoring period as published by the DNA of Brazil /73/. As part of EPIC assessment, the ex-ante determined (fixed) parameters w_{OM}, w_{BM} and $EF_{grid,BM}$ were also assessed and confirmed as correctly selected and applied for the determination of the value for $EF_{grid,CM,y}$. In summary, it is EPIC opinion that the selection and reporting of the monitoring parameter $EF_{grid,CM,y}$ is deemed correct and acceptable.	
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.	

reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	

Assessment details for the monitoring parameter "Operation margin emission factor for the grid in year y ($EF_{grid,OM,y}$)

Data / Parameter: (as per the monitoring plan of the PDD):	Operation margin emission factor for the grid in year *y* ($EF_{grid,OM,y}$)
Measuring, recording and reporting frequencies:	Not applicable. The selected values for $EF_{grid,OM,y}$ are the recently calculated values valid for each month of year 2019 encompassed by the considered monitoring period as published by the DNA of Brazil /73/ and made available online.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.
Type of monitoring equipment/instrument:	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.
Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable. The selected values are the average calculated monthly values valid for the months of year 2019 encompassed by the monitoring period, as published by the DNA of Brazil /73/.
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	As confirmed by the EPIC verification team, the DNA of Brazil has regularly calculated values of $EF_{grid,OM,y}$ for the National Electricity Grid of Brazil by applying classified information and data on dispatch of electricity by grid-connected power plants within the National Electricity Grid of Brazil and by following calculation guidance applicable for "Dispatch data analysis operating margin CO_2 emission factor" ($EF_{grid,OM-DD,y}$) (based on dispatch merit order data for grid-connected power plants) as established by the methodological tool "Tool to calculate the

		emission factor for an electricity system". Related clarifications and details for the determination of $EF_{grid,OM,y}$ = $EF_{grid,OM-DD,y}$ by the DNA of Brazil are made available at a specific section of the website of the DNA of Brazil /73/. Information made available in the website of the DNA of Brazil /73/ confirms the correctness of the selected value for $EF_{grid,OM,y}$. The EPIC verification team also confirmed as part of its performed assessment that *ex-post* determined values for both $EF_{grid,OM,y}$ and Build margin CO_2 emission factor ($EF_{grid,BM,y}$) on the basis of information published by the DNA of Brazil /73/ have been selected and applied for the determination of both baseline and project emissions related to electricity generation and consumption respectively in CDM projects hosted in Brazil with full acceptance both from the DOEs involved in the assessments and from the CDM-EB. The selected values for the monitoring parameter $EF_{grid,OM,y}$ valid for each month of year 2019 encompassed by the considered monitoring period were confirmed by the EPIC verification to correctly represent the official values for $EF_{grid,OM,y}$ for such months of 2019 as published by the DNA of Brazil /73/. In summary, it is EPIC opinion that the selection and reporting of the monitoring parameter $EF_{grid,OM,y}$ is deemed correct and acceptable.
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.

Assessment details for the monitoring parameter "Average technical transmission and distribution losses for providing electricity to source j in year y ($TDL_{j,y}$)"

Data / Parameter: (as per the monitoring plan of the PDD):	Average technical transmission and distribution losses for providing electricity to source j in year y ($TDL_{j,y}$)
Measuring, recording and reporting frequencies:	Annually. According to provisions of the PDD /2/, the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/ and ACM0001 (version 13.0.0) /7/.

Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.
Type of monitoring equipment/instrument:	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$. Default value is selected (0.2) as per "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/.
Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.

Assessment details for the monitoring parameter "Quantity of electricity consumed from the grid by the project activity during the year y" ($EG_{EC1,y} = EC_{PJ1,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$)

	Measuring, recording and reporting frequencies:	During the considered monitoring period, accumulated values of continuously measurements of the monitoring parameter $EG_{EC1,y}$ = $EC_{PJ1,y}$ were aggregated and recorded/reported monthly by the staff of ESTRE Ambiental S/A.
	Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, continuous measurements of $EG_{EC1,y}$ = $EC_{PJ1,y}$ are to be recorded and reported at least with an every month frequency. The "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/, and ACM0001 (version 13.0.0) /7/ do not clearly indicate recording and reporting frequencies for continuous measurements for the parameter $EG_{EC1,y}$ = $EC_{PJ1,y}$. Thus, the adopted measuring, recording and reporting frequency is assumed as in accordance with the monitoring plan of the PDD /2/, the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/ and ACM0001 (version 13.0.0) /7/.
	Type of monitoring equipment/instrument:	During the considered monitoring period, continuously measurements of the monitoring parameter $EG_{EC1,y}$ = $EC_{PJ1,y}$ were performed by the installed electricity meter of which main specifications are presented below: Specifications of installed electricity meter Manufacturer: ABB S.p.A. Model: ETE30 Serial Number (S/N): 1001864115020195 Accuracy: ±0.5% Source: /61/
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	The PDD /2/, the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/ and ACM0001 (version 13.0.0) /7/ do not specify any accuracy requirement for the electricity meters installed at the project site. The accuracy range for the installed instruments is ±0.5%. It is EPIC contention that the use of the installed instruments represents good practice for monitoring of consumption of grid-sourced electricity by the project activity.
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Records of grid-sourced electricity consumed by the project activity during the considered monitoring period, as reported in the summarized emission reduction calculation spreadsheet /5/ and Monitoring Report /3/ were cross-checked with monthly invoices of grid-sourced electricity purchase issued by CPFL Energia /64/ (the local power distribution company) which were made available and assessed by the EPIC verification team while watching online (and later further assessing/reviewing) the produced live video

	(movie) /94/ (of which details are included in Section D.2). Such cross-checking confirmed correctness of reported data for $EC_{PJ1,y}$ during the considered monitoring period.
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	The EPIC verification team has confirmed that values for the monitoring parameter $EC_{PJ,grid,y}$ as reported in the summarized emission reduction calculation spreadsheet /5/ and Monitoring Report /3/ are as per the primary monitoring records.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Quantity of electricity consumed from diesel generators by the project activity during the year y" ($EG_{EC2,y} = EC_{PJ2,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$)
Measuring, recording and reporting frequencies:	During the considered monitoring period, accumulated values of continuously measurements of the monitoring parameter $EG_{EC2,y} = EC_{PJ2,y}$ were aggregated and recorded/reported monthly by the staff of ESTRE Ambiental S/A.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, continuous measurements of $EG_{EC2,y} = EC_{PJ2,y}$ are to be recorded and reported at least with an every month frequency. The "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/, and ACM0001 (version 13.0.0) /7/ do not clearly indicate recording and reporting frequencies for continuous measurements for the parameter $EG_{EC2,y} = EC_{PJ2,y}$. Thus, the adopted measuring, recording and reporting frequency is assumed as in accordance with the monitoring plan of the PDD /2/, the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/ and ACM0001 (version 13.0.0) /7/.
Type of monitoring equipment/instrument:	During the considered monitoring period, continuously measurements of the monitoring parameter $EG_{EC2,y} = EC_{PJ2,y}$ were performed by the installed electricity meter of which main specifications are presented below:

	Specifications of installed electricity meter Manufacturer: ABB S.p.A. Model: ETE30 Serial Number (S/N): 1002503115100408 Accuracy: ±0.5% Source: /61/
Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	The PDD /2/, the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/ and ACM0001 (version 13.0.0) /7/ do not specify any accuracy requirement for the electricity meters installed at the project site. The accuracy range for the installed instruments is ±0.5%. It is EPIC contention that the use of the installed instruments represent good practice for monitoring of consumption of electricity sourced by diesel backup electricity generators.
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	The EPIC verification team has confirmed that values for the monitoring parameter $EC_{PJ,grid,y}$ as reported in the summarized emission reduction calculation spreadsheet /5/ and Monitoring Report /3/ are as per the primary monitoring records.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period t" ($F_{CH4,EG,t}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period *t* ($F_{CH4,EG,t}$)
Measuring, recording and reporting frequencies:	For the considered monitoring period and for each individual flare, two valid measurements for the monitoring parameter $F_{CH4,EG,t}$ were performed by a third party accredited entity. The independent 3rd party inspection service company Merieux NutriSciences / Bioagri

		Ambiental Ltda. Was selected by ESTRE Ambiental S/A for performing all measurements related to the determination of the set of biannual values for $F_{CH4,EG,t}$ for each individual flare. As outlined in the test/evaluation technical reports /71/ /72/ issued by Merieux NutriSciences / Bioagri Ambiental Ltda., performance of measurements for the determination of the set of values for $F_{CH4,EG,t}$ for each flare (calculation sub-parameters $F_{CH4,EG,t,flare-1}$, $F_{CH4,EG,t,flare-2}$, $F_{CH4,EG,t,flare-3}$, $F_{CH4,EG,t,flare-4}$, $F_{CH4,EG,t,flare-5}$ and $F_{CH4,EG,t,flare-6}$) valid for the considered monitoring period occurred in the following dates: - Flares 1, 2 and 3: 23/01/2019 (measurements performed by Merieux NutriSciences / Bioagri Ambiental Ltda.) - Flares 4, 5 and 6: 25/02/2019 (measurements performed by Merieux NutriSciences / Bioagri Ambiental Ltda.) - Flares 1, 4 and 5: 24/10/2019 (measurements performed by Merieux NutriSciences / Bioagri Ambiental Ltda.) - Flares 2 and 6: 25/10/2019 (measurements performed by Merieux NutriSciences / Bioagri Ambiental Ltda.)
	Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, measurements and calculations for the determination of values for the monitoring parameter $F_{CH4,EG,t}$ for each individual flare are to be performed biannually. Applicable guidance of the methodological tool "Project emissions from flaring" (version 02.0.0) /12/ establishes the following: "*(…) The two time periods in year y during which the flare efficiency is measured, each a minimum of one hour and separated by at least six months* ". The performed measurements events as indicated above are deemed correct and the most representatives available.
	Type of monitoring equipment/instrument:	As outlined in the Monitoring Report /3/ and in the test/evaluation reports /71/ /72/ issued for the valid performed measurements and calculations for the regular determination of the values of $F_{CH4,EG,t}$, for performing the measurements of amount of residual methane in the exhaust gas of the flares, the following measuring instruments were used: - Measurements performed by Merieux NutriSciences / Bioagri Ambiental Ltda. on 23/01/2019 (Flares 1, 2 and 3), 25/02/2019 (Flares 4, 5 and 6), 24/10/2019 (Flares 1, 4 and 5) and 25/10/2019 (Flares 2 and 6) for performing the measurements of amount of residual methane in the

		exhaust gas of the flare, an appropriated chromatographer was utilized by the independent 3rd party inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. Moreover, for determining the speed of exhaust gas in the flare (in order to calculate the flow of exhaust gas of the flare), an appropriated Pitot tube of type S manufactured by APEX Instruments was used by Mérieux NutriSciences Brasil as part of the measurements / Bioagri Ambiental Ltda. As per information made available in the technical evaluation/testing report /72/ issued by Merieux NutriSciences / Bioagri Ambiental Ltda., applicable measurement and test methodologies of U.S.A. Environmental Protection Agency (US-EPA) and CETESB (Companhia Ambiental do Estado de São Paulo (Environmental Agency for São Paulo State in Brazil)) were applied as follows: • US-EPA Method 18 – "Measurement of Gaseous Organic Compound Emission by Gas Chromatography" • CETESB L9.221 – "Pipelines and chimneys in stationary emission sources – Sampling points determination procedure" • CETESB L9.222 – "Pipeline and chimneys in stationary emission sources – Determination of speed and outflow of gases" • CETESB L9.223 – "Pipeline and chimneys in stationary emission sources – Determination of dry molecular mass and the excess of the air flow gas" • CETESB L9.224 – "Pipeline and chimneys in stationary emission sources – "Determination of humidity of effluents"
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	The PDD /2/ and ACM0001 (version 13.0.0) /7/ do not specify any equipment or procedural requirement for performing the related measurements and calculations for the determination of values for $F_{CH4,EG,t}$. The methodological tool "Project emissions from flaring" (version 02.0.0) /12/ establishes that *"(…) under Option B.1 the measurement is conducted by an accredited entity on a biannual basis".* The following disclaimer about the entity that performed the set of measurements for $F_{CH4,EG,t}$ that are valid for the considered monitoring period is appropriately included in Section D.2. of the Monitoring Report /3/:

		"Mérieux NutriSciences Brasil / Bioagri Ambiental Ltda. is an independent third party inspections services company specialized in inspections and testing of air emissions from stationary sources accredited by the Instituto Nacional de Metrologia, Qualidade e Tecnologia (INMETRO) (the Brazilian national authority for metrology and certification affairs), which is responsible for the regulation of operation of inspection entities and labs." In summary, it is the opinion of EPIC that Merieux NutriSciences / Bioagri Ambiental Ltda. performing related measurements with the measurement instruments indicated above and following the applicable measurement and test methodologies of the US-EPA and CETESB represent a good practice for the determination of $F_{CH4,EG,t}$. The accreditation certificate for BIOAGRI Ambiental Ltda. / Mérieux NutriSciences Brasil from INMETRO was made available and was assessed by the EPIC verification team /44/ /71/ /72/.
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	The related technical test/evaluation reports /71/ /72/ for the performed measurements of $F_{CH4,EG,t}$ issued by the inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. were made available and assessed by the EPIC verification team. Information made available in the Monitoring Report /3/ are in line with measurement details outlined in these technical reports /71/ /72/. As confirmed by the EPIC verification team through review of the technical test/evaluation reports issued by BIOAGRI Ambiental Ltda. / Mérieux NutriSciences Brasil /71/ /72/, guidance and requirements from the US-EPA Method 18 – Measurement of Gaseous Organic Compound Emission by Gas Chromatography were followed and met as part of performed biannual determination of $F_{CH4,EG,t}$ for the installed flare within the considered monitoring period. Based on its sectoral expertise, the EPIC verification team acknowledges that, as appropriately outlined in the Monitoring Report /3/, such method has been widely internationally recognized and/or accepted by different national and international organizations as a standard/method for performance of emission measurements from stationary emission sources in a wide range of industries. The EPIC verification team also confirmed that, as also outlined in the Monitoring Report /3/, different agencies in the United States (USA) and in other countries require or recommend that

		determination of concentration of VOC portion in landfill gas is to be performed by applying US-EPA Method 18. The US-EPA Method 18 was also confirmed by the EPIC verification team as being refereed in the most popular and acknowledged pollution control handbooks and guides (i.e. Pollution Control Handbook for Oil and Gas Engineering, 2016, published by John Wiley & Sons, Inc. – USA, US-EPA Guidance for evaluating landfill gas emissions from closed or abandoned facilities, SEPA Guidance for monitoring landfill gas engine emissions, Pollution Prevention and Abatement Handbook 1998 – The World Bank Group, etc.) as also claimed in the Monitoring Report /3/. The EPIC verification team also confirmed that technical test/evaluation reports issued by BIOAGRI Ambiental Ltda. / Mérieux NutriSciences Brasil /71/ /72/ for the performed biannual determination of $F_{CH4,EG,t}$ for the installed flare within the considered monitoring period also refers to methods recommended by the environmental authority of São Paulo State in Brazil. In summary, the EPIC verification team confirmed that $F_{CH4,EG,t}$ is measured according to an appropriate national or international standard as required by the methodological tool "Project emissions from flaring" (version 02.0.0) /12/ for the application of its Option B.1.
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	The EPIC verification team compared the results of all measurements and calculations as outlined in the test/evaluation technical reports /71/ /72/ issued by Merieux NutriSciences / Bioagri Ambiental Ltda. against description of measurements and calculations as presented in the latest version of the Monitoring Report /3/ and spreadsheet including the calculation of flare efficiency values valid for the considered monitoring period /5/.
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Temperature in the exhaust gas

of the enclosed flare in minute m" ($T_{EG,m}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$)
Measuring, recording and reporting frequencies:	During the considered monitoring period, continuous measurements of the monitoring parameter $T_{EG,m}$ were recorded/reported with an every minute frequency. As correctly outlined in the latest version of the Monitoring Report /3/, while measurements for the monitoring parameter $T_{EG,m}$ are performed by the installed 6 thermocouples (one thermocouple for each individual installed flare), this monitoring parameter is thus measured, recorded and reported on the basis of the following sub-parameters: - $T_{EG,m,flare-1}$: Temperature of exhaust gas in Flare 1 - $T_{EG,m,flare-2}$: Temperature of exhaust gas in Flare 2 - $T_{EG,m,flare-3}$: Temperature of exhaust gas in Flare 3 - $T_{EG,m,flare-4}$: Temperature of exhaust gas in Flare 4 - $T_{EG,m,flare-5}$: Temperature of exhaust gas in Flare 5 - $T_{EG,m,flare-6}$: Temperature of exhaust gas in Flare 6 This is deemed correct, acceptable and under conformance with requirements of ACM0001 (version 13.0.0) /7/ and applicable methodological tools.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per the PDD /2/, continuous measurements of the monitoring parameter $T_{EG,m}$ are to be recorded and reported every minute. Moreover, as per the applicable guidance of the methodological tool "Project emissions from flaring" (version 02.0.0) /12/, (which is applied in accordance ACM0001 (version 13.0.0) /7/), values of $T_{EG,m}$ shall be recorded once per minute. Thus, the applied measuring, recording and reporting frequencies for $T_{EG,m}$ are thus in accordance with both ACM0001 (version 13.0.0) /7/ and the PDD /2/.
Type of monitoring equipment/instrument:	Measurements of $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$ are continuously performed by 6 installed thermocouples (one for each installed high temperature enclosed flare). *Thermocouples used for measuring the sub-parameter $T_{EG,m,flare-1}$*: The specifications of the thermocouples installed on Flare 1 to measure $T_{EG,m,flare-1}$ during the considered monitoring period are presented below:

Specifications of the first thermocouple installed on Flare 1 (measurements for the sub-parameter $T_{EG,m,flare-1}$)	
Manufacturer	ELSI s.r.l.
Model	type S
Serial Number	12318234
Accuracy	[2.704 + (0.0025 x measured temperature)] ℃, if measured temperature is equal or higher than 600℃

Source: [774]

Thermocouple used for measuring the sub-parameter $T_{EG,m,flare-2}$:
The specifications of the thermocouple installed on Flare 2 to measure $T_{EG,m,flare-2}$ during the considered monitoring period are presented below:

Specifications of the thermocouple installed on Flare 2 (measurements for the sub-parameter $T_{EG,m,flare-2}$)	
Manufacturer	ELSI s.r.l.
Model	type S
Serial Number	11-09/5207
Accuracy	[2.704 + (0.0025 x measured temperature)] ℃, if measured temperature is equal or higher than 600℃

Source: [774]

Thermocouple used for measuring the sub-parameter $T_{EG,m,flare-3}$:
The specifications of the thermocouple installed on Flare 3 to measure $T_{EG,m,flare-3}$ during the considered monitoring period are presented below:

Specifications of the thermocouple installed on Flare 3 (measurements for the sub-parameter $T_{EG,m,flare-3}$)	
Manufacturer	ELSI s.r.l.
Model	type S
Serial Number	08-12/64188
Accuracy	[2.704 + (0.0025 x measured temperature)] ℃, if measured temperature is equal or higher than 600℃

Source: [774]

Thermocouple used for measuring the sub-parameter $T_{EG,m,flare-4}$:
The specifications of the thermocouple installed

on Flare 4 to measure $T_{EG,m,flare-4}$ during the considered monitoring period are presented below:

Specifications of the thermocouple installed on Flare 4 (measurements for the sub-parameter $T_{EG,m,flare-4}$)	
Manufacturer	ELSI s.r.l.
Model	type S
Serial Number	11-06/1675
Accuracy	[2.704 + (0.0025 x measured temperature)] ℃, if measured temperature is equal or higher than 600℃

Source: [74]

Thermocouple used for measuring the sub-parameter $T_{EG,m,flare-5}$:
The specifications of the thermocouple installed on Flare 5 to measure $T_{EG,m,flare-5}$ during the considered monitoring period are presented below:

Specifications of the thermocouple installed on Flare 5 (measurements for the sub-parameter $T_{EG,m,flare-5}$)	
Manufacturer	ELSI s.r.l.
Model	type S
Serial Number	11-09/5209
Accuracy	[2.704 + (0.0025 x measured temperature)] ℃, if measured temperature is equal or higher than 600℃

Source: [74]

Thermocouple used for measuring the sub-parameter $T_{EG,m,flare-6}$:
The specifications of the thermocouple installed on Flare 6 to measure $T_{EG,m,flare-6}$ during the considered monitoring period are presented below:

Specifications of the thermocouple installed on Flare 6 (measurements for the sub-parameter $T_{EG,m,flare-6}$)	
Manufacturer	ALUTAL Controles Industriais Ltda.
Model	type S
Serial Number	11086340
Accuracy	±1.5 ℃ or ±0.25% of measured value (where the highest value is considered)

Source: [74]

	Is the accuracy of the	The PDD [72] and ACM0001 (version 13.0.0) [77] do

	monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	not specify any accuracy requirement for the thermocouples installed at the project site. The accuracy ranges for the installed instruments are: ±1.5 ℃ or ±0.25% of measured value (where the highest value is considered) and also [2.704 + (0.0025 x measured temperature)] ℃, if measured temperature is equal or higher than 600℃. It is EPIC contention that the use of the installed instruments represents good practice for monitoring of temperature in the exhaust gas of the flares.	
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.	
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Figures of temperature in the exhaust gas of each flare (calculation sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$.) as visualized by the EPIC verification team in the screen of the project's data supervisory system (in the project activity's control room) were compared with figures displayed by a display existent in the flare control panel (which are located next to the flares) (for the same time instant) at the time of the production of the live video (movie) /94/ on 03/04/2020 (of which details are included in Section D.2). Such data checking/comparison confirmed correct data processing and recording by the project's PLC unit and monitoring equipment respectively (at the time of the production of the live video (movie) /94/ on 03/04/2020. Further assessment details about recording of values measured at the project site are included in the end of this Section. Furthermore, a *data authenticity checking* was performed for all every minute basis measurement records of the following LFG and flaring related monitoring parameters (incl. sub-parameters) in order to demonstrate and ensure that only authentic/not modified monitoring data was used as input data for the emission reduction calculations for the considered monitoring period: - Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) - Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$) - Temperature of the gaseous stream in time interval *t* (T_t) - Pressure of the gaseous stream in time	

		interval *t* (P_t) - Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$) - Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) - Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$) - Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$) The performed checking aimed to ensure that monitoring data were not intentionally or unintentionally edited/modified by anyone prior of being used as primary data input for the processing of emission reduction calculations. The performed checking also aimed to ensure that the emission reduction calculation spreadsheets /5/ include only authentic monitoring records. Details about the performed *data authenticity checking* (which is valid for above-listed LFG and flaring related monitoring data) are included in the end of this Section.
	Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Flame detection of flare in the minute m" ($Flame_m$):

Data / Parameter: (as per the monitoring plan of the PDD):	Flame detection of flare in the minute *m* ($Flame_m$)
Measuring, recording and reporting frequencies:	During the considered monitoring period, the operational status of the flares was recorded and reported every-minute on the basis of continuous measurements of the status of flame in the flares. As correctly outlined in the latest version of the

		Monitoring Report [3], while measurements for $Flame_m$ are performed by the installed 6 UV flame detectors (one flame detector for each individual installed flare), this monitoring parameter is thus measured, recorded and reported on the basis of the following sub-parameters: - $Flame_{m,flare-1}$: Flame detection status for Flare 1 - $Flame_{m,flare-2}$: Flame detection status for Flare 2 - $Flame_{m,flare-3}$: Flame detection status for Flare 3 - $Flame_{m,flare-4}$: Flame detection status for Flare 4 - $Flame_{m,flare-5}$: Flame detection status for Flare 5 - $Flame_{m,flare-6}$: Flame detection status for Flare 6 This is deemed correct, acceptable and under conformance with requirements of ACM0001 (version 13.0.0) [7] and applicable methodological tools. As confirmed by the EPIC verification team through assessment of the monthly emission reduction calculation spreadsheets [5], for every minute *m* during which flame was detected in the flare *n* (where n = 1, 2, 3, 4, 5 and 6), the flame status of the measured flare for each minute is set as "*ON*" (Flame "*on*"), otherwise the flame status of this flare for the given minute is set to "*OFF*" (Flame "*off*").
	Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	As per both the PDD [2] and the methodological tool "Project emissions from flaring" (version 02.0.0) [12], (which is applied in accordance to ACM0001 (version 13.0.0) [7]), the operational status of each flare (calculation sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3,}$ $Flame_{m,flare-4,}$ $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) shall be recorded once per minute. Thus, the applied measuring, recording and reporting frequencies for $Flame_m$ are thus in accordance with both ACM0001 (version 13.0.0) [7] and the PDD [2].
	Type of monitoring equipment/instrument:	Monitoring of the operational status of each flare (calculation sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3,}$ $Flame_{m,flare-4,}$ $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) is performed by 6 installed UV flame detectors of the same model (one for each installed high temperature enclosed flare). *UV Flame detectors used for monitoring the sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3,}$ $Flame_{m,flare-4,}$ $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$:* Specifications of the UV Flame detector installed in each one of the flares Manufacturer: Krom Schroder

		Model: UVS6 Source: [50]
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable. There are no measured values for Flame detection of flare in the minute *m*.
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Not applicable.
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	A *data authenticity checking* was performed for all every minute basis measurement records of the following LFG and flaring related monitoring parameters (incl. sub-parameters) in order to demonstrate and ensure that only authentic/not modified monitoring data was used as input data for the emission reduction calculations for the considered monitoring period: - Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$) - Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$) - Temperature of the gaseous stream in time interval *t* (T_t) - Pressure of the gaseous stream in time interval *t* (P_t) - Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$) - Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$) - Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$) - Quantity of electricity consumed from diesel generators during the year *y*

	($EG_{EC2,y} = EC_{PJ2,y}$) The performed checking aimed to ensure that monitoring data were not intentionally or unintentionally edited/modified by anyone prior of being used as primary data input for the processing of emission reduction calculations. The performed checking also aimed to ensure that the emission reduction calculation spreadsheets /5/ include only authentic monitoring records. Details about the performed *data authenticity checking* (which is valid for above-listed LFG and flaring related monitoring data) are included in the end of this Section.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Yes. Details for data transfer and reporting of emission reductions (incl. relevant QA/QC process) are assessed in the end of this Section. Further details for monitoring management and quality assurance related aspects for the project activity are also included in the end of this Section.

Assessment details for the monitoring parameter "Maintenance events completed in year y" ($Maintenance_y$):

Data / Parameter: (as per the monitoring plan of the PDD):	Maintenance events completed in year *y* ($Maintenance_y$)
Measuring, recording and reporting frequencies:	As per the implemented monitoring procedure adopted at ESTRE Ambiental S/A, all the maintenance events at the project site are weekly performed by the technical staff of the project participant and project operator ESTRE Ambiental S/A in a customized maintenance log book (with details about historical of performed interventions (repair, maintenance and calibration services) /24/. The latest version of the Monitoring Report /3/ states that the maintenance events (including inspection and maintenance service) were performed with an every-week frequency in the 6 installed flares during the considered monitoring period. The maintenance events encompass general inspection/maintenance service (incl. inspection of the condition of the flare isolation ceramics revetment material, 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).
	Are measuring, recording and reporting frequencies in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The registered PDD [/2/] defines the following "*(…) The maximum duration in days between maintenance events has been chosen considering ESTRE preventive maintenance program which defines the frequency for checking flare equipment situation every week.*" Thus, the applied every-week monitoring frequency for the parameter is thus in accordance with both ACM0001 (version 13.0.0) [/7/] and the PDD [/2/].
	Type of monitoring equipment/instrument:	Not applicable. There are no measurements involved in the monitoring of $Maintenance_y$.
	Is the accuracy of the monitoring equipment/instrument as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable. There are no measurements involved in the monitoring of $Maintenance_y$.
	If applicable, has the reported monitoring data been cross-checked with other available data or source?	Yes. The EPIC verification team compared details included in the Monitoring Report [/3/] for the monitoring parameter $Maintenance_y$ against all available documented evidences for performed maintenance services at the flares installed as part of the project activity (incl. log book with details about historical of performed interventions (repair, maintenance and calibration services) at the flares [/24/]).
	How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	Not applicable. While all performed maintenance events in the installed flares (including inspection and/or replacement of flare revetment material) were performed in accordance with requirements established in details for the ex-ante determined parameter "Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval" ($SPEC_{flare}$), the determination of emission reductions achieved by the project activity during the considered monitoring period are thus not negatively impacted by the records for the monitoring parameter $Maintenance_y$.
	Does the applied monitoring data management process	Not applicable.

	(from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transfer and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	

It is important to note that the monitoring plan of the PDD /2/ also includes the following monitoring parameters of which monitoring was not required during the considered monitoring period since the methodological options for which they are applicable were not selected during the considered monitoring period[9].

Parameter not monitored during the considered monitoring period
Volumetric flow of the gaseous stream in time interval *t* on a dry basis ($V_{t,db}$)
Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a dry basis ($v_{i,t,db} = v_{i,RG,m}$)

Handling of records for both parameters monitored ex-post and ex-ante determined parameters in the context of determination of achieved emission reductions:
As part of the applied monitoring procedure, measurements for the following LFG and flaring related monitoring parameters were automatically processed by the project's Programmable Logic Controller (PLC) unit and recorded in a customized SQL based database with a data recording/reporting frequency of every one minute:

- Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$),
- Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$),
- Temperature of the gaseous stream in time interval *t* (T_t),
- Pressure of the gaseous stream in time interval *t* (P_t),
- Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$) (sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$)
- Flame detection of flare in the minute *m* ($Flame_m$) (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$)
- Quantity of electricity consumed from the grid by the project activity during

[9] While Option C of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) was selected for the determination of $F_{CH4,flared,y}$ during the considered monitoring period, it is important to note the following:

- $V_{t,db}$ was not monitored as Option A of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) was not selected.

- $v_{CH4,t,db}$ was not monitored as Options A and D of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) was not selected.

the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$)

- Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$)

As confirmed by the EPIC verification team, the project's customized SQL based data-server is directly connected to the project's data supervisor system model SCADA. As per the operational of the customized SCADA data supervisor platform, one data file is generated every week (with summarized files being registered in the end of each month) as follows:

- a MS-Excel format spreadsheet file /6/ with every one-minute values for $V_{t,wb}$ (sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$, $w_{CH4,y}$), $v_{i,t,wb}$, T_t, P_t, $T_{EG,m}$ (sub- parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$), $Flame_m$ (sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$), $O_{pj,h}$ (sub-parameters $O_{pj,h,flare-1}$, $O_{pj,h,flare-2}$, $O_{pj,h,flare-3}$, $O_{pj,h,flare-4}$, $O_{pj,h,flare-5}$ and $O_{pj,h,flare-6}$), $EC_{PJ1,y}$ and $EC_{PJ2,y}$

It is EPIC opinion that the use of the SCADA data supervisor system and the customized SQL[10] based data base for recording monitoring details for the project activity represents good practice in terms of data acquisition and data archiving. EPIC was also able to verify that a reliable and robust monitoring mechanism was established, implemented and has been followed by ESTRE Ambiental S/A.

Data transmission, data export/conversion and creation of "raw data" input files for the emission reduction calculations:

SQL-format data with values of the measured records at the LFG extracting and flaring station has been regularly retrieved from the data base through the available interface in the data supervisor system SCADA.

As per the implemented monitoring procedure, at regular time intervals, the monitoring manager for the project activity exports/converts data from SQL-format into an MS-Excel-format (.xls files) by using the data supervisor system SCADA. These data exports/conversions into MS-Excel formats are performed by selecting the related functions (buttons) in the user graphical interface of the data supervisor system SCADA.

Also as part of the implemented project's monitoring procedure, 3 monthly MS-Excel format "raw-data" files /6/ resulted from regular data exports were used as primary monitoring input data for the emission reduction calculations (as established in the applicable work procedure of ESTRE Ambiental S/A).

For the monitoring period from 01/10/2019 to 31/12/2019, as per the adopted work procedures, a set of 3 monthly "raw-data" MS-Excel-format files were generated. The set of 3 MS-Excel "raw-data" files /6/ were used as primary monitoring data input for the compilation of the monthly emission reduction calculations as follows:

Period	File Names
October/2019	*"OCT_19.xls"*

[10] SQL (sometimes also referred to as Structured Query Language) is a programming language designed for managing data in relational database management systems. SQL is currently the most widely used database language.

November/2019	*"NOV_19.xls"*
December/2019	*"DEC_19.xls"*

The set of 3 generated MS-Excel-format "raw-data" files /6/ were made available and assessed by the EPIC verification team.

All raw data files contain, for each minute of the considered monitoring period, historical monitoring records for LFG flow sent to each flare, LFG pressure, LFG temperature, CH_4 content of LFG, temperature of the exhaust gas of the flares, flame status of each flare, operational status of each flare, amount of grid-sourced electricity consumed by the project activity as well as amount of electricity sourced by the backup diesel generators, which are used for the calculation of GHG emission reductions.

As verified by EPIC, for each individual MS-Excel format "raw-data" spreadsheet file /6/ the number of records exceeds 42,000 rows for a full month period. It is crucial to note that when generating such files in MS-Excel, data could be eventually intentionally or unintentionally edited/modified. Thus, in order to ensure that only authentic (not edited /not modified) "raw data" were used as a basis for the emission reduction calculations, a systematic *data authenticity checking* was performed by the EPIC verification team for all the monitored data as described and assessed below under the sub-section "*Data authenticity checking".*

As part of the adopted project's monitoring procedure, in order to compile the set of monthly emission reduction spreadsheets /5/ valid for the considered monitoring period, every-minute measurement records, as presented in the raw-data files, were used as input data for the compilation of the monthly MS-Excel format emission reduction calculation spreadsheets /5/.

As per the adopted monitoring procedure and in accordance with the requirements of ACM0001 (version 13.0.0) /7/ and related provisions of the PDD, GHG emission reductions are calculated based on measurement records and selected default values of the *ex-post* monitored parameters (of which monitoring details are presented in the tables above) and also using the values for the ex-ante determined parameter as presented below:

Parameter	Value
Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline ($OX_{top\ layer}$)	0.1
Global Warming Potential of CH_4 (GWp_{ch4})	25 tCO_2e/tCH_4
Universal ideal gases constant (R_u)	8,314 $Pa.m^3/kmol.K$
Molecular mass of gas *k* (MM_k)	28.01 kg/kmol
Molecular mass of greenhouse gas *i* (MM_i)	16.04 kg/kmol
Atmospheric pressure at reference conditions (P_{ref})	101,325 Pa
Temperature at reference conditions (T_{ref})	273.15 K
Molecular mass of water (MM_{H2O})	18.0152 kg/kmol
Weighting of build margin emissions factor (w_{BM})	75%
Weighting of operating margin emissions factor (w_{OM})	25%

Build margin emission factor for the grid in year *y* ($EF_{grid,BM,y}$)	0.2010 tCO_2/MWh

Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval ($SPEC_{flare}$)[11]

$SPEC_{flare.\ Flare\ 1}$ $SPEC_{flare.\ Flare\ 2}$ (Flare models 2000 HT)	Min.	Max.
Operational LFG flow for each flare (for continuous operation)	400 Nm^3/h	2,000 Nm^3/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
Maximum duration in days between maintenance events	7 days[12]	

$SPEC_{flare.\ Flare\ 3}$ $SPEC_{flare.\ Flare\ 4}$ $SPEC_{flare.\ Flare\ 5}$ $SPEC_{flare.\ Flare\ 6}$ (Flare models 2500 HT)	Min.	Max.
Operational LFG flow for each flare (for continuous operation)	500 Nm^3/h	2,500 Nm^3/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
Maximum duration in days between maintenance events	7 days	

It is noteworthy that values of the fixed parameters indicated in the table above were selected ex-ante in the PDD /2/.

[11] Section E.6.1 includes relevant and additional assessment details valid for the ex-ante determined parameter Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval ($SPEC_{flare}$).
[12] The maximum duration in days between maintenance events has been chosen considering ESTRE preventive maintenance program which defines the frequency for checking flare equipment situation every week.

Baseline emissions for each one of the 3 months of the monitoring period were partially calculated through application of the *blank* version of the spreadsheet template that is developed by the project participant ESTRE Ambiental S/A and termed "monthly emission reduction calculation spreadsheet template" /23/. This calculation spreadsheet template uses the following data/information as input data for the determination of every-minute and accumulated monthly values for the calculation parameters "Amount of methane in the LFG which is flared and/or used in the project activity in year *y*" ($F_{CH4,PJ,y}$):

- Monitoring records included in the 3 MS-Excel format "raw-data" spreadsheet files /6/ valid for the monitoring period
- the *ex-ante* determined parameters presented in the table above
- the calculated values of Flare efficiency (parameter $\eta_{flare,calc,m}$)

It is noteworthy that the calculations for the determination of the applicable values for the monitoring parameter Flare efficiency ($\eta_{flare,calc,m}$) are performed in a separate calculation spreadsheet termed "*MR 28 – Paulínia – V.2 - FE.xls*" /5/). Further assessment for the determination of $\eta_{flare,calc,m}$ is presented on Section E.8.1.

For the monitoring period from 01/10/2019 to 31/12/2019 encompassing 3 months of year 2019, 3 monthly calculated spreadsheets /5/ were thus generated as a result of the use of the spreadsheet template for each individual month encompassed by the considered monitoring period. Each one of the elaborated monthly emission reduction calculation spreadsheet files /5/ aggregates (reports) the following recorded monitoring data on an every-minute recording/reporting frequency (folder "Output"):

- Volumetric flow of LFG sent to each high temperature enclosed flare (monitoring parameter "Volumetric flow of the gaseous stream in time interval *t* on a wet basis" ($V_{t,wb}$) on the basis of the sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$, $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$);
- Methane fraction in the LFG (monitoring parameter "Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis" ($v_{i,t,wb}$));
- Temperature of landfill gas (monitoring parameter "Temperature of the gaseous stream in time interval *t* " (T_t));
- Pressure of the landfill gas (monitoring parameter "Pressure of the gaseous stream in time interval *t* " (P_t));
- Temperature of the flares (monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$) on the basis of the sub-parameters $T_{EG,m,flare-1}$, $T_{EG,m,flare-2}$, $T_{EG,m,flare-3}$, $T_{EG,m,flare-4}$, $T_{EG,m,flare-5}$ and $T_{EG,m,flare-6}$);
- Flame status of the flares (monitoring parameter "Flame detection of flare in the minute *m*" ($Flame_m$) on the basis of the sub-parameters $Flame_{m,flare-1}$, $Flame_{m,flare-2}$, $Flame_{m,flare-3}$, $Flame_{m,flare-4}$, $Flame_{m,flare-5}$ and $Flame_{m,flare-6}$).
- Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$)
- Quantity of electricity consumed from diesel generators during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$)

An additional calculation spreadsheet (termed "Summarized emission reduction calculation spreadsheet") (file name "*MR 28 - Paulínia - V.2.xls*") /5/ correctly summarizes the achieved baseline emissions due to destruction of methane by the project activity during the considered monitoring period (by summing the

	accumulated monthly values for the calculation parameters $F_{CH4,PJ,y}$ and also summing the accumulated monthly values for the calculation parameters $F_{CH4,BL,y}$ from each one of the 3 monthly emission reduction spreadsheets /5/). Further assessment details about the calculation of baseline emissions are included in Section E.8.1. Project emissions are also calculated in the summarized emission reduction calculation spreadsheet /5/ on the basis of monitoring records (input data) for (i) monitoring parameters automatically recorded/reported by the project's PLC unit (Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y}$ = $EC_{PJ1,y}$) and Quantity of electricity consumed from diesel generators by the project activity during the year *y* ($EG_{EC2,y}$ = $EC_{PJ2,y}$)) (ii) monitoring parameters that are not automatically recorded/reported by the project's PLC unit (Operating margin emission factor for the grid in year *y* ($EF_{grid,OM,y}$), Combined margin emission factor for the grid in year *y* ($EF_{grid,CM,y}$) and Average technical transmission and distribution losses for providing electricity to source *j* in year *y* ($TDL_{j,y}$)) (iii) related *ex-ante* determined parameters (Weighting of build margin emissions factor (w_{BM}), Weighting of operating margin emissions factor (w_{OM}) and Build margin emission factor for the grid in year *y* ($EF_{grid,BM,y}$)). Further assessment details about the calculation of project emissions are included in Section E.8.2. The 3 MS-Excel-format monthly emission reduction calculation spreadsheets files /5/ and the summarized emission reduction calculation spreadsheet /5/ were all made available and assessed by the EPIC verification team. In summary, the EPIC verification team was able to confirm that calculations of baseline emissions and project emissions were correctly performed as per the formulae and methods stated in the PDD /2/, monitoring methodology and applicable tools /12/ /13/ /14/ /15/ as described and assessed in Section E.8. All calculations are thus confirmed by the EPIC verification team to be under conformance with applicable requirements from: - CDM baseline and monitoring methodology ACM0001 – "Flaring or use of landfill gas" (version 13.0.0) /7/, - "Tool to calculate baseline, project and/or leakage CO_2 emissions from fossil fuel combustion" (version 02) /15/, - "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) /13/, - "Tool to calculate the emission factor for an electricity system" (versions 3.0.0 /16/, - "Project emissions from flaring" (version 02.0.0) /12/, - "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/, - Monitoring plan of the PDD /2/. The table below presents the reported results of the generated monthly emission reduction spreadsheets and the summarized emission reduction calculation spreadsheet:

File name for the monthly emission reduction calculation spreadsheets	Period	Reported amount of methane flared ($F_{CH4,PJ,y} = F_{CH4,flared,y}$) ($tCH_4$)
"102019.xls"	01/07/2019 - 31/07/2019	1,568 tCH_4
"112019.xls"	01/08/2019 - 31/08/2019	1,086 tCH_4
"122019.xls"	01/09/2019 - 30/09/2019	1,562 tCH_4
"MR 28 – Paulínia – V.2.xls" (Summarized emission reduction calculation spreadsheet for the whole monitoring period)	From 01/10/2019 to 31/12/2019	4,216 tCH_4

As verified by the EPIC verification team, while the number of records exceeds 42,000 rows in for each individual MS-Excel format monthly emission reduction spreadsheet [5], it is crucial to note that, as earlier highlighted in this section, when generating the "raw-data" spreadsheet files (which are used as primary input data for each one of the monthly emission reduction spreadsheets [5]), data could be eventually intentionally or unintentionally edited/modified (by using MS-Excel application). Thus, in order to ensure that only authentic (not edited /not modified) data were used as a basis for the emission reduction calculations, a systematic *data authenticity checking* was performed by the EPIC verification team for all the monitored data as detailed below under the sub-section "*Data authenticity checking".*

Monitoring Management and Quality Assurance:
The EPIC verification team was able to confirm that quality control and quality assurance (QA/QC) procedures are implemented by the project participant and project operator ESTRE Ambiental S/A for preventing or identifying and correct eventual errors or omissions in the reported monitoring parameters.

As verified by the EPIC verification team, competent and sufficiently trained staff are recruited for operating the project activity and handling related monitoring data. Such employees are found with knowledge not only about the operation of the project activity, but also with sufficient knowledge and competence to ensure the application of all related QA/QC procedures for data recording and storage.

Furthermore, for the 28th periodic verification, the host-country project participant and project operator ESTRE Ambiental S/A was also supported with consultancy and advisory services in CDM and LFG management related issues by the consultancy service company named UniCarbo Energia e Biogás Ltda. As confirmed by the EPIC verification team, the technical team from UniCarbo Energia e Biogás Ltda. has contributed for the development of related documentation (e.g. Monitoring Report [3] and emission reduction calculation spreadsheets [5]) and also supported ESTRE Ambiental S/A for addressing all raised outstanding issues (raised CARs).

As also assessed by the EPIC verification team, the project activity has been operated by sufficiently trained staff by correctly following guidance and instructions of internal documented working procedures and with high quality technical support from external CDM and LFG management consultants.

As confirmed by the EPIC verification team, the applied procedures for data collection, data reporting, performance of calibration events and other aspects related to the applied procedures for determining the emission reductions are systematically implemented and have been appropriately followed by the host-

country project participant and project operator ESTRE Ambiental S/A. While watching online (and later further assessing/reviewing) the produced live video (movie) /94/ (of which details are included in Section D.2), the EPIC verification team was also able to verify that the operational structure of the project activity is also in line with the information made available in the PDD /2/ and in the Monitoring Report /3/. In summary, EPIC was also able to verify that detailed management and operational work procedures are in place and confirmed that an operational structure for the project activity is established with responsibilities clearly identified. Moreover, trained staff is employed to ensure data quality.

Data authenticity checking:
As part of the performed verification assessment, the EPIC verification team was able to confirm that the monthly emission reduction calculation spreadsheets /5/ completed by ESTRE Ambiental S/A are basically MS-Excel spreadsheets that, in theory, could have recorded data being easily edited/modified (intentionally or unintentionally). Thus, these spreadsheets, if inappropriately edited, could potentially tamper reported monitoring records, thus resulting in unreal and incorrect calculation and reporting of emission reductions achieved by the project activity during the considered monitoring period. In order to ensure that all emission reductions calculations are entirely and correctly based on authentic and real monitoring records valid for the considered monitoring period, a *data authentic check* was performed as part of the verification assessment.

Such checking aimed to ensure that only authentic and unmodified monitoring data records were used by the host-country project participant ESTRE Ambiental S/A for performing the emission reduction calculation for the considered monitoring period (thus ensuring that measurement records made available in the MS-Excel format "raw data" input files /6/ and measurement records reported in the monthly emission reduction spreadsheets were not intentionally or unintentionally edited/modified during the generation or handling of these files).

The performed *data authenticity check* involved the following steps:

STEP 1: Assessment and handling of the measurement data:
While each monthly MS-Excel format raw data contains identical every-minute LFG related monitoring records for the whole month period encompassed by the considered monitoring period, the EPIC verification team has assessed the set of monthly files in MS-Excel format (with primary data inputs from the project's data supervisor system) retrieved from the project's data supervisor system model SCADA during the production of the live video (movie) /94/ on 03/04/2020. These comparative files were termed by the EPIC verification team as "*raw-data for checking*" files /22/.

STEP 2: Re-calculation of emission reductions:
By using the set of 3 MS-Excel format "*raw-data for checking*" comparative files /22/ (that were generated under STEP 1) as input data, the procedure for emission reductions calculation for the whole monitoring period was reproduced by the EPIC verification team for all 3 months encompassed by the considered monitoring period. The content of the "*raw-data for checking*" comparative files /22/ was used as input data for the compilation of the set of 3 comparative monthly emission reduction calculation spreadsheets /21/ by applying a *blank* version of the emission reduction calculation spreadsheet /5/ that was made available by the project participant and was assessed by the EPIC verification team. Moreover, correct values for the applicable *ex-ante* determined parameters were also inserted in the *blank* version of the emission reduction calculation spreadsheet /5/ as input data. As a result of this step, a set of 3 comparative monthly emission reduction spreadsheets /21/ was thus created.

STEP 3 – Comparison of emission reduction calculation spreadsheets developed by the project participant ESTRE Ambiental S/A against the

	created comparative monthly emission reduction spreadsheets and analysis of the results: The calculated accumulated monthly values of the parameter $F_{CH4,PJ,y}$ in each one of the comparative monthly emission reduction spreadsheets /21/ (files generated under STEP 2) were compared against the corresponding accumulated values for the parameter $F_{CH4,PJ,y}$ in each one of the emission reduction spreadsheets /5/ previously created by the project participants as part of the monitoring/reporting process. As a result of STEP 3, by comparing files previously generated by the project participants against the files generated under STEP 2, the EPIC verification team was able to confirm that the generated set of 3 comparative monthly checking spreadsheets /21/ are identical to the 3 monthly emission reduction calculation spreadsheets /5/ previously created by the project participants. While no quantitative deviations or differences were identified when comparing the accumulated values for the calculation parameters presented in these files, and by assuming that all encrypted data stored in the project's data supervisor system model SCADA represent credible and authentic monitoring data, the performed *data authenticity check* thus successfully and sufficiently confirmed that only authentic and not-modified monitored measurement data (from the installed data supervisor system SCADA) were previously used by the project participants for the calculation of emission reductions as reported in the Monitoring Report /3/.
Findings	One (1) FAR was previously raised as part of the previously performed 21st periodic verification assessment for the project activity (monitoring period from 01/07/2017 to 30/09/2017) regarding the compliance of monitoring activities valid for the considered monitoring period with monitoring requirements as per the monitoring plan from the PDD. **FAR 1:** On 04/05/2018, the installed LFG flow meter for Flare 5 did not any longer include legible label that would allow the identification of its model and serial number (S/N). Furthermore, at the same date, the electronic display of this particular LFG flow meter was found not functional. Although the lack of legible label and functional display in the LFG flow meter *per se* would not promote any material impact over the operationalization of the project's monitoring system, the DOE performing the 21st periodic verification for the project activity (monitoring period from 01/07/2017 to 30/09/2017) raised a FAR related to such issues in the LFG flow meter on 04/05/2018.
Conclusion	In order to have the raised FAR being addressed, the service representative from the manufacturer of the LFG flow meter for Flare 5 was inquired about the possibility of providing a new instrument specification label (that would allow the identification of its model and serial number (S/N)). The service representative from the manufacturer of the LFG flow meter for Flare 5 was also inquired about the possibility of repairing/replacing the electronic display of the instrument. As responses to the raised inquires, a new label was provided and attached to the instrument and the instrument electronic display was also replaced on 06/08/2018. This was confirmed by the EPIC verification team during the performed on-site visit to the project activity held on 12/02/2019 (for the previous 21st periodic verification (monitoring period from 01/07/2017 to 30/09/2017)). In summary, the EPIC verification team was able to confirm that monitoring plan has been implemented in accordance with the monitoring plan. The monitoring mechanism is effective and reliable. The EPIC verification team sufficiently confirmed that: - The monitoring plan and the applied methodology had been properly implemented and related monitoring activities have been correctly performed. - The responsibilities and authorities for monitoring and reporting were in

	accordance with the general responsibilities and authorities for the monitoring plan as outlined in the latest version of the Monitoring Report /3/. - QA/QC procedures are implemented for preventing or identifying and correct eventual errors or omissions in the reported monitoring parameters. - All parameters for which monitoring were required (by taking into account the monitoring approaches and calculation options selected for the considered monitoring period) were sufficiently and appropriately monitored during the considered monitoring period. For each monitored parameter, sufficient details about data generation, aggregation, recording and reporting are included in the latest version of the Monitoring Report /3/).

E.6.3. Implementation of sampling plan

Means of verification	Not applicable[13].
Findings	Not applicable.
Conclusion	Not applicable.

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The EPIC verification team has assessed whether all monitoring instruments/equipment installed at the project site have operated during the monitoring period from 01/10/2019 to 31/12/2019 under full compliance with calibration requirements as per both related provisions from the PDD /2/ and recommendations/guidance from the instrument/equipment manufacturers. The following tables include assessment details for calibration events performed on the monitoring instruments/equipment used for performance of measurements monitoring the ex-post determined parameters during the considered monitoring period: *Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Management of the SWDS":*

Data / Parameter: (as per the monitoring plan of the PDD):	Management of the SWDS (Management of SWDS)
Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. While monitoring of the parameter "Management of the SWDS" is not performed based on measurements, there are no monitoring equipment/instruments utilized. Thus, there are no compliance with applicable calibration frequency/intervals of monitoring equipment/instruments to be assessed.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Not applicable. While monitoring of the parameter Management of the SWDS is not performed based on measurements, there are no monitoring equipment/instruments utilized. Thus, there are no compliance with applicable calibration frequency/intervals of monitoring equipment/instruments to be assessed.
Did the performed calibration(s) confirm proper functioning of	Not applicable. While monitoring of the parameter Management of the SWDS is not performed based on measurements, there are no monitoring

[13] As per the monitoring and GHG calculation approaches that are valid for the project activity (as established in the PDD and applied CDM baseline and monitoring methodology + applicable methodological tools) no sampling procedure and no sampling-based monitoring are valid/required for the determination of achieved emission reductions. Moreover, as further assessed in Section E.6.2, under *Data authenticity checking*, cross-checking/reproducing all reported LFG and flaring measurement records valid for the considered monitoring period against the related primary data sources were performed (with all reported related monitoring data being cross-checked/reproduced instead of having selected samples of data being cross-checked/reproduced).

monitoring equipment/instrument? (Yes / No):	equipment/instruments utilized. Thus, there are no compliance with applicable calibration frequency/intervals of monitoring equipment/instruments to be assessed.
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable. While monitoring of the parameter Management of the SWDS is not performed based on measurements, there are no monitoring equipment/instruments utilized. Thus, there are no compliance with applicable calibration frequency/intervals of monitoring equipment/instruments to be assessed.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Operation of the equipment that consumes the LFG" ($O_{pj,h}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Operation of the equipment that consumes the LFG" ($O_{pj,h}$)
Calibration frequency /interval for the monitoring equipment/instrument:	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).
Is(are) the performed calibration(s) valid for the whole reporting period?	Specifications and calibration details for the installed thermocouples are presented below in the applicable table for the monitoring parameter "Temperature in the exhaust gas of the enclosed flare in minute *m*" ($T_{EG,m}$).

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Volumetric flow of the gaseous stream in time interval t on a wet basis" ($V_{t,wb}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Volumetric flow of the gaseous stream in time interval *t* on a wet basis ($V_{t,wb}$) (monitored as per Option C of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/).
Calibration frequency /interval for the monitoring	As per the implemented monitoring procedure at ESTRE Ambiental S/A and recommendations from

		equipment/instrument:	the equipment's manufacturer, the installed 6 LFG flow meters are calibrated every 3 years by a third party independent accredited calibration laboratory. *Calibration details for the flow meter used for measuring the sub-parameter $V_{t,wb,flare-1}$:* For the flow meter with S/N 1505000326, a valid calibration event was performed on 05/07/2018 as indicated in the Certificate of Calibration No. 1505000326 0718 M7 /77/ issued by Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda. The Certificate of Calibration was made available and was assessed by the EPIC verification team. *Calibration details for the flow meter used for measuring the sub-parameter $V_{t,wb,flare-2}$:* For the flow meter with S/N 1505000325, a valid calibration event was performed on 29/06/2018 as indicated in the Certificate of Calibration No. 1505000325 0618 M7 /45/ issued by Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda. The Certificate of Calibration was made available and was assessed by the EPIC verification team. *Calibration details for the flow meter used for measuring the sub-parameter $V_{t,wb,flare-3}$:* For the flow meter with S/N 1507000470, a valid calibration event was performed on 12/07/2018 as indicated in the Certificate of Calibration No. 1505000470 0718 FC /20/ issued by Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda. The Certificate of Calibration was made available and was assessed by the EPIC verification team. *Calibration details for the flow meter used for measuring the sub-parameter $V_{t,wb,flare-4}$:* For the flow meter with S/N 1505000328, a valid calibration event was performed on 02/08/2018 as indicated in the Certificate of Calibration No. 1505000328 0818 M7 /85/ issued by Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda. The Certificate of Calibration was made available and was assessed by the EPIC verification team. *Calibration details for the flow meter used for measuring the sub-parameter $V_{t,wb,flare-5}$:* For the flow meter with S/N 1505000327, a valid calibration event was performed on 06/08/2018 as indicated in the Certificate of Calibration No. 1505000327 0818 FC /35/ issued by Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda. The Certificate of Calibration was made available and was assessed by the EPIC verification team. *Calibration details for the flow meter used for measuring the sub-parameter $V_{t,wb,flare-6}$:* For the flow meter with S/N 1505000329, a valid

		calibration event was performed on 20/06/2018 as indicated in the Certificate of Calibration No. 1505000329 0618 M7 /52/ issued by Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda. The Certificate of Calibration was made available and was assessed by the EPIC verification team.
	Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	As per both the PDD /2/ and ACM0001 (version 13.0.0) /7/, the installed LFG flow meters are to be calibrated in a frequency as per the instrument's specifications and/or instrument manufacturer's recommendations. Thus, the applied calibration frequency (every 3 years, as per recommendations from the equipment's manufacturer) is under full conformance with both the monitoring plan of the PDD /2/ and ACM0001 (version 13.0.0) /7/.
	Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration events for the installed LFG flow meters confirmed proper functioning of this equipment.
	Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration events for the installed LFG flow meters are valid for the whole considered monitoring period. EPIC was able to confirm the validity of the performed calibration event for the installed LFG flow meters as follows: - Flow meter installed on Flare 1: Calibration event performed on 05/07/2018, valid until 04/07/2021 (3 years) - Flow meter installed on Flare 2: Calibration event performed on 29/06/2018, valid until 28/06/2021 (3 years) - Flow meter installed on Flare 3: Calibration event performed on 12/07/2018, valid until 11/07/2021 (3 years) - Flow meter installed on Flare 4: Calibration event performed on 02/08/2018, valid until 01/08/2021 (3 years) - Flow meter installed on Flare 5: Calibration event performed on 06/08/2018, valid until 05/08/2021 (3 years) - Flow meter installed on Flare 6: Calibration event performed on 20/06/2018, valid until 19/06/2021 (3 years)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Volumetric fraction of greenhouse gas methane in a hourly time interval t on a wet basis" ($v_{i,t,wb}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a wet basis ($v_{i,t,wb}$)
Calibration frequency /interval for the monitoring equipment/instrument:	As per the implemented monitoring procedure at ESTRE Ambiental S/A, the installed CH_4 content gas analyzer units are to be calibrated every year by 3rd party entity. This is confirmed by the EPIC verification team to be in accordance with recommendations from the equipment's manufacturer. Related Certificates of calibration were made available to the EPIC verification team. The performed calibration event which is valid for the monitoring period from 01/10/2019 to 31/12/2019 was correctly performed by comparison with canisters of calibrated span gases purchased from a certified gas supplier. For the gas analyzer unit with Serial Number N1-UN-0653, a valid calibration event was performed on 17/05/2019 /49/ by the company Isocell Soluções em Analítica. The certified span gases utilized for the calibration events of the CH_4 gas analyzer unit are summarized below: Set of certificates for the cylinder of span gases used for the calibrations of the CH_4 content gas analyzer unit: - Gas cylinders with 89.99 mol/mol of CH_4: cylinder n° 342734, certificate number 2337891 /47/ (supplied by Air Products Brasil Ltda.) As part of the performed calibration event, the relationship (measurement deviation/error) between the measurements of CH_4 content performed in the utilized span standard with known/certified CH_4 content is established. Through this procedure, the potential measurement error/deviation for CH_4 content of collected LFG is identified and expressed as a percentage. Such measurement deviation/errors are indicated in the Calibration Certificate. Information available in the Calibration Certificates /49/ were assessed by EPIC. The EPIC verification team has assessed the certificates /47/ of the utilized span gas cylinders and calibration notes in order to confirm the correctness of information provided above. Moreover, by assessing the reported details for the valid calibration events, the EPIC verification team was able to confirm that the composition of the utilized span gases were properly considered in the context of the determination of the measurement deviations/errors for CH_4 content measurements (Span).
Is the calibration interval in line with the	As per the PDD /2/, ACM0001 (version 13.0.0) /7/ and the "Tool to determine the mass flow of a greenhouse

monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	gas in a gaseous stream" (version 02.0.0) /14/, the installed continuous CH_4 content gas analyzer unit is to be calibrated in a frequency to be established under conformance with instrument's specifications and/or instrument manufacturer's recommendations. Thus, the adopted calibration frequency (every year, as per recommendations from the equipment's manufacturer) is in line with the monitoring plan of the PDD /2/, ACM0001 (version 13.0.0) /7/ and the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/. It is the opinion of the EPIC verification team that the adopted calibration frequency represents good practice.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration event for the CH_4 content gas analyzer unit confirmed proper functioning of these equipments.
Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration event for the CH_4 content gas analyzer unit is valid for the whole considered monitoring period. EPIC was able to confirm the validity of the performed calibration event for the installed CH_4 gas analyzer unit as follows: - Calibration event performed on 17/05/2019, valid until 16/05/2020 (1 year)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Temperature of the gaseous stream in time interval t" (T_t):

Data / Parameter: (as per the monitoring plan of the PDD):	Temperature of the gaseous stream in time interval *t* (T_t)
Calibration frequency /interval for the monitoring equipment/instrument:	As per the implemented monitoring procedure at ESTRE Ambiental S/A and recommendations from the equipment's manufacturer, the installed LFG temperature sensor is to be calibrated every 3 years. As confirmed by the EPIC verification team through assessment of the specification sheet for the installed LFG temperature sensor, the selected calibration frequency is as per the recommendations of the instrument manufacturer. A valid calibration event was performed on 28/05/2019 as indicated in the Certificate No. 21000051685400149992/19 /39/, issued by CEIME Calibração e Comércio de Instrumentos Ltda. The Calibration Certificate was made available and assessed by the EPIC verification team.
Is the calibration interval in line with the monitoring plan of the	As per both the PDD /2/ and ACM0001 (version 13.0.0) /7/, the installed LFG temperature sensor is to be calibrated in a frequency as per the instrument's

PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	specifications and/or instrument manufacturer's recommendations. Thus, the adopted calibration frequency (every 3 years, as per recommendations from the equipment's manufacturer) is in line with the both the monitoring plan of the PDD /2/ and ACM0001 (version 13.0.0) /7/.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration event for the LFG temperature sensor confirms proper functioning of the measurement instrument.
Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration event for the temperature sensor is valid for the whole considered monitoring period. EPIC was able to confirm the validity of the performed calibration event for the installed LFG temperature sensor as follows: - Calibration event performed on 28/05/2019, valid until 27/05/2022 (3 years)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Pressure of the gaseous stream in time interval t" (P_t):

Data / Parameter: (as per the monitoring plan of the PDD):	Pressure of the gaseous stream in time interval *t* (P_t)
Calibration frequency /interval for the monitoring equipment/instrument:	As per the implemented monitoring procedure at ESTRE Ambiental S/A and recommendations from the equipment's manufacturer, the installed LFG pressure sensor is to be calibrated every 3 years. As confirmed by the EPIC verification team through assessment of the specification sheet for the installed LFG pressure sensor, the selected calibration frequency is as per the recommendations of the instrument manufacturer. A valid calibration event was performed on 28/05/2019 as indicated in the Certificate No. 641000100249992/19 /48/, issued by CEIME Calibração e Comércio de Instrumentos Ltda. The Calibration Certificate was made available and assessed by the EPIC verification team.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	As per both the PDD /2/ and ACM0001 (version 13.0.0) /7/, the installed LFG pressure sensor is to be calibrated in a frequency as per the instrument's specifications and/or instrument manufacturer's recommendations. Thus, the adopted calibration frequency (every 3 years, as per recommendations from the equipment's manufacturer) is in line with the both the monitoring plan of the PDD /2/ and ACM0001 (version 13.0.0) /7/.
Did the performed calibration(s) confirm	Yes. The performed calibration event for the LFG pressure sensor confirms proper functioning of the

proper functioning of monitoring equipment/instrument? (Yes / No):	measurement instrument.
Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration event for the pressure sensor is valid for the whole considered monitoring period. EPIC was able to confirm the validity of the performed calibration event for the installed LFG pressure sensor as follows: - Calibration event performed on 28/05/2019, valid until 27/05/2022 (3 years)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Saturation pressure of H_2O at temperature T_t in time interval t" ($p_{H2O,t,sat}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Saturation pressure of H_2O at temperature T_t in time interval *t* ($p_{H2O,t,sat}$)
Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. The determination of applicable value for the monitoring parameter $p_{H2O,t,sat}$ is not based on measurements.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Not applicable. The determination of applicable value for the monitoring parameter $p_{H2O,t,sat}$ is not based on measurements.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Not applicable. The determination of applicable value for the monitoring parameter $p_{H2O,t,sat}$ is not based on measurements.
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable. The determination of applicable value for the monitoring parameter $p_{H2O,t,sat}$ is not based on measurements.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Combined margin emission factor for the grid in year y" ($EF_{grid,CM,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Combined margin emission factor for the grid in year *y* ($EF_{grid,CM,y}$)
Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.
Is the calibration interval in	Not applicable. There are no measurements or

line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y.}$
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,CM,y}$.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Operation margin emission factor for the grid in year y" ($EF_{grid,OM,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Operation margin emission factor for the grid in year *y* ($EF_{grid,OM,y}$)
Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y.}$
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $EF_{grid,OM,y}$.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Average technical transmission and distribution losses for providing electricity to source j in year y" ($TDL_{j,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Average technical transmission and distribution losses for providing electricity to source *j* in year *y*" ($TDL_{j,y}$)
Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.
Is the calibration interval in line with the monitoring	Not applicable. There are no measurements or measurement instruments/equipment involved for

plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	the definition of $TDL_{j,y}$.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y.}$
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable. There are no measurements or measurement instruments/equipment involved for the definition of $TDL_{j,y}$.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Quantity of electricity consumed from the grid by the project activity during the year y" ($EG_{EC1,y} = EC_{PJ1,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Quantity of electricity consumed from the grid by the project activity during the year *y* ($EG_{EC1,y} = EC_{PJ1,y}$)
Calibration frequency /interval for the monitoring equipment/instrument:	As per the implemented monitoring procedure at ESTRE Ambiental S/A and recommendations from the equipment's manufacturer, the installed electricity meter is to be calibrated every year. As confirmed by the EPIC verification team through assessment of the specification sheet for the installed electricity meter /61/, the selected calibration frequency is as per the recommendations of the instrument manufacturer. A valid calibration event was performed on 30/05/2019 (Calibration Certificate 004550045/19 /54/, issued by CEIME Calibração e Comércio de Instrumentos Ltda.).
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Both the monitoring plan of the PDD /2/ and ACM0001 (version 13.0.0) /7/ do not specify any calibration frequency requirements for the electricity meters. The PDD /2/ states the following: *"Electricity meter will be subject to regular (in accordance with stipulation of the meter supplier) maintenance and testing to ensure accuracy. Periodical calibration as per manufacturer specifications to ensure validity of data measured. The readings will be double checked by the electricity distribution company The calibration frequency of this monitoring equipment should be according to the manufacturer's specifications."* As per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/, the following requirement is established regarding maintenance and calibration for electricity meter:

	"(...) meters should be installed, maintained and calibrated according to equipment manufacturer instructions and be in line with national standards, or, if these are not available, international standards (e.g. IEC, ISO)". It is important to note that the installed electricity meter is approved/certified by the Brazilian national authority for metrology and standardization affairs (INMETRO). The meter is thus in conformance with INMETRO's requirements for maintenance and testing of electricity meter. Furthermore, the adopted calibration frequency is confirmed to be in accordance with related requirements/recommendations as established by the meter manufacturers. As confirmed by the EPIC verification team, in accordance with the instrument manufacturers a calibration frequency of 1 year is applied for the installed electricity meter.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration event for the installed electricity meter confirms proper functioning of the measurement instrument.
Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration event for the installed electricity meter is valid for the whole monitoring period. EPIC was able to confirm the validity of the performed calibration event for the installed electricity meter as follows: - Calibration event performed on 30/05/2019, valid until 29/05/2020 (1 year)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Quantity of electricity consumed from diesel generators by the project activity during the year y" ($EG_{EC2,y} = EC_{PJ2,y}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Quantity of electricity consumed from diesel generators by the project activity during the year *y* ($EG_{EC2,y} = EC_{PJ2,y}$)
Calibration frequency /interval for the monitoring equipment/instrument:	As per the implemented monitoring procedure at ESTRE Ambiental S/A and recommendations from the equipment's manufacturer, the installed electricity meter is to be calibrated every year. As confirmed by the EPIC verification team through assessment of the specification sheet for the

		installed electricity meter /61/, the selected calibration frequency is as per the recommendations of the instrument manufacturer. A valid calibration event was performed on 30/05/2019 (Calibration Certificate 004350045/19 /76/, issued by CEIME Calibração e Comércio de Instrumentos Ltda.).
	Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Both the monitoring plan of the PDD /2/ and ACM0001 (version 13.0.0) /7/ do not specify any calibration frequency requirements for the electricity meters. The PDD /2/ states the following: *"Calibration of instrument as per manufacturer specifications to ensure validity of data measured. The calibration frequency of this monitoring instrument should be according to the manufacturer's specifications."* As per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" /13/, the following requirement is established regarding maintenance and calibration for electricity meters: *"(...) meters should be installed, maintained and calibrated according to equipment manufacturer instructions and be in line with national standards, or, if these are not available, international standards (e.g. IEC, ISO)".* It is important to note that the installed electricity meter is approved/certified by the Brazilian national authority for metrology and standardization affairs (INMETRO). The meter is thus in conformance with INMETRO's requirements for maintenance and testing of electricity meter. Furthermore, the adopted calibration frequency is confirmed to be in accordance with related requirements/recommendations as established by the meter manufacturers. As confirmed by the EPIC verification team, in accordance with the instrument manufacturers a calibration frequency of 1 year is applied for the installed electricity meter.
	Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration event for the installed electricity meter confirms proper functioning of the measurement instrument.
	Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration event for the installed electricity meter is valid for the whole monitoring period. EPIC was able to confirm the validity of the performed calibration event for the installed electricity meter as follows:

	- Calibration event performed on 30/05/2019, valid until 29/05/2020 (1 year)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period t" ($F_{CH4,EG,t}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period *t* ($F_{CH4,EG,t}$)
Calibration frequency /interval for the monitoring equipment/instrument:	The technical test/evaluation reports /71/ /72/ issued by the third party independent inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. highlight that the utilized chromatographers and Pitot tubes were in full conformance with calibration requirements applicable for these instruments/equipment.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	The PDD /2/ and ACM0001 (version 13.0.0) /7/ do not specify any equipment or procedural requirement for performing the related measurements and calculations for the determination of values for $F_{CH4,EG,t}$. The methodological tool "Project emissions from flaring" (version 02.0.0) /12/ establishes that *"(…) under Option B.1 the measurement is conducted by an accredited entity on a biannual basis".* Thus, no calibration frequency requirement for related instruments/equipment is specified by such methodological tool either. It was not made available to the EPIC verification team any evidence/proof (e.g. Certificates of Calibration, description of applied calibration procedures, etc.) outlining the adopted calibration intervals for the equipment/instruments utilized by the inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. The technical valid test/evaluation reports /71/ /72/ issued by the third party independent inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. highlight that the utilized chromatographer and Pitot tube were in conformance with calibration requirements applicable for these instruments.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	No information, evidences/proof for performed calibration events in equipment/instruments utilized by the inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. were made available to the EPIC verification team.
Is(are) the performed calibration(s) valid for the whole reporting period?	No information, evidences/proof for performed calibration events in equipment/instruments utilized by the inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. were made available to the EPIC verification team.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Temperature in the exhaust gas of the enclosed flare in minute m" ($T_{EG,m}$):

Data / Parameter: (as per the monitoring plan of the PDD):	Temperature in the exhaust gas of the enclosed flare in minute *m* ($T_{EG,m}$)
Calibration frequency /interval for the monitoring equipment/instrument:	As per the implemented monitoring procedure at ESTRE Ambiental S/A and recommendations from the equipment's manufacturer, the installed thermocouples are to be calibrated every year. As confirmed by the EPIC verification team through assessment of the specification sheet for the installed thermocouples /74/, the selected calibration frequency is as per the recommendations of the instrument manufacturer. *Calibration details for the thermocouples used for measuring the sub-parameter $T_{EG,m,flare-1}$:* A valid calibration event was performed on 28/05/2019 (Certificate of Calibration No. 1231823449992/19 /57/ issued by CEIME Calibração e Comércio de Instrumentos Ltda.). *Calibration details for the thermocouple used for measuring the sub-parameter $T_{EG,m,flare-2}$:* A valid calibration event was performed on 28/05/2019 (Certificate of Calibration No. 11-09/520749992/19 /56/ issued by CEIME Calibração e Comércio de Instrumentos Ltda.). *Calibration details for the thermocouples used for measuring the sub-parameter $T_{EG,m,flare-3}$:* A valid calibration event was performed on 28/05/2019 (Certificate of Calibration No. 08-12/6418849992/19 /53/ issued by CEIME Calibração e Comércio de Instrumentos Ltda.). *Calibration details for the thermocouple used for measuring the sub-parameter $T_{EG,m,flare-4}$:* A valid calibration event was performed on 28/05/2019 (Certificate of Calibration No. 11-06/167549992/19 /40/ issued by CEIME Calibração e Comércio de Instrumentos Ltda.). *Calibration details for the thermocouple used for measuring the sub-parameter $T_{EG,m,flare-5}$:* A valid calibration event was performed on 28/05/2019 (Certificate of Calibration No. 11-09/520949992/19 /36/ issued by CEIME Calibração e Comércio de Instrumentos Ltda.). *Calibration details for the thermocouples used for measuring the sub-parameter $T_{EG,m,flare-6}$:* A valid calibration event was performed on 28/05/2019 (Certificate of Calibration No.

	1108634049992/19 [37] issued by CEIME Calibração e Comércio de Instrumentos Ltda.). The Calibration Certificates were made available and assessed by the EPIC verification team.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	As per both the PDD [2] and the methodological tool "Project emissions from flaring" (version 02.0.0) [12], the installed thermocouples are to be replaced or calibrated in a frequency as per the instrument's specifications and/or instrument manufacturer's recommendations. Thus, the adopted calibration frequency (every year, as per recommendations from the equipment's manufacturer) is in line with the both the monitoring plan of the PDD [2] and ACM0001 (version 13.0.0) [7].
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration events for the installed thermocouples confirm proper functioning of these measurement instruments.
Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. The performed calibration events for the installed thermocouples are valid for the whole monitoring period. EPIC was able to confirm the validity of the performed calibration events for the 6 installed thermocouples as follows: Thermocouple with S/N 12318234: - Calibration event performed on 28/05/2019, valid until 27/05/2020 (1 year) Thermocouple with S/N 11-09/5207: - Calibration event performed on 28/05/2019, valid until 27/05/2020 (1 year) Thermocouple with S/N 08-12/64188: - Calibration event performed on 28/05/2019, valid until 27/05/2020 (1 year) Thermocouple with S/N 11-06/1675: - Calibration event performed on 28/05/2019, valid until 27/05/2020 (1 year) Thermocouple with S/N 11-09/5209: - Calibration event performed on 28/05/2019, valid until 27/05/2020 (1 year) Thermocouple with S/N 11086340: - Calibration event performed on 28/05/2019, valid until 27/05/2020 (1 year)

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Flame detection of flare in the minute m" ($Flame_m$):

Data / Parameter: (as per the monitoring plan of the PDD):	Flame detection of flare in the minute *m* ($Flame_m$)

Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. As confirmed by the EPIC verification team through assessment of the specification sheets for the UV Flame detectors installed at the project site /50/, the installed UV Flame detectors have a self-checking function and thus do not require any calibration.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Not applicable.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Not applicable.
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable.

Assessment of performed calibration event(s) for equipment/instrument(s) used for monitoring the parameter "Maintenance events completed in year y" (Maintenance$_y$):

Data / Parameter: (as per the monitoring plan of the PDD):	Maintenance events completed in year *y* (Maintenance$_y$)
Calibration frequency /interval for the monitoring equipment/instrument:	Not applicable. There are no measurements involved in the monitoring of the parameter Maintenance$_y$.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	Not applicable. There are no measurements involved in the monitoring of the parameter Maintenance$_y$.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Not applicable. There are no measurements involved in the monitoring of the parameter Maintenance$_y$.
Is(are) the performed calibration(s) valid for the whole reporting period?	Not applicable. There are no measurements involved in the monitoring of the parameter Maintenance$_y$.

It is important to note that, as further assessed in Section E.6.2., the monitoring plan of the PDD /2/ also includes the following monitoring parameters of which monitoring was not required during the considered monitoring period (since the methodological calculation and/or monitoring options for which they are applicable were not selected):

	<table><tr><th>Parameter not monitored during the considered monitoring period</th></tr><tr><td>Volumetric flow of the gaseous stream in time interval *t* on a dry basis ($V_{t,db}$)</td></tr><tr><td>Volumetric fraction of greenhouse gas methane in a hourly time interval *t* on a dry basis ($v_{i,t,db} = v_{i,RG,m}$)</td></tr></table> No assessment details are thus included for the parameters listed above.
Findings	No findings (Cars/CLs) were raised regarding the compliance of monitoring activities valid for the considered monitoring period with calibration requirements as per the monitoring plan from the PDD.
Conclusion	As a conclusion, the EPIC verification team was able to confirm that the calibration events performed for the monitoring instruments of the project activity were conducted in accordance with the monitoring plan from the registered PDD /2/, ACM0001 (version 13.0.0) /7/) and applicable tools during the monitoring period from 01/10/2019 to 31/12/2019. Documented evidences for performed calibration events allowed the EPIC verification team to confirm that applied monitoring instruments/equipped operated under appropriate manner during the considered monitoring period. Moreover, the EPIC verification team was able to confirm that conservative deductions were systematically applied in emission reduction calculations for addressing the acknowledged delays in the performance of calibration events for the installed LFG temperature sensor and LFG pressure sensor by the project participants.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	The EPIC verification team assessed whether the methods and formulae used to determine baseline emissions for the considered monitoring period are appropriate. The performed assessment encompassed checking whether applied methods and formulae as described in the registered monitoring plan and applicable methodology + methodological tools were correctly applied and reported, including confirmation whether the Monitoring Report includes all parameters and monitored data at the intervals required by the applied methodology + methodological tools as per the PDD /2/). The correct application of emission factor and default values (ex-ante determined/fixed parameters as per the registered PDD) /2/ was also verified. The EPIC verification team was able to verity that, as correctly indicated in the Monitoring Report /3/ and also as established by ACM0001 (version 13.0.0) /7/, applied methodological tools and the PDD /2/, baseline emissions (BE_y) for the considered monitoring period are calculated as follows: $BE_y = BE_{CH4,y}$ Where: $BE_{CH4,y}$ Baseline emissions of methane from the SWDS. $BE_{CH4,y}$ is determined as follows: $BE_{CH4,y} = (1 - OX_{top\_layer}) * (F_{CH4,PJ,y} - F_{CH4,BL,y}) * GWP_{CH4}$

Where:

OX_{top_layer} Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline. As outlined in the Monitoring Report, OX_{top_layer} is *ex-ante* determined as 10%. This value represents the ex-ante determined value as per the registered PDD [2].

$GWP_{CH4,y}$ Global warming potential of CH_4. As indicated in the registered PDD [2]. As outlined in the Monitoring Report, $GWP_{CH4,y}$ is *ex-ante* determined as 25. This value represents the ex-ante determined value as per the registered PDD [2].

$F_{CH4,BL,y}$ Amount of methane in the LFG that would be flared in the baseline in year *y.* $F_{CH4,BL,y}$ is calculated as follows:

$$F_{CH4,BL,y} = 0.2 * F_{CH4,PJ,y}$$

As appropriately outlined in the latest version of the Monitoring Report, in the particular context of the determination of value of every minute value of $F_{CH4,BL,y}$ for the considered monitoring period (and under conformance with ACM0001 (version 13.0.0)) , this calculation parameter is correctly determined as 0.2 times the total amount of captured methane that is sent to all flares for combustion during each the minute *m* within the considered monitoring period ($F_{CH4,PJ,capt,y}$). Records for operational status of the flares (parameter Operation of the equipment that consumes the LFG ($O_{pj,h}$)), flame detection in the flares (monitoring parameter $Flame_m$), and/or efficiency of the flares (calculation parameter $\eta_{flare,calc,y}$) are not taken into account in related calculations. This is deemed reasonable and correct. As outlined in the Monitoring Report, in the particular context of determination of $F_{CH4,BL,y}$, the following thus applies:

$$F_{CH4,PJ,y} = F_{CH4,sent\_flare,y,flare-1} + F_{CH4,sent\_flare,y,flare-2} + F_{CH4,sent\_flare,y,flare-3} + F_{CH4,sent\_flare,y,flare-4} + F_{CH4,sent\_flare,y,flare-5} + F_{CH4,sent\_flare,y,flare-6}$$

Where:

$F_{CH4,sent\_flare,y,flare-n}$ Amount of methane in the LFG which is sent to each individual flare. Details for the determination of every-minute values for $F_{CH4,sent\_flare,y,flare-n}$ are presented below (under "*Assessment details of the determination of every-minute values for the calculation parameter $F_{CH4,sent\_flare,y}$*").

As confirmed by the EPIC verification team, the calculated accumulated value for $F_{CH4,BL,y}$ for the considered monitoring period is correctly determined as 967 tCH_4.

$F_{CH4,PJ,y}$ Amount of methane in the LFG which is flared and/or used in the project activity in year *y*. As outlined in the latest version of the Monitoring Report [3] and in accordance with the PDD [2], $F_{CH4,PJ,y}$ is correctly determined as follows:

$$F_{CH4,PJ,y} = F_{CH4,flared,y}$$

Where:

$F_{CH4,flared,y}$ Amount of methane in the LFG flared by the project activity in year *y*. Under conformance with applicable requirements from the PDD [2] and by correctly following the applicable guidance of the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" [14], every-minute values of $F_{CH4,flared,y}$ are determined for each individual flare within the considered monitoring period. Each every-minute value is correctly determined as the difference between the amount of methane supplied to the particular flare and residual methane project emissions from combustion of LFG for each corresponding flare for the minute m in question 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 in year *y*. Details for the determination of every-minute values for $F_{CH4,sent\_flare,y}$ for each individual flare are presented below (under "*Assessment details of the determination of every-minute values for the calculation parameter $F_{CH4,sent\_flare,y}$*").

$PE_{flare,y}$ Project emissions from flaring of the residual gas stream in year *y*. Details for the determination of every-minute values for $PE_{flare,y}$ for each individual flare are presented below (under " *Assessment details for determination of every-minute values for $PE_{flare,y}$* ").

Assessment details for the determination of every-minute values for the calculation parameter $F_{CH4,sent\_flare,y}$:

In accordance with ACM0001 version 13.0.0) [7], the amount of methane in the LFG which is sent to the flares in year *y* ($F_{CH4,sent,flare,y}$) is determined for each individual flare (calculation sub-parameters $F_{CH4,sent\_flare,y,flare-1}$, $F_{CH4,sent\_flare,y,flare-2}$, $F_{CH4,sent\_flare,y,flare-3}$, $F_{CH4,sent\_flare,y,flare-4}$, $F_{CH4,sent\_flare,y,flare-5}$ and $F_{CH4,sent\_flare,y,flare-6}$) by following the applicable guidance of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" [14].

For the considered monitoring period, Option C (Simplified calculation without measurement of the moisture content / volume flow of LFG and volumetric fraction of CH_4 in collected LFG being measured in wet basis) of this methodological tool is selected. As per Option C of this methodological tool, the amount of methane in the LFG which is sent to each installed flare is determined as follows:

$$F_{CH4,sent\_flare,y,flare-n} = F_{CH4,t,flare-n} = V_{t,wb,n,flare-n} * v_{i,t,wb} * \rho_{CH4,n}$$

Where:

Sulfix "*Flare-n*": Flare number: Flare 1, Flare 2, Flare 3, Flare 4, Flare 5 and Flare 6

$V_{t,wb,n,flare-n}$ Volumetric flow of the gaseous stream (LFG) in time interval *t* on a wet basis at reference conditions.

As confirmed by the EPIC verification team, while the sub-parameters for the monitoring parameter $V_{t,wb,flare-n}$ are already measured in normalized conditions, there are no need to calculate every-minute values of the calculation parameter $V_{t,wb,n,flare-n}$ valid for each flare (calculation sub-parameters $V_{t,wb,n,flare-1}$, $V_{t,wb,n,flare-2}$, $V_{t,wb,n,flare-3}$, $V_{t,wb,n,flare-4}$, $V_{t,wb,n,flare-5}$ and $V_{t,wb,n,flare-6}$) by using LFG pressure and LFG temperature data. As correctly outlined in the Monitoring Report /3/, while the installed LFG flow meters already measure volumetric flow of LFG in Nm³ wet gas/h (normal conditions), the following assumption is thus valid:

$V_{t,wb,n,flare-n}$ is equivalent to $V_{t,wb,flare-n}$

Where:

$V_{t,wb,flare-n}$ Volumetric flow of the gaseous stream (LFG) in time interval *t* on a wet basis for flare *n* (n = 1, 2, 3, 4, 5 and 6) [14]. As previously described in Section E.6.2. and correctly indicated in the Monitoring Report /3/, as the installed LFG flow meters already measure volumetric flow of LFG in Nm³ wet gas/h (normal conditions), no measurements of "Temperature of the gaseous stream in time interval *t*" (T_t), "Pressure of the gaseous stream in time interval *t*" (P_t) are required for the determination of every-minute values of $V_{t,wb,n,flare-n}$.

$v_{i,t,wb}$ Volumetric fraction of CH_4 in the gaseous stream in time interval *t* on a wet basis.

$\rho_{CH4,n}$ Density of CH_4 in the gaseous stream (LFG) at reference conditions. As per the selected determination procedure of the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/, $\rho_{CH4,n}$ is calculated as follows:

$\rho_{CH4,n} = (P_{ref} * MM_i) / (R_u * T_{ref})$

Where:

P_{ref} Absolute pressure at reference conditions. *Ex-ante* determined as 101,325 Pa.

T_{ref} Temperature at reference conditions. *Ex-ante* determined as 273.15 Kelvin.

MM_i Molecular mass of greenhouse gas *i* (*i* = CH_4). *Ex-ante* determined as 16.04 kg/mol.

R_u Universal ideal gases constant. *Ex-ante* determined as 8,314 $Pa.m^3$/kmol.K.

The EPIC verification team was able to verify that the value of the parameter $\rho_{CH4,n}$ was correctly calculated and reported as 0.7156650 $kgCH_4/m^3CH_4$.

Assessment details for determination of every-minute values for $PE_{flare,y}$:

[14] As correctly outlined in the latest version of the Monitoring Report, while measurements for $V_{t,wb}$ are performed by the installed 6 LFG flow meters in Nm^3/h (one flow meter for each individual installed flare), the monitoring parameter $V_{t,wb}$ is thus measured, recorded and reported on the basis of the sub-parameters $V_{t,wb,flare-1}$, $V_{t,wb,flare-2}$ $V_{t,wb,flare-3}$, $V_{t,wb,flare-4}$, $V_{t,wb,flare-5}$ and $V_{t,wb,flare-6}$ with such sub-parameters being equivalent to the calculation sub-parameters $V_{t,wb,n,flare-1}$, $V_{t,wb,n,flare-2}$, $V_{t,wb,n,flare-3}$, $V_{t,wb,n,flare-4}$, $V_{t,wb,n,flare-5}$ and $V_{t,wb,n,flare-6}$.

In accordance with applicable guidance from both the methodological tool "Project emissions from flaring" /12/ and from the PDD /2/, every-minute values of $PE_{flare,y}$ for each of the installed flares (calculation sub-parameters $PE_{flare,y,flare-1}$, $PE_{flare,y,flare-2}$, $PE_{flare,y,flare-3}$, $PE_{flare,y,flare-4}$, $PE_{flare,y,flare-5}$ and $PE_{flare,y,flare-6}$) are determined as a function of every-minute records of mass flow of methane sent to the flare in question (for each flare n, $F_{CH4,RG,m,flare-n} = F_{CH4,sent\_flare,y,flare-n}$, where *n* = 1, 2, 3, 4, 5 and 6) as well as based on *ex-post* calculated values for flare efficiency for the flare *n* ($\eta_{flare,m} = \eta_{flare,calc,m}$). Values of $PE_{flare,y}$ are correctly calculated for the considered monitoring period as follows:

$$PE_{flare,y} = GWP_{CH4} * \sum_{m=1}^{525,600} F_{CH4,RG,m} * (1 - \eta_{flare,m}) * 10^{-3}$$

Where:

$F_{CH4,RG,m}$ Methane mass flow in the residual gas for the considered flare. For each minute *m* of the considered monitoring period and for each individual flare *n*, values for $F_{CH4,RG,m}$ are equal to the measured and reported every-minute values of the monitoring parameter "Amount of methane in the LFG which is sent to the flares" ($F_{CH4,sent\_flare,y}$) for the flare in question (calculation sub-parameters $F_{CH4,sent\_flare,y,flare-1}$, $F_{CH4,sent\_flare,y,flare-2}$, $F_{CH4,sent\_flare,y,flare-3}$, $F_{CH4,sent\_flare,y,flare-4}$, $F_{CH4,sent\_flare,y,flare-5}$ and $F_{CH4,sent\_flare,y,flare-6}$)).

$\eta_{flare,m}$ Flare efficiency in minute *m*. For the considered monitoring period, as confirmed by the EPIC verification team, $\eta_{flare,m}$ is determined based on performed measurements by following applicable guidance of Option B B.1 of the methodological tool Project emissions from flaring" /12/. As required by this determination option, related measurements to determine the efficiency of each one of the flares (measurement for monitoring parameter $F_{CH4,EG,t}$) were performed by an accredited independent third party entity (e.g. an independent inspection/analysis service company) on a biannual basis. The calculated flare efficiency ($\eta_{flare,calc,m}$) for each flare is determined as the average of two performed measurements within the year encompassed by the considered monitoring period as follows:

$$\eta_{flare,calc,y} = 1 - \frac{1}{2}\sum_{t=1}^{2}\left(\frac{F_{CH4,EG,t}}{F_{CH4,RG,t}}\right)$$

Where:

$F_{CH4,EG,t}$ Mass flow of methane in the exhaust gas of the flare on a dry basis at reference conditions in the time period *t*. For determining $F_{CH4,EG,t}$, biannual measurements of residual methane in the exhaust gas of the flares during a considered time and measurements of speed of exhaust gas of the flares were performed by the third party inspection service company Merieux NutriSciences / Bioagri Ambiental Ltda. Theses inspection service company is specialized in measurements of air emissions and inspections for air pollutants. Further assessment details for the ex-post determination of values for $F_{CH4,EG,t}$ are included in Section E.6.2.

t The two time periods in year *y* during which the flare efficiency is measured. Each measurement event takes a minimum duration of one hour. The time interval between the measurement events is at least six months. Further assessment details are included in Section E.6.2.

$F_{CH4,RG,t}$ Mass flow of methane in the residual gas on a dry basis at reference conditions in the time period *t.*

Assessment details for the determination of $F_{CH4,RG,t}$:
As per the applicable guidance of the methodological tool "Project emissions from flaring" /12/ and also as per the PDD /2/, values of $F_{CH4,RG,t}$ shall be calculated by following the applicable guidance of the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/. Values for the parameter $F_{CH4,RG,t}$ valid for each flare (calculation sub-parameters $F_{CH4,RG,t,flare-1}$, $F_{CH4,RG,t,flare-2}$, $F_{CH4,RG,t,flare-3}$, $F_{CH4,RG,t,flare-4}$, $F_{CH4,RG,t,flare-5}$ and $F_{CH4,RG,t,flare-6}$) are thus calculated as follows:

$$F_{CH4,RG,t,flare-n} = V_{t,db,n,flare-n} * v_{CH4,t,db} * \rho_{CH4,n}$$

Where:

$\rho_{CH4,n}$ Density of greenhouse gas *i* (*i* = CH_4) in the gaseous stream (LFG) at reference conditions. Further details for the determination of $\rho_{CH4,n}$ are presented above under the sub-section "*Determination of every-minute values for the calculation parameter $F_{CH4,sent\_flare,y}$*".

$v_{CH4,t,db}$ Volumetric fraction of greenhouse gas *i* (*i* = CH_4) in the gaseous stream in a time interval *t* on a dry basis. As confirmed by the EPIC verification team, Footnote 3 of the methodological tool "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/: states the following:

> "*(…) Flow measurement on a dry basis is not feasible at reasonable costs for a wet gaseous stream, so there will be no difference in the readings for volumetric fraction in wet basis analyzers and dry basis analyzers and both types can be used indistinctly for calculation Options A and D*."

Thus, every-minute values of $v_{CH4,t,db}$ are regarded as equal to every-minute values of the monitoring parameter $v_{i,t,wb}$ (for which further details are presented above under the sub-section "*Determination of every-minute values for the calculation parameter $F_{CH4,sent\_flare,y}$*").

$V_{t,db,n,flare-n}$ Volumetric flow of the gaseous stream (LFG) in time interval *t* on a dry basis for flare *n* (n = 1, 2, 3, 4, 5 and 6). As per Option B of the applicable methodological "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/, the volumetric flow of the gaseous stream on a dry basis for each flare (calculation sub-parameters $V_{t,db,n,flare-1}$, $V_{t,db,n,flare-2}$, $V_{t,db,n,flare-3}$, $V_{t,db,n,flare-4}$, $V_{t,db,n,flare-5}$ and $V_{t,db,n,flare-6}$) is determined by converting the measured volumetric flow from wet basis to dry basis as follows:

$$V_{t,db,n,flare-n} = V_{t,wb,n,flare-n} / (1+v_{H2O,t,db})$$

Where:

$V_{t,wb,n,flare-n}$ Volumetric flow of the gaseous stream (LFG) in time interval *t* on a wet basis at reference conditions. Further details of $V_{t,wb,n,flare-n}$ are presented above under the sub-section "*Determination of every-minute values for the calculation parameter $F_{CH4,sent\_flare,y}$*".

$v_{H2O,t,db}$ Volumetric fraction of H_2O in the gaseous stream in time interval *t* on a dry basis. As per applicable guidance of the

methodological "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/, $v_{H2O,t,db}$ is calculated as follows:

$$v_{H2O,t,db} = \frac{m_{H2O,t,db} * MM_{t,db}}{MM_{H2O}}$$

Where:

MM_{H2O} Molecular mass of H_2O. *Ex-ante* determined as 18.0152 kg/kmol.

$MM_{t,db}$ Molecular mass of the gaseous stream in time interval *t* on a dry basis. As per applicable guidance of the methodological "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/, $MM_{t,db}$ is calculated as follows:

$$MM_{t,db} = \sum_{k} (v_{k,t,db} * MM_{k})$$

Where:

k All gases, except H_2O, contained in the gaseous stream (e.g. N_2, CO_2, O_2, CO, H_2, CH_4, N_2O, NO, NO_2, SO_2, SF_6 and PFCs). See simplification below.

$V_{k,t,db}$ Volumetric fraction of gas *k* in the gaseous stream in time interval *t* on a dry basis. As confirmed by the EPIC verification team, applicable guidance of the methodological "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/ established the following:

> "*(…) The determination of the molecular mass of the gaseous stream ($MM_{t,db}$) requires measuring the volumetric fraction of all gases (k) in the gaseous stream. However, as a simplification, the volumetric fraction of only the gases k that are greenhouse gases and are considered in the emission reduction calculation in the underlying methodology must be monitored and the difference to 100% may be considered as pure nitrogen."*

As also confirmed by the EPIC verification team, ACM0001 (version 13.0.0) /7/ does not include any restriction to such simplification. Thus, only the volumetric fraction of gases that are greenhouse gases and are correctly considered in related calculations (CH_4 in the particular case of the project activity) should be measured and the difference to 100% is just considered as pure nitrogen. Further details for the

determination of the volumetric fraction of CH_4 in the gaseous stream ($V_{k,t,db}$ = $v_{CH4,t,db}$) are presented above under the calculation parameter $v_{CH4,t,db}$.

MM_k Molecular mass of gas *k* (*k* = CH_4 and N_2). As indicated in the PDD /2/, the molecular mass of CH_4 and N_2 are ex-ante determined as 16.04 and 28.01 respectively.

$m_{H2O,t,db}$ Absolute humidity in the gaseous stream in time interval *t* n a dry basis. As per Option 2 of the methodological "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" /14/, by conservatively assuming that the gaseous stream is saturated ($m_{H2O,t,db}$ = $m_{H2O,t,db,Sat}$), $m_{H2O,t,db}$ is calculated as follows [15]:

$$m_{H2O,t,db,Sat} = \frac{p_{H2O,t,Sat} * MM_{H2O}}{(P_t - p_{H2O,t,Sat}) * MM_{t,db}}$$

Where:

MM_{H2O} Molecular mass of H_2O. As indicated in the PDD /2/, MM_{H2O} is *ex-ante* determined as 18.0152.

P_t Absolute pressure of the gaseous stream in time interval *t*. Further assessment details for the monitoring parameter P_t are included in Section E.6.2.

$MM_{t,db}$ Molecular mass of the gaseous stream in a time interval *t* on a dry basis. Further assessment details for the determination of $MM_{t,db}$ are presented above.

$p_{H2O,t,Sat}$ Saturation pressure of H_2O at temperature T in time *t*, Further

[15] It is important to note that the simplified calculation for the absolute humidity of the gaseous stream ($m_{H2O,t,db}$) presented in Option 2 of the methodological "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" shall be applied by assuming the gaseous stream is dry or saturated depending on which is the conservative situation.

As confirmed by the EPIC verification team, Footnote 4 of the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" states the following:

> "*An assumption that the gaseous stream is saturated is conservative for the situation that the mass flow of greenhouse gas I is underestimated (applicable for calculating baseline emissions). Conversely, an assumption that the gas stream is dry is conservative for the situation that the greenhouse gas t is overestimated (applicable for calculating project emissions).*"

In this particular case, $m_{H2O,t,db}$ is calculated for the determination of the mass flow of methane in the residual gas on a dry basis during the time period *t* ($F_{CH4,RG,t}$). While $F_{CH4,RG,t}$ is used for the determination of the parameter $PE_{flare,y}$ (project emissions from flaring the residual gas), the assumption that the gaseous stream is dry (conservatively applicable for calculating project emissions) would not be conservative in this case as an overestimation of the amount of methane in the residual gas would actually increase the calculated efficiency of the flares, thus resulting in a reduction of $PE_{flare,y}$ and consequent increment of emission reductions.

assessment details for the monitoring parameter $p_{H2O,t,Sat}$ are included in Section E.6.2.

As correctly outlined in the latest version of the Monitoring Report /3/, calculated values for $\eta_{flare,calc,y}$ the installed high temperature enclosed flares 1, 2, 4, 5 and 6 and valid for the considered monitoring period are summarized in the table below:

Calculated values of $\eta_{flare,calc,y}$ for each flare valid for the considered monitoring period	Flare 1 ($\eta_{flare,calc,y,flare-1}$)	Flare 2 ($\eta_{flare,calc,y,flare-2}$)	Flare 3 ($\eta_{flare,calc,y,flare-3}$)
	0.8920648	0.8999686	0
	Flare 4 ($\eta_{flare,calc,y,flare-4}$)	Flare 5 ($\eta_{flare,calc,y,flare-5}$)	Flare 6 ($\eta_{flare,calc,y,flare-6}$)
	0.8999825	0.8999778	0.8998965

The EPIC verification team has confirmed that the calculated values of $\eta_{flare,calc,y}$ correctly incorporate a deduction factor of 0.1 by taking into account the dimensions of the flares (ratio between height and diameter) as established by the methodological tool "Project emissions from flaring" /12/

Assessment details for (i) compliance with operational and maintenance requirements for the flares (as established by the ex-ante determined parameter "Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval" ($SPEC_{flare}$)) and (ii) consideration of data records for the monitoring parameter "Flame detection of flare in the minute m" ($Flame_m$) for the calculation of every-minute values:

As also confirmed by the EPIC verification team by assessing the monthly emission reduction spreadsheets /5/, in accordance with the applied monitoring procedure for the project activity, compliance with operational and maintenance requirements for the flares, as established by the *ex-ante* determined parameter "Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval" ($SPEC_{flare}$), was correctly considered for the determination and application of values of $\eta_{flare,m}$ for calculating every-minute values of $F_{CH4,PJ,y} = F_{CH4,flared,y}$ along the considered monitoring period[16]. As also confirmed by the EPIC verification team through assessment of the monthly emission reduction calculation spreadsheets /5/, 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 $\eta_{flare,m}$ along the considered monitoring period. For each installed flare, the time the flare has operated is monitored through every-minute monitoring the flame combustion status/condition by using an UV flame detector (of which status signal (flame status "*ON*" or "*OFF*") is recorded and reported in the monthly emission reduction calculation spreadsheets /5/. As also assessed by the EPIC verification team, monitoring requirements related to operational requirements/conditions for the flare (as provided by the manufacturer's specifications for operating conditions as per the *ex-ante* determined parameter $SPEC_{flare}$ (min. and max. flow of LFG to the set of flares + temperature of exhaust gas of the flares + meeting of maintenance requirements)) are also correctly considered in the context of the determination and application of values for $\eta_{flare,m}$ for calculating every-minute values of $F_{CH4,PJ,y} = F_{CH4,flared,y}$ along the considered monitoring period. As also confirmed through assessment of the monthly emission reduction calculation spreadsheets /5/, for each minute *m* within the

[16] While all performed maintenance events in the installed flares (including regular inspections of the flares) were performed in accordance with requirements established in details for the ex-ante determined parameter "Manufacturer's flare specifications for temperature, flow rate and maintenance schedule interval" ($SPEC_{flare}$)), the determination of emission reductions achieved by the project activity during the considered monitoring period are thus not negatively impacted by the records for the monitoring parameter $Maintenance_y$.

	considered monitoring period when the flare have combusted LFG by not operating in accordance with 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), no destruction of methane is accounted for the flare as part of the calculation of every-minute values for $F_{CH4,PJ,y} = F_{CH4,flared,y}$. This is under full compliance with related requirements from the PDD /2/. The calculated accumulated value for $F_{CH4,PJ,y} = F_{CH4,flared,y}$ for the considered monitoring period is correctly determined as 4,216 tCH_4. The calculated value for BE_y for the monitoring period from 01/10/2019 to 31/12/2019 is correctly determined as 73,103 tCO_2e.
Findings	No findings (CARs/CLs) were raised regarding the calculation of baseline GHG emissions.
Conclusion	The EPIC verification team was able to confirm that all related calculations for the determination of baseline emissions are provided in the monthly emission reduction calculation spreadsheets files /5/ as well as the FE calculation spreadsheet /5/ and the summarized emission reduction calculation spreadsheet /5/ in a deemed correct and transparent manner. All performed calculations for baseline emissions, as reported in the latest version of the Monitoring Report /3/ and emission reduction calculation spreadsheets /5/, were verified to be performed under full conformance with applicable requirements of the PDD /2/, ACM0001 (version 13.0.0) /7/ and applicable methodological tools /12/ /13/ /14/ /15/. Applied methods and formulae, as described in the monitoring plan from the PDD /2/ and applicable methodology + methodological tools, were correctly applied. The calculated value for BE_y for the monitoring period from 01/10/2019 to 31/12/2019 is correctly determined as 73,103 tCO_2e. Determined value for BE_y is also confirmed as being correctly accounted in the context of determination of emission reductions achieved by the project activity during the considered monitoring period.

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	The EPIC verification team assessed whether the methods and formulae used to determine project emissions for the considered monitoring period are appropriate. The performed assessment encompassed checking whether applied methods and formulae as described in the registered monitoring plan and applicable methodology + methodological tools were correctly applied, including confirmation whether the Monitoring Report includes all parameters and monitored data at the intervals required by the applied methodology + methodological tools as per the PDD /2/. The correct application of emission factor and default values (ex-ante determined/fixed parameters as per the PDD /2/) was also verified. Through assessment of the Monitoring Report, the EPIC verification team was able to verity that as correctly indicated in the Monitoring Report /3/, project emissions for the whole monitoring period due to the operation of the project activity are determined as follows: $PE_y = PE_{EC,1} + PE_{EC,2}$ Where: $PE_{EC1,y}$ Project emissions due to the consumption of grid-sourced electricity by the project activity.

$PE_{EC2,y}$ Project emissions due to the consumption of electricity sourced by captive off-grid backup electricity generators.

Project emissions due to the consumption of grid-sourced electricity by the project activity ($PE_{EC1,y}$):
As correctly outlined in the latest version of the Monitoring Report /3/, for the whole considered monitoring period, emissions due to the consumption of grid-sourced electricity by the project activity ($PE_{EC1,y}$) are correctly determined by following applicable guidance of the methodological tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) /13/ as follows:

$PE_{EC1,y} = EC_{PJ1,y} * EF_{grid,CM,y} * (1 + TDL_{j,y})$

Where:

$EC_{PJ1,y}$ Quantity of grid-sourced electricity consumed by the project activity in year *y*. For the considered monitoring period, $EC_{PJ1,y}$ is monitored as 236.2 MWh. The following monthly values for consumption of grid-sourced electricity ($EC_{PJ1,y}$) within the considered monitoring period are correctly reported in the Monitoring Report /3/ and summarized emission reduction calculation spreadsheet /5/:
- October/2019: 73.9 MWh
- November/2019: 49.0 MWh
- December/2019: 113.3 MWh

Assessment details for the monitoring parameter $EC_{PJ1,y}$ valid for the considered monitoring period are included in Section E.6.2.

$TDL_{j,y}$ Average technical transmission and distribution losses for grid-sourced electricity consumed by the project activity in year *y*. As indicated in the PDD /2/, $TDL_{j,y}$ is *ex-ante* determined as 20%.

$EF_{grid,CM,y}$ For the considered monitoring period, $EF_{grid,CM,y}$ is determined ex-post as the Combined margin CO_2 emission factor ($EF_{grid,CM,y}$) that is calculated as the weighted average of the ex-post determined values valid for the months of year of 2019 encompassed by the considered monitoring period for the monitoring parameter "Operating margin CO_2 emission factor in year *y*" ($EF_{grid,CM,y}$) and the previously determined and validated value for the *ex-ante* determined parameter "Build margin CO_2 emission factors" ($EF_{grid,BM,y}$). In order to appropriately weight these two factors, the also previously determined and validated default values for the *ex-ante* determined parameters "Weighting of operating margin emission factor" (w_{OM}) and "Weighting of build margin emission factor" (w_{BM}) are applied. For the considered monitoring period, $EF_{grid,CM,y}$ is thus determined as follows:

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

Where:

w_{OM} Weighting of operating margin emissions factor. As established in the PDD /2/, w_{OM} is ex-an*te* determined as 0.25%.

w_{BM} Weighting of operating margin emissions factor. As established in the PDD /2/, w_{BM} is *ex-ante* determined as 0.75%.

$EF_{grid,OM,y}$ Operating margin CO_2 emission factor in year *y*. As per the applied monitoring procedure, the selected values for $EF_{grid,OM}$ correctly represent the official average values for

	the months of year (vintage) 2019 encompassed by the considered monitoring period as calculated and made public available by the DNA of Brazil [73] as follows: Month / $EF_{grid,OM,y}$ Oct./2019 / 0.5370 Nov./2019 / 0.5720 Dec./2019 / 0.5997 Further assessment details for the monitoring parameter $EF_{grid,OM,y}$ are included in Section E.6.2. $EF_{grid,BM,y}$ Build margin CO_2 emission factor in year *y*. As indicated in the PDD [2], for the 2nd 7-year crediting period of the project activity, $EF_{grid,BM}$ is *ex-ante* determined as 0.2010 tCO_2/MWh. The calculated value for $PE_{EC1,y}$ for the considered monitoring period from 01/10/2019 to 31/12/2019 is correctly determined as 85 tCO_2 (rounded value). *Project emissions due to the consumption by the project activity of electricity sourced by backup captive off-grid electricity generators ($PE_{EC2,y}$):* Project emissions due to the consumption by the project activity of electricity sourced by backup captive off-grid electricity generators ($PE_{EC2,y}$) are correctly determined by following the applicable guidance of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) [13] as follows: $PE_{EC2,y} = EC_{PJ2,y} * EF_{EL,j,y}$ Where: $EC_{PJ2,y}$ Quantity of electricity sourced by backup captive off-grid electricity generators consumed by the project activity. $EC_{PJ2,y}$ is correctly reported as 0.1 MWh. Detailed assessment for monitoring of $EC_{PJ2,y}$ is presented in Section E.6.2. $EF_{EL,j,y}$ The emission factor for the diesel generators in year *y*. $EF_{EL,j,y}$ is determined as 1.3 tCO_2/MWh (conservative default value as per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) [13]). The calculated value for $PE_{EC2,y}$ for the monitoring period from 01/01/2019 to 30/06/2019 is correctly determined as 1 tCO_2 (rounded value). Total project emissions ($PE_y = PE_{EC,y}$) are correctly calculated and reported as 86 tCO_2 (rounded value) and are correctly considered in the context of the emission reduction calculations.
Findings	A CAR was raised regarding the calculation of project GHG emissions: **CAR 3:** The reported value of grid-electricity consumed by the project activity during the month of December 2019 (monitoring parameter "Quantity of electricity consumed from the grid by the project activity during the year *y*" ($EG_{EC1,y} = EC_{PJ1,y}$)) is not in accordance with primary monitoring records.
Conclusion	The EPIC verification team was able to confirm, upon closure of the raised CAR, that all related calculations for the determination of project emissions are provided in the summarized emission reduction calculation spreadsheet [5] in a deemed correct and transparent manner. All performed calculations for project emissions,

	as reported in the latest version of the Monitoring Report /3/ and summarized emission reduction calculation spreadsheet /5/, were verified to be performed under full conformance with applicable requirements of the PDD /2/, ACM0001 (version 13.0.0) /7/ and applicable methodological tools /13/ /15/ /16/ /17/. Applied methods and formulae, as described in the monitoring plan from the PDD /2/ and applicable methodology + methodological tools, were correctly applied. The calculated value for PE_y for the monitoring period from 01/10/2019 to 31/12/2019 is correctly determined as 86 tCO_2 (rounded value). It is important to note that, as a result of the performed corrections in order to address the raised CAR 3, project emissions during the considered monitoring period were slightly decreased when compared to the value reported in the initial version of the Monitoring Report.

E.8.3. Calculation of leakage GHG emissions

Means of verification	Not applicable. In accordance with the applied CDM baseline and monitoring methodology ACM0001 (version 13.0.0) /7/, the PDD /2/ indicates that no leakage emissions are to be considered in the context of emission reduction calculations.
Findings	Not applicable.
Conclusion	Not applicable.

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	The EPIC verification team assessed whether calculation and reporting of achieved GHG emission reductions for the considered monitoring period are correct. As a result of the performed verification assessment, the EPIC verification team was able to confirm that the determination of achieved GHG emission reductions for the considered monitoring period are performed and reported in a correct, objective and transparent manner. As confirmed by the EPIC verification team, determination of baseline and project emissions are in accordance with the applicable requirements from the following reference and methodological documents: - Monitoring plan and other related provisions of the PDD /2/. - CDM baseline and monitoring methodology ACM0001 - 'Flaring or use of landfill gas" (version 13.0.0) /7/, - Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01) /13/. - Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02) /15/ - "Tool to calculate the emission factor for an electricity system" (versions 3.0.0 /16/) - "Project emissions from flaring" (version 02.0.0) /12/ - "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" (version 02.0.0) /14/ All figures and input data as well as all performed calculations were checked by the EPIC verification team and were found to be reported in a deemed correct, appropriate and transparent manner in the latest versions of the Monitoring Report /3/ and emission reduction calculation spreadsheets /5/. EPIC was thus able to confirm that the emission reductions reported for the monitoring period from 01/10/2019 to 31/12/2019 are based on authentic measurements of LFG and flaring related monitoring data and are also based on the application of a semi-

	automatic and systematic data monitoring procedure for LFG and flaring related monitoring data as well as data related to the consumption of both backup captive off-grid electricity and grid–sourced electricity by the project activity. Moreover, as also assessed by the EPIC verification team, monitoring data records were correctly retrieved and utilized in the emission reduction calculation spreadsheets /5/ for performing related calculation and reporting of achieved emission reductions for the considered monitoring period. EPIC was thus able to verify that, in general, all calculation and reporting procedures were adopted in a deemed transparent, correct and reliable manner.
Findings	No findings (CARs, CLs) were raised regarding reporting and calculations of summary of calculation of GHG emission reductions.
Conclusion	The EPIC verification team was able to confirm that reported achieved emission reductions for monitoring period from 01/10/2019 to 31/12/2019 are correctly calculated and reported as the difference between determined accumulated values for baseline emissions and project emissions for the period. Reported achieved emission reductions are in accordance with all applicable measurement, reporting and calculation requirements as per the monitoring plan of the PDD /2/, monitoring and baseline methodology ACM0001 - 'Flaring or use of landfill gas" (version 13.0.0) /7/ and applicable methodological tools /13/ /14/ /15/ /16/ /17/.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The EPIC verification team assessed the comparison of achieved GHG emission reductions with related estimates as per the PDD /2/. As part of the performed verification assessment, reported and verified emission reductions achieved by the project activity during the monitoring period (encompassing 92 days within year 2019) were compared against the related *ex-ante* estimation of emission reductions for year 2019 as per the PDD /2/. The results of such comparisons are summarized and assessed below:

Period	Ex-ante estimation of emission reductions as per the PDD (in tCO_2e)	Achieved emission reductions (in tCO_2e)
Period from 01/10/2019 to 31/12/2019 (considered monitoring period)	155,674[17]	73,017

Findings	No findings (CARs, CLs) were raised regarding the comparison of achieved emission reductions against related *ex-ante* estimation of emission reductions as per the PDD.
Conclusion	As confirmed by the EPIC verification team, for the 92-day length monitoring period from 01/10/2019 to 31/12/2019, achieved emission reductions are correctly indicated in the latest version of the Monitoring Report as about ~63% lower than

[17] The 155,674 tCO_2e value is appropriately calculated as the share of estimated emission reductions to be achieved during the 92-day length share of the monitoring period within year 2019 (based on total value for emission reductions for year 2019 as reported in the PDD). Such estimate is calculated as 617,621 tCO_2e * 92 / 365.

	the comparable value of *ex-ante* estimation of emission reductions as per the PDD /2/ valid for such period. As further assessed in Section E.8.6., the Monitoring Report presents a set of factors and aspects that sufficiently explains the occurred differences between achieved/verified emission reductions during the considered monitoring period and the comparable value for *ex-ante* estimation of emission reductions as per the PDD /2/ for the same time period. This is deemed correct and in accordance with applicable verification requirements.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	The EPIC verification team assessed the remarks on the difference between achieved GHG emission reductions and applicable estimated value in PDD /2/. As appropriately indicated in Section E.6 of the latest version of the Monitoring Report /3/, there a set of factors and aspects that sufficiently explain the occurred difference between verified emission reductions achieved during the considered monitoring period and the comparable value for *ex-ante* estimation of emission reductions as per the PDD /2/ for the same time period are identified. Assessment for such factors and aspects are summarized below: *Aspects/conditions that represent a decrease factor of reported emission reductions for the considered monitoring period when compared against the ex-ante estimation of emission reduction for the same period in the registered PDD:* *1. Uncertainties associated with the application of First Order Decay (FOD) multi-phased model for estimating the emission reductions in the registered PDD:* Like any other CDM project activity encompassing LFG collection and destruction/utilization, all potential uncertainties associated with the application of the First Order Decay (FOD) multi-phased model in the context of the *ex-ante* estimation of emission reductions in the registered PDD /2/ are applicable for the *ex-ante* estimation of emission reductions for the "ESTRE's Paulínia Landfill Gas Project (EPLGP)". In the particular context of the project activity, it is relevant to note that, as also confirmed by the EPIC verification team, share of MSW disposal (which is accounted in the application of the FOD model in the registered PDD) has occurred in an area of the CGR Paulínia landfill which is not yet encompassed by the project's LFG collection network (area 2). As appropriately claimed in the Monitoring Report /3/, this aspect per se indeed represents a decrease factor of reported emission reductions for the considered monitoring period (when compared against ex-ante estimates of emission reductions for the same period as reported in the registered PDD). Furthermore, the EPIC verification team acknowledges that the LFG collection efficiency in a LFG collection and destruction initiative such as project activity plays an important role in differences between the achieved emission reductions and related ex-ante estimations of emission reductions as per the PDD /2/. Recently published literature on the topic /65/ /66/ /67/ has shown that LFG collection efficiency for well-engineered landfills with forced LFG extracting systems ranges from 50% up to 90% (depending on the design and operation of the LFG collection system). While the EPIC verification team also acknowledges that there are indeed several operational and performance aspects for a typical LFG collection and destruction project activity that negatively influence the potentially achieved average LFG collection and destruction efficiency, in the particular context of the operation of the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)", it is reasonable to assume that achieved average LFG collection efficiency for the project activity during the considered monitoring period was lower than the one earlier assumed in the context of the ex-ante estimation of emission reductions (75%).

	2. Non-meeting of operational conditions for the flares in terms of temperature of the exhaust gases o the flare (monitoring parameter $T_{EG,m}$) and the flow rate of LFG to the flare (monitoring parameter $F_{RG,m}$) (as per applicable manufacturer's specification/requirements for the flares as defined under parameter $SPEC_{flare}$) during limited time instants within the considered monitoring period, thus resulting in null emission reductions being accounted for the project activity during such minor shares of the considered monitoring period: As confirmed by the EPIC verification team, the operational conditions of the flares (as per the monitoring parameter $T_{EG,m}$) were not fully met during limited time instants within the considered monitoring period, thus negatively affecting calculated emission reductions achieved for the period.
Findings	No CARs and CLs were raised regarding remarks on difference from estimated value from registered PDD.
Conclusion	Based on the performed document desk review and by watching online (and later further assessing/reviewied) the produced live video (movie) /94/ (of which details are included in Section D.2), the EPIC verification team confirms that remarks on difference from estimated value from registered PDD are under conformance with the provisions of the PDD /2/.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	As the monitoring period covered by this Verification Report (01/10/2019 to 31/12/2019) started after 01/01/2013, this verification assessment does not include assessment of GHG emission reductions occurred during the first commitment period of the Kyoto Protocol. Achieved emission GHG emission reductions as reported in the Monitoring Report /3/ occurred after 01/01/2013.
Findings	No findings (CARs, CLs) were raised regarding reporting and calculations of GHG emission reductions during the first commitment period and the period from 01/01/2013 onwards.
Conclusion	As a conclusion, EPIC thus confirms that the reported achieved emission reductions for monitoring period from 01/10/2019 to 31/12/2019 are in accordance with all measurement, reporting and calculation requirements of the monitoring plan of the PDD /2/, monitoring and baseline methodology ACM0001 - 'Flaring or use of landfill gas" (version 13.0.0) /7/ and applicable methodological tools /13/ /14/ /15/ /16/ /17/. No emission reductions occurred prior 01/01/2013 were considered in the current verification.

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Not applicable. The project activity does not encompass monitoring of sustainable development co-benefits.
Findings	Not applicable.
Conclusion	Not applicable.

E.10. Global stakeholder consultation

Means of verification	Not applicable. This verification report does not encompass assessment of the first monitoring period of the project activity.
Findings	Not applicable.
Conclusion	Not applicable.

SECTION F. Internal quality control

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As part of EPIC internal quality control system, after the completion of assessment by the verification team, all the relevant documentation is submitted to a qualified independent technical review team. The technical review team (with at least one member) is appointed to review the draft final verification report (Draft FVR). The technical review team assesses whether all the reporting requirements have been fulfilled and whether all the issues raised (CARs and/or CLs) were satisfactorily addressed. The technical reviewer team either accepts or rejects elements of the Draft FVR compiled by the verification team. The comments made by the technical review team are taken into consideration and incorporated in the final FVR, if applicable. The final Verification Report (after resolutions of all findings) is then submitted to the head of operations of EPIC for final review and approval.

SECTION G. Verification opinion

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It is the opinion of EPIC that reported GHG emission reductions for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" for the monitoring period from 01/10/2019 to 31/12/2019, as reported in the latest version of the Monitoring Report issued on 08/04/2020 (version 2.0), are calculated and reported without material misstatements and in a correct manner. Moreover, EPIC has confirmed that all information presented in the latest version of the Monitoring Report /3/ and all applied calculations for the determination of emission reductions achieved during the considered monitoring period are under full conformance with provisions and requirements of the registered PDD /2/, monitoring and baseline methodology ACM0001 - 'Flaring or use of landfill gas" (version 13.0.0) /7/ and all applicable methodological tools /13/ /14/ /15/ /16/ /17/.

EPIC thus confirms the following regarding verified emission reductions:

Project title:	ESTRE's Paulínia Landfill Gas Project (EPLGP)
UNFCCC ref no:	0165
PDD Monitoring Report	Version 04.5, dated 29/02/2016 Version 2.0, dated 08/04/2020
Methodology used for verification:	ACM0001 (version 13.0.0)
Applicable monitoring period:	01/10/2019 to 31/12/2019 (first and last day included)
Achieved emission reductions:	73,017 tCO_2e

SECTION H. Certification statement

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EPIC Sustainability Services Pvt. Ltd. (EPIC) has performed the 28th periodic verification assessment of the registered CDM project activity titled "ESTRE's Paulínia Landfill Gas Project (EPLGP)". The project activity was registered by the UNFCCC on 03/03/2006 as CDM project activity with registration no. 0165 and it is currently under its 2nd 7-year renewable crediting period (period from 14/09/2013 to 13/09/2020).

The performed CDM verification assessment covered the monitoring period from 01/10/2019 to 31/12/2019 (including both days) and represents the 12th periodic verification within the 2nd 7-year crediting period for the project activity.

It is EPIC responsibility to express an independent verification statement and opinion on the reported GHG emission reductions from the project activity during the covered monitoring period.

The project activity is implemented and has operated at the CGR Paulínia landfill. In accordance with related project design information made available in the registered version of the Project Design Document (PDD) for the 2nd 7-year crediting period, the operation of the project activity resulted in permanent and real mitigation of methane (CH_4) emissions during the considered monitoring period through collection and destruction of landfill gas (LFG) by combustion under controlled conditions in six high temperature enclosed flares. While LFG is rich in CH_4, as established in the PDD for the project activity, in the absence of the project activity (baseline scenario) it is assumed that the largest share of LFG collected and destroyed by the project activity would be directly emitted into the atmosphere.

The host-country project participant and project operator ESTRE Ambiental S/A has been responsible for gathering of monitoring data in accordance with the monitoring plan of the PDD. While supported by hired external CDM consultants, ESTRE Ambiental S/A has been responsible for calculating and reporting GHG emissions reductions achieved by the project activity during the considered monitoring period.

The EPIC verification team performed the verification assessment and provided its verification opinion on the basis of the provisions and requirements of the CDM baseline and monitoring methodology ACM0001 - "Flaring or use of landfill gas" (version 13.0.0), the monitoring plan included in the registered version of the PDD /2/ for the 2nd 7-year crediting period of the project activity (version 04.5, dated 29/02/2016) and also as per the latest version of Monitoring Report for the considered monitoring period (version 2.0, dated 08/04/2020). The verification assessment performed by EPIC included:

i) checking whether the project activity was implemented and has operated in accordance with related project design details as described in the registered Project Design Document (PDD) for the project activity;
ii) checking whether the provisions of both the applied CDM baseline and monitoring methodology and the monitoring plan (as per the PDD) were consistently and appropriately applied;
iii) assessment of all documented evidences which supports the reported data and claimed emission reductions during the considered monitoring period;
iv) checking whether the installed monitoring equipment/instrument required for measuring *ex-post* determined parameters required for calculating emission reductions were calibrated and have operated appropriately.

The EPIC verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. EPIC planned and performed the verification assessment by obtaining evidence, information and explanations that were considered necessary for providing reasonable assurance that reported GHG emission reductions are fairly stated. All Corrective Action Requests (CARs) and/or Clarification Actions (CL) raised by EPIC as part of the performed verification assessment were confirmed to be adequately resolved.

It is the opinion of EPIC that reported GHG emission reductions for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" for the monitoring period from 01/10/2019 to 31/12/2019, as reported in the latest version of the Monitoring Report issued on 08/04/2020 (version 2.0), are calculated and reported without material misstatements and in a correct manner. Moreover, EPIC has confirmed that all information presented in the latest version of the Monitoring Report and all applied calculations for the determination of emission reductions achieved during the considered monitoring period are under full conformance with monitoring provisions and requirements of the registered version of the PDD, monitoring and baseline methodology ACM0001 - 'Flaring or use of landfill gas" (version 13.0.0) and all applicable methodological tools.

EPIC Sustainability Services Pvt. Ltd. (EPIC) herewith confirms that GHG emission reductions were achieved by the CDM project activity “ESTRE’s Paulínia Landfill Gas Project (EPLGP)” during the monitoring period from 01/10/2019 to 31/12/2019 as follows:

Emission reductions achieved by the project activity during the monitoring period from 01/10/2019 to 31/12/2019:	73,017 tCO_2e

Prepared and submitted by:
 (Marco A. Ratton) Verification Team Leader

Appendix 1. Abbreviations

Abbreviations	Full texts
ACM	Approved Consolidated Methodology (CDM baseline and monitoring methodology)
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	Clean Development Mechanism Executive Board
CDM-M&P	Modalities and Procedures for Clean Development Mechanism
CDM-PCP-PA	Clean Development Mechanism Project Cycle Procedures for project activites
CDM-PS-PA	Clean Development Mechanism Project Standard for project activities
CDM-VVS-PA	Clean Development Mechanism Validation and Verification Standard for project activities
CER	Certified Emission Reduction
CETESB	Companhia Ambiental do Estado de São Paulo (Environmental Agency/Authority for São Paulo State in Brazil)
CGR	Centro de Gerenciamento de Resíduos ("Waste Management Facility" when translated into English language)
CH4	Methane
CL	Clarification Request
CMP	Meeting of Parties to the Kyoto Protocol
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
COP/MOP	The Conference of the Parties to the United Nations Framework Convention on Climate Change serving as the Meeting of the Parties to the Kyoto Protocol
COVID-19	Coronavirus disease (infectious disease caused by a new virus that caused a worldwide pandemic in year 2020).
DNA	Designated National Authority
DOE	Designated Operational Entity
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas
HDPE	High Density Polyethylene
INMETRO	Instituto Nacional de Metrologia, Normalização e Qualidade Industrial (Brazilian "Institute for Metrology, Standardization and Industrial quality" when translated into English language). INMETRO is the Brazilian official agency for metrology and certification affairs
LFG	Landfill gas
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
MSW	Municipals solid waste
ONS	Operador Nacional do Sistema (Brazilian entity responsible for the coordination of the dispatch of power plants connected to the National Electricity Grid of Brazil)
PDD	Project Design Document
PLC	Programmable logic controller
PNRS	Política Nacional de Resíduos Sólidos (Brazilian National Policy on Waste Management as established by Federal Law No. 12,305/10 (the LPNRS).
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
SQL	Structured query language
UNFCCC	United Nations Framework Convention for Climate Change
UV	Ultra violet

Appendix 2. Competence of team members and technical reviewers

All personnel being engaged in CDM verification assessments performed by EPIC are qualified based on the established procedures of EPIC to assure the resource requirements that satisfy all the requirements of competence criteria of the CDM Accreditation Standard for operational entities. EPIC is accredited as a DOE and holds the full responsibility on decision-making regarding the verification in accordance with the accreditation requirements of the CDM-EB.

The following verification team has been assigned to carry out the verification of the project.

Name	**Mr Marco A. Ratton**	**Mr. R. Vijayaraghavan**
Role	Lead Auditor	Technical Reviewer
Competence in relevant sectoral scope(s):	Sectors 1 and 13	Sectors 1 and 13
Responsibility	Performance of document review, watching online (and later further assessing/reviewing) the produced live video (movie) (of which details are included in Section D.2), preparation of initial list of findings, assessment of responses from the project participants for all list of findings and assessment of updated/corrected documents, preparation of the and draft Verification Report, addressing comments from the performed technical review and preparation of final Verification Report.	Performance of Technical review

Mr. Marco A. Ratton is based in Brazil and has acted as a CDM auditor since 2007. He holds vast experience with independent assessments of CDM project activities within the area of solid waste management and effluent treatment implemented in Latin America and other regions. He also has previous working experience with planning of municipal waste management as well as educational background in mechanical fabrication & manufacturing technologies, economics and environmental management & policy. He has undergone extensive training on CDM validation and verification and is a qualified Lead Auditor for Sectoral Scope 13 under Technical Area “Waste

handling and disposal" and Sector Scope 1 in accordance with procedures of EPIC sustainability services Pvt. Ltd. He also has previous experience on conducting ISO 9001/14001 assessments.

Mr. R. Vijayaraghavan holds BE in Mechanical Engineering, M.Tech in Energy Conservation and Management and MBA in Technology Management. He is certified as Energy Auditor by Bureau of Energy Efficiency (BEE), Government of India. He has 10 years of working experience in energy sector including validation / verification of fifty CDM and VCS/GS projects and has undergone extensive training on CDM validation and verification and has been qualified as Lead Auditor and Technical Reviewer with Sectoral Scope 1 and 13. He is also an ISO 26000 lead auditor certified by Professional Evaluation and Certification Board (PECB).

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/1/	UNFCCC/CDM-EB	Clean Development Mechanism validation and verification standard for project activities (CDM-VVS-PA) (version 02.0)	Dated 29/11/2018. Available online: https://cdm.unfccc.int/Reference/Standards/index.html	Others
/2/	ESTRE Ambiental S/A	Project Design Document (PDD) for the 2nd 7-year renewable crediting period for the CDM project activity: "ESTRE's Paulínia Landfill Gas Project (EPLGP)", version 04.5 -	Dated 29/02/2016	Project Participants [18]
/3/	ESTRE Ambiental S/A	Monitoring Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" - monitoring period from 01/10/2019 to 31/12/2019, version 2.0.	Dated 08/04/2020	Project Participants
/4/	ESTRE Ambiental S/A	Monitoring Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" - monitoring period from 01/10/2019 to 31/12/2019, version 1.	Dated 28/01/2020. https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/view	Project Participants
/5/	ESTRE Ambiental S/A	Emission reduction calculation spreadsheets for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" - monitoring period from 01/10/2019 to 31/12/2019. Set of 3 monthly emission reduction spreadsheets (one for each month of the monitoring period) + flare efficiency calculation spreadsheet + summarized emission reduction spreadsheet. File names: *"102019.xls"* *"112019.xls"* *"122019.xls"* *"MR 28 – Paulinia – V.2.xls"* *"MR 28 – Paulinia – V.2 - FE.xls"*	Dated 08/04/2020.	Project Participants
/6/	ESTRE Ambiental S/A	Input data for the emission reduction calculation	Dated 28/01/2020.	Project Participants

[18] All document with provider indicated as "Project Participants" were sourced by the host-country project participant and project owner ESTRE Ambiental S/A.

		spreadsheets for the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" - monitoring period from 01/10/2019 to 31/12/2019. File names: *"OCT_19.xls"* *"NOV_19.xls"* *"DEC_19.xls"*		
/7/	UNFCCC/CDM-EB	Consolidated baseline and monitoring methodology ACM0001 - "Flaring or use of landfill gas¨ (version 13.0.0)	Dated 11/05/2012. Available online: http://cdm.unfccc.int/methodologies/DB/D44X8FH8SFCXREE6037AXJSBGGFVDO	Others
/8/	UNFCCC	Kyoto Protocol to the United Nations Framework Convention on Climate Change	Dated 1998. Available online: http://unfccc.int/resource/docs/convkp/kpeng.pdf	Others
/9/	UNFCCC	Decision 3/CMP. 1 (Marrakesh – Accords)	Dated 30/03/2006. Available online: https://cdm.unfccc.int/Reference/COPMOP/08a01.pdf	Others
/10/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	"Validation of the renewal of crediting period of an existing CDM-project" for the project activity ESTRE's Paulínia Landfill Gas Project (EPLGP), Report No. 10074KM, version 2.	Dated 12/07/2013. Available online: https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/view?cp=2	Others
/11/	IPCC	1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book; 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book.	Available online: http://www.ipcc-nggip.iges.or.jp/public/gl/invs5.html	Others
/12/	UNFCCC/CDM-EB	"Project emissions from flaring" (version 02.0.0)	Dated 20/07/2012. Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-06-v2.0.pdf/history_view	Others
/13/	UNFCCC/CDM-EB	"Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01)	Dated 16/05/2008. Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v1.pdf/history_view	Others
/14/	UNFCCC/CDM-EB	¨Tool to determine the mass flow of a greenhouse gas in a gaseous stream¨ (version 02.0.0)	Dated 03/06/2011. Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-08-v2.0.0.pdf/history_view	Others

/15/	UNFCCC/CDM-EB	"Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02)	Dated 02/08/2008. Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf/history_view	Others
/16/	UNFCCC/CDM-EB	"Tool to calculate the emission factor for an electricity system" (version 03.0.0)	Dated 23/11/2012. Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf/history_view	Others
/17/	UNFCCC/CDM-EB	"Tool to calculate the emission factor for an electricity system" (version 05.0)	Dated 04/10/2013. Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf	Others
/18/	UNFCCC/CDM-EB	Clean Development Mechanism project standard for project activities (CDM-PS-PA) (version 02.0)	Dated 29/11/2018. Available online: https://cdm.unfccc.int/Reference/Standards/index.html	Others
/19/	UNFCCC/CDM-EB	Clean Development Mechanism project cycle procedure for project activities (CDM-PCP-PA) (version 02.0)	Dated 29/11/2018. Available online: https://cdm.unfccc.int/Reference/Procedures/index.html	Others
/20/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	Certificate of Calibration for the installed LFG flow meter with S/N 1507000470 - calibration event performed on 12/07/2018. Certificate No. 1505000470 0718 FC.	Certificate issuance date: 12/07/2018.	Others
/21/	EPIC / ESTRE Ambiental S/A	Comparative emission reduction calculation spreadsheets for the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" - monitoring period from 01/10/2019 to 31/12/2019. Created as part of the *Data authenticity checking* procedure performed during the verification. File names: *"102019- for checking.xls"* *"112019- for checking.xls"* *"122019- for checking.xls"* *"MR 28 – Paulínia – V.1 - for checking.xls"* *"MR 28 – Paulínia – V.1 - FE - for checking.xls"*	Dated 09/04/2020.	Project Participants
/22/	EPIC / ESTRE Ambiental S/A	Comparative spreadsheets with monitoring records for the project activity "ESTRE's Paulínia Landfill Gas Project	Dated 03/04/2020.	Project Participants

		(EPLGP)" – monitoring period from 01/10/2019 to 31/12/2019. Created as part of the *Data authenticity checking* procedure partially performed during the time the live video (movie) (of which details are included in Section D.2) was produced. File names: "OCT_*19 - for checking.xls"* "*NOV_19 - for checking.xls"* "*DEC_19 - for checking.xls"*		
/23/	ESTRE Ambiental S/A	Blank version of the emission reduction calculation spreadsheets applied for the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" - monitoring period from 01/10/2019 to 31/12/2019. File names: "*MMYYYY - blank.xls* " *"MR 28 – Paulínia – V.1 - blank.xls"* *"MR 28 – Paulínia – V.1 - FE - blank.xls"*	Dated 28/01/2020.	Project Participants
/24/	ESTRE Ambiental S/A	Internal service and maintenance log book (with details about historical of interventions, service and instrument/equipment calibration and replacement in the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)").	Available at the project's data control room.	Project Participants
/25/	ESTRE Ambiental S/A	Completed Modalities of Communication (MoC) form for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)"	Latest version dated 29/10/2014. Available online: http://cdm.unfccc.int/Projects/DB/DNV-CUK1134509951.62/view?cp=1	Project Participants
/26/	EPIC	EPIC: Working procedures for performance of CDM verification assessments, Issue No. 2, Rev No. 1.	Dated 01/08/2014.	Others
/27/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 12th periodic verification (monitoring period from 01/05/2011 to 30/11/2011). Report No. 600500902, Rev 1.	Dated 06/09/2012. Available online: https://cdm.unfccc.int/filestorage/p/1/7JCHG9EBYSFO54V32RIQM0XD6ZPK1T.pdf/Verification%20Report.pdf?t=c2x8b2RpOGc0fDAYzZ47KdQ7MITPqTzFg8Wb	Others
/28/	RINA Services S.p.A.	CDM Verification and Certification Report for the CDM project activity "ESTRE's	Dated 25/02/2014. Available online: https://cdm.unfccc.int/filestor	Others

		Paulínia Landfill Gas Project (EPLGP)". 15th periodic verification (monitoring period from 01/10/2012 to 13/09/2013). Report No. 2014-BQ-05-MD, Rev 1.1Aa.	age/0/A/6/0A6T8H9VGOW1QYZL5FMIP2NUE73DB4/FVR_14BQ05MD_rev_1_1_Aa_06062014.pdf?t=V2J8b2RpOGt0fDCPG8qMSKTWydNpoAfxzxob	
/29/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 1st periodic verification (monitoring period from 14/09/2006 to 31/01/2007). Report No. 961151, Rev 1.	Dated 15/03/2007. Available online: https://cdm.unfccc.int/filestorage/D/W/H/DWHRIO7ORAW8E7KKVCSGUG8FTTR6VG/Verification%20Report.pdf?t=eG58b2RpMTNufDAenJALYqgVc7rySxT0Gzro	Others
/30/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 2nd periodic verification (monitoring period from 01/02/2007 to 31/07/2007). Report No. 1038926, Rev 1.	Dated 30/08/2007. Available online: https://cdm.unfccc.int/filestorage/W/2/B/W2BPTZISUPLZPTOIY0D55V9N1177UG/Revised%20Verification%20Report.pdf?t=WGl8b2RpMWgzfDAGBRmA2BIb0--ElBvVNFwB	Others
/31/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 3rd periodic verification (monitoring period from 01/08/2007 to 29/02/2008). Report No. 1151610, Rev 0.	Dated 07/04/2008. Available online: https://cdm.unfccc.int/filestorage/W/2/B/W2BPTZISUPLZPTOIY0D55V9N1177UG/Revised%20Verification%20Report.pdf?t=WGl8b2RpMWgzfDAGBRmA2BIb0--ElBvVNFwB	Others
/32/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 4th verification (monitoring period from 01/03/2008 to 31/08/2008), Report No.: 1230928, version 1.	Dated 05/05/2009. Available online: https://cdm.unfccc.int/filestorage/R/P/D/RPDBJTYHFIG8C2X41LE9MU3KW57AOS/Verification%20Report.pdf?t=Z2F8b2RpN2Y3fDBJ1g7QgL4V2r2lb8YhW05I	Others
/33/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 5st verification (verification period from 01/09/2008 to 31/01/2009). Report No.: 600500207, version 1.	Dated 27/05/2009. Available online: https://cdm.unfccc.int/filestorage/G/I/D/GID06RBYV7HKOP25AXULEW319F48CZ/Verification%20Report.pdf?t=T218b2RpN2lzfDBibJl1r-fKOiiCvnxETSJH	Others
/34/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 24th periodic verification (monitoring period from 01/07/2018 to 30/09/2018). Report No. ESSPL/CDM/2018/222, Rev 2.	Dated 29/03/2019.	Others

/35/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	Certificate of Calibration for the installed LFG flow meter with S/N 1505000327 - calibration event performed on 06/06/2018. Certificate No. 1505000327 0818 FC.	Certificate issuance date: 06/06/2018.	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.
/36/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the installed thermocouple with S/N 11-09/52094 (installed on Flare 5). Calibration Certificate No. 11-09/520949992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/37/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the installed thermocouple with S/N 110863404 (installed on Flare 6). Calibration Certificate No. 1108634049992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/38/	RINA Services S.p.A.	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 17th verification (verification period from 01/10/2014 to 31/07/2015). Report version 1.1 Aa.	Dated 03/08/2016. Available online: https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/CP/LNLLT775VPPZY1HM0CAQBJKP7WDJZ3/iProcess/RINA1441285407.99/view	Others
/39/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the TSP321 temperature sensor. Certificate No. 2100005168540014992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/40/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the installed thermocouple with S/N 11-06/16754 (installed on Flare 4). Calibration Certificate No. 11-06/167549992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/41/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 26th periodic verification (monitoring period from 01/01/2019 to 30/06/2019), Version 2.0.	Dated 16/01/2020.	Others
/42/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 6st verification (verification period from 01/02/2009 to 30/06/2009).	Dated 20/08/2009. Available online: https://cdm.unfccc.int/filestorage/W/I/1/WI1C7MKED5SZ3YV4QG6PHRN2J9B0AU/Verification%20Report.pdf?t=SGV8b2RpN252fDAyKZ8zXu9v	Others

		Report No.: 600500323, version 1.	sp26jApRYlXi	
/43/	Itron Soluções para Energia e Água Ltda.	Technical specification sheet for the chromatographer Itron C13I0021574D.	Available online: https://www.itron.com/brasil/pt/Pages/default.aspx	Others
/44/	INMETRO	Accreditation scopes of the inspection service company Mérieux NutriSciences Brasil / Bioagri Ambiental Ltda. vis-a-vis accreditation requirements from INMETRO.	Available online: http://inmetro.gov.br/laboratorios/rble/docs/CRL0172.pdf	Others
/45/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	Certificate of Calibration for the installed LFG flow meter with S/N 1505000325 - calibration event performed on 29/06/2018. Certificate No. 1505000325 0618 M7.	Certificate issuance date: 29/06/2018.	Others
/46/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 25th verification (verification period from 01/10/2018 to 31/12/2018). Report version 1.0.	Dated 24/04/2019. Available online: https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/CP/LNLLT775VPPZY1HM0CAQBJKP7WDJZ3/iProcess/EPIC_Sust1548049408.51/view	Others
/47/	Air Products Brasil Ltda.	Certificate for the cylinder of pattern gases used for the calibration of the CH_4 content gas analyzer unit: - Gas cylinders with 89.99 mol/mol CH_4: Certificate Number 2337891.	Certificate issuance date: 06/04/2017.	Others
/48/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the 2600T pressure sensor. Certificate No. 641000100249992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/49/	Isocell Soluções em Analítica.	Calibration certificate for the installed CH_4 content gas analyzer unit. Calibration Certificate No. 61.0/2019. Calibration event date: 17/05/2019.	Certificate issuance date: 17/05/2019.	Others
/50/	Elster GmbH, Kromschröder Osnabrück	Specification sheet for the UVS1	Available online: https://irp-cdn.multiscreensite.com/8d5e9e85/files/uploaded/UVS.pdf	Others
/51/	UNFCCC/CDM-EB	"Guideline – Application of materiality in verifications", (version 02.0)	Dated 20/02/2015.	Others
/52/	Contech Indústria	Certificate of Calibration for the	Certificate issuance date:	Others

	e Comércio de Equipamentos Eletrônicos Ltda.	installed LFG flow meter with S/N 1505000329 - calibration event performed on 20/06/2018. Certificate No. 1505000329 0618 M7.	20/06/2018.	
/53/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the installed thermocouple with S/N 08-12/64188 (installed on Flare 3). Calibration Certificate No. 12/6418849992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/54/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for electricity meter (Serial No. 1001864115020195). Certificate No. 0045550045/19. Calibration event date: 30/05/2019.	Certificate issuance date: 30/05/2019	Others
/55/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 18th verification (verification period from 01/08/2015 to 30/06/2016). Report version 1.0.	Dated 19/09/2016. Available online: https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/CP/LNLLT775VPPZY1HM0CAQBJKP7WDJZ3/iProcess/EPIC_Sust1471500814.88/view	Others
/56/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the installed thermocouple with S/N 11-09/5207 (installed on Flare 2). Calibration Certificate No. 11-09/520749992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/57/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for the installed thermocouple with S/N 12318234 (installed on Flare 1). Calibration Certificate No. 1231823449992/19. Calibration event date: 28/05/2019.	Certificate issuance date: 28/05/2019.	Others
/58/	CBR – CIBER do Brasil	Technical Specification sheet for the electricity meters UPD200-2480M	Available online: http://www.nei.com.br/produto/2006-05-medidor-multivariavel-cbr-ciber-do-brasil-com-instr-eletr-ltda-1?id=e525679d-5ba7-11e4-8697-0e94104de12e	Others
/59/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 23rd periodic verification (monitoring period from 01/01/2018 to 30/06/2018). Report No. ESSPL/CDM/2018/221, Rev 1.	Dated 11/02/2019. Available online: https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/CP/LNLLT775VPPZY1HM0CAQBJKP7WDJZ3/iProcess/EPIC_Sust1544145680.99/view	Others
/60/	EPIC	CDM Verification and Certification Report for the CDM	Dated 27/01/2020.	Others

		project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 27th periodic verification (monitoring period from 01/07/2019 to 30/09/2019), Version 1.0, draft version.		
/61/	ABB S.p.A.	Technical Specification sheet for the electricity meters ETE30	Available online: http://www.eletricamagalhaes.com.br/gerenciador/catalogos/747286c3bad482a55d33e9a06537980e.pdf	Others
/62/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 21st periodic verification (monitoring period from 01/07/2017 to 30/09/2017). Report No. ESSPL/CDM/2017/170, Rev 1.	Dated 03/01/2019.	Others
/63/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	Operation and maintenance instruction / manual for the FT-2 flow meter.	Available online: http://www.contechind.com.br/catalogos/medidor-de-vazao-tipo-thermal.pdf	Others
/64/	CPFL Energia	Monthly invoices/sales receipts of grid-sourced electricity purchase by ESTRE Ambiental S/A for months OCT/2019, NOV/2019 and DEC/2019.	-	Others
/65/	Intermountain CHP Application Center	Designing a Landfill Gas to Energy Project: Rules of Thumb and Questions to Ask. Intermountain Workshop. CHP Bioenergy for Landfills and for and Wastewater Treatment Plants. SCS Engineers.	Dated 11/08/2005.	Others
/66/	Solid Waste Association of North America (SWANA)	Landfill Gas Collection System Efficiencies (2007).	Report dated 2007.	Others
/67/	California Environmental Protection Agency	Evaluation of Landfill Gas Collection Efficiency. Appendix D.	Dated year 2009. Available online: http://www.arb.ca.gov/regact/2009/landfills09/appd.pdf	Others
/68/	ABB S.p.A.	Specification details for the pressure sensor model 2600T	Available online: https://library.e.ABB (ASEA Brown Boveri) S.p.A..com/public/ae1b190549664f7bc12572ae0032979a/Addendum_2600T_PA_P3.pdf	Others
/69/	ABB S.p.A.	Specification details for the temperature sensor model TSP321	Available online: https://library.e.ABB (ASEA Brown Boveri)	Others

			S.p.A..com/public/201494028782b09dc1257b0c0054926c/DS_TSP3X1-EN-A-06_2007.pdf	
/70/	SIEMENS AG	Gas Analyzer technical specifications of ULTRAMAT 23	Available online: http://w3.siemens.com/mcms/sensor-systems/en/process-analytics/gas-analyzer-gas-analysis/extractive/ir-active-components/pages/ultramat-23.aspx	Others
/71/	Merieux NutriSciences / Bioagri Ambiental Ltda.	Technical Reports for the determination of methane destruction efficiency in the flares of the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)".	Reports dated 23/01/2019 and 25/02/2019	Others
/72/	Merieux NutriSciences / Bioagri Ambiental Ltda.	Technical Reports for the determination of methane destruction efficiency in the flares of the project activity.	Reports dated 24/10/2019 and 25/10/2019.	Others
/73/	Brazil's Interministerial Commission on Global Climate Change (DNA of Brazil)	CO_2 emission factors for electricity generation in Brazil National Interconnected System.	Available online: http://www.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/textogeral/emissao_despacho.html	Others
/74/	ELSI s.r.l.	Specification sheet for the thermocouple type S.	Available online: http://www.elsi.it/en/products/thermocouple/ELSI_TC_M2_UK.pdf	Others
/75/	ELSI s.r.l.	Specification sheet for the thermocouple type S.	Available online: http://www.elsi.it/en/products/thermocouple/ELSI_TC_M2_UK.pdf	Others
/76/	CEIME Calibração e Comércio de Instrumentos Ltda.	Calibration certificate for electricity meter (Serial No. 1002503115100408). Certificate No. 004350045/19. Calibration event date: 30/05/2019.	Certificate issuance date: 30/05/2019	Others
/77/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	Certificate of Calibration for the installed LFG flow meter with S/N 1505000326 - calibration event performed on 05/07/2018. Certificate No. 1505000326 0718 M7.	Certificate issuance date: 05/07/2018.	Others
/78/	ESTRE Ambiental S/A	Technical reports for monitoring the parameter "Management of the SWDS" sent to the environmental agency CETESB	Documents dated 08/01/2019, 07/10/2019, 05/07/2019 and 13/01/2020	Others
/79/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM	Dated 20/08/2012. Available online:	Others

		project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 8th periodic verification (monitoring period from 26/02/2010 to 31/07/2010). Report No. 600500492, Rev 1.	https://cdm.unfccc.int/filestorage/g/o/YLEBNCP57ISQV80R1ZAKW93X2UDJHT.pdf/Verification%20Report.pdf?t=c3F8b2RpN3ZofDCIFdmjTAYbNmIJcIzmyBhr	
/80/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 22nd periodic verification (monitoring period from 01/10/2017 to 31/12/2017). Report No. ESSPL/CDM/2017/174, Rev 1.	Dated 24/01/2019.	Others
/81/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 10th periodic verification (monitoring period from 01/11/2010 to 31/01/2011). Report No. 600500563, Rev 1.	Dated 20/08/2012. Available online: https://cdm.unfccc.int/filestorage/d/w/TCJQSF1Y0H76WXDMO2IVK4NR3ZP8G5.pdf/Verification%20Report.pdf?t=Zk98b2RpODRkfDCnsD0tN7xjDW090cIXMhBX	Others
/82/	Mayer-Brown / Tauil & Chequer	Legal update / interpretation: Regulation of Brazil's National Policy on Waste Management	Available online: http://www.tauilchequer.com.br/publications/article.asp?id=10261&nid=13012	Others
/83/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 13th periodic verification (monitoring period from 01/12/2011 to 31/05/2012). Report No. 600501064, Rev 1.	Dated 29/08/2012. Available online: https://cdm.unfccc.int/filestorage/f/5/V1LXBHYENC28DO9QP3JUSM4KGTRA06.pdf/Verification%20Report.pdf?t=MkN8b2RpOGMxfDAcQH4RX8LLhd2NGhXmnwmd	Others
/84/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 14th periodic verification (monitoring period from 01/06/2012 to 30/09/2012). Report No. 600501127, Rev 1.	Dated 05/11/2012. Available online: https://cdm.unfccc.int/filestorage/u/k/UV4J9LET3O576DPKIMGZQBFX1CHR20.pdf/Verification%20Report.pdf?t=MXh8b2RpOGlpfDA_9uU6dHziZ6dovx2TngXj	Others
/85/	Contech Indústria e Comércio de Equipamentos Eletrônicos Ltda.	Certificate of Calibration for the installed LFG flow meter with S/N 1505000328 - calibration event performed on 02/08/2018. Certificate No. 1505000328 0818 M7.	Certificate issuance date: 02/08/2018.	Others
/86/	Chapple, Mike.	SQL Fundamentals.	-	Others
/87/	Gordon J. Van Wylen, Richard E. Sonntag and Borgnakke:	Fundamentals of Classical Thermodynamics; 4th Edition, John Wiley & Sons, Inc. Table A-4: Saturated Water-	Available online: https://pt.scribd.com/doc/133363365/Fundamentals-of-Engineering-	Others

		Temperature.	Thermodynamics-4th-Ed-Solutions-Manual-M-J-Moran-H-N-Shapiro	
/88/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 11th periodic verification (monitoring period from 01/02/2011 to 30/04/2011). Report No. 600500727, Rev 1.	Dated 20/08/2012. Available online: https://cdm.unfccc.int/filestorage/y/s/P7HBR5AW3Y4MVUS2NF0EQDC9GZJK1I.pdf/Verification%20Report.pdf?t=R2N8b2RpODdnfDD4LGtnt8KstXnHye8gYLun	Others
/89/	UNFCCC / CDM-EB	Monitoring Report Form (CDM-MR-FORM). Version 07.0.	Dated 31/05/2019. Available online: https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Others
/90/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 7th periodic verification (monitoring period from 01/07/2009 to 25/02/2010). Report No. 600500465, Rev 1.	Dated 01/10/2010. Available online: https://cdm.unfccc.int/filestorage/Q/M/1/QM1URPA9ZY8BDK7C6VOLEFNH3J2IS4/Verification%20Report.pdf?t=YlN8b2RpN3NofDB12Z4xrsZo-esOMV2f6A5j	Others
/91/	TUV SUD Industrie Service GmbH	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 9th periodic verification (monitoring period from 01/08/2010 to 31/10/2010). Report No. 600500524, Rev 1.	Dated 20/08/2012. Available online: https://cdm.unfccc.int/filestorage/n/_/G89VCIYNMFA4X1ZWT3USEPBQKJD05H.pdf/Verification%20Report.pdf?t=NGF8b2RpN3ppfDD2usOWuDtv9bTyztgiYD-y	Others
/92/	EPIC	CDM Verification and Certification Report for the CDM project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)". 20th periodic verification (monitoring period from 01/01/2017 to 30/06/2017). Report No. 600500524, Rev 1.	Dated 25/08/2017. Available online: https://cdm.unfccc.int/Projects/DB/DNV-CUK1134989999.25/CP/LNLLT775VPPZY1HM0CAQBJKP7WDJZ3/iProcess/EPIC_Sust1505912321.76/view	Others
/93/	CDM-EB	Decision agreed by the CDM Executive Board (CDM-EB) to relax mandatory site visits by DOEs (valid for a 3-month period (from 23/03/2020 to 23/06/2020) because of COVID-19 pandemic	Dated March/2020 Available online: https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html	Others
/94/	ESTRE Ambiental S/A	Live video (movie) produced by the operational staff of the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP) showing implementation and operational aspects of the project activity.	Dated 03/04/2020	Project Participants

/95/	ESTRE Ambiental S/A	CER delivery/forwarding schedule valid for the project activity "ESTRE's Paulínia Landfill Gas Project (EPLGP)" for the period from year 2015 to year 2020 as per related contractually established agreement (Emission Reduction Purchase Agreement (ERPA)) set between ESTRE Ambiental S/A and Nordic Environment Finance Corporation.	Dated: June/2015	Project Participants

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

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	1	**Section no.**	E.6.2.	**Date:** 11/01/2019
Description of FAR				
The installed LFG flow meter for Flare 5 does not any longer include legible label that would allow the identification of its model and serial number (S/N). Furthermore, the electronic display of this particular LFG flow meter was found not functional. Although the lack of legible label and functional display in the LFG flow meter *per se* do not promote any material impact over the operationalization of the project's monitoring system, the DOE performing the subsequent verification is may confirm whether appropriate QA/QC measures are taken by the project participant within future monitoring periods for addressing such operational limitations.				
Project participant response				**Date:** 16/01/2019
As a response to the raised FAR, In the context of the previous 21st verification, the service representative from the manufacturer of the LFG flow meter for Flare 5 was inquired about the possibility of providing a new instrument specification label (that would allow the identification of its model and serial number (S/N)). The service representative from the manufacturer of the LFG flow meter for Flare 5 was also inquired about the possibility of repairing/replacing the electronic display of the instrument. As responses to the raised inquires, ESTRE Ambiental S/A was informed that identification label and display are not items which are supplied as spare parts for the installed LFG flow meter.				
Documentation provided by project participant				
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DOE assessment				**Date:** 18/01/2019
EPIC has confirmed that the service representative from the manufacturer of the LFG flow meter was indeed contacted by the project participant ESTRE Ambiental S/A and provided the above summarized response. As previously confirmed, the lack of legible label and functional display in the LFG flow meter per se do not promote any material impact over the operationalization of the project's monitoring system. This FAR was thus closed in the context of the previous 21st verification.				

Table 2. CL from this verification

CL ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of CL				
Project participant response				**Date:** DD/MM/YYYY

Documentation provided by project participant
DOE assessment **Date:** DD/MM/YYYY

Table 3. CAR from this verification

CAR ID	1	**Section no.**	E.3.	**Date:** 07/04/2020
Description of CAR				
The Monitoring Report does not include sufficient details about relevant operational aspects of the project activity within the considered monitoring period.				
Project participant response				**Date:** 08/04/2020
As a response to the raised CAR, further details about relevant operational aspects of the project activity within the considered monitoring period were added in the revised version of the Monitoring Report.				
Documentation provided by project participant				
No additional documentation was provided.				
DOE assessment				**Date:** 09/04/2020
The EPIC verification team confirmed that related corrections and improvements made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.				

Table 4. CAR from this verification

CAR ID	2	**Section no.**	E.3.	**Date:** 07/04/2020
Description of CAR				
The number of LFG collection wells encompassed by the project's LFG collection system during the considered monitoring period presented in the initial version of the Monitoring Report is incorrect.				
Project participant response				**Date:** 08/04/2020
As a response to the raised CAR, the number of operational collection wells during the considered monitoring period was corrected in the revised version of the Monitoring Report.				
Documentation provided by project participant				
No additional documentation was provided.				
DOE assessment				**Date:** 09/04/2020
The EPIC verification team confirmed that related corrections and improvements made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.				

Table 5. CAR from this verification

CAR ID	3	**Section no.**	E.8.2.	**Date:** 07/04/2020
Description of CAR				
The reported value of grid-electricity consumed by the project activity during the month of December 2019 (monitoring parameter "Quantity of electricity consumed from the grid by the project activity during the year *y*" ($EG_{EC1,y} = EC_{PJ1,y}$)) is not in accordance with primary monitoring records.				
Project participant response				**Date:** 08/04/2020

As a response to the raised CAR, project emission were re-calculated by considering the correct value of "Quantity of electricity consumed from the grid by the project activity during the year *y*" ($EG_{EC1,y} = EC_{PJ1,y}$) for the month of December 2019. As a consequence, project emissions during the considered monitoring period were slightly decreased when compared with the reported value as per the initial version of the Monitoring Report.
Documentation provided by project participant
No additional documentation was provided.
DOE assessment **Date:** 09/04/2020
The EPIC verification team confirmed that related corrections and improvements made in the revised version of the Monitoring Report and emission reduction calculation spreadsheets sufficiently address the raised CAR. This CAR is thus closed.

Table 6. FAR from this verification

FAR ID	XX	**Section No.**		**Date:** DD/MM/YYYY
Description of FAR				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

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Document information

Version	*Date*	*Description*
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM validation and verification standard for project activities" (CDM-EB93-A05-STAN); • Make structural and editorial improvements.
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
02.0	31 October 2017	Revision to align with the requirements of the "CDM validation and verification standard for project activities" (version 01.0).
01.0	23 March 2015	Initial publication.

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