




**Verification and certification report form for
CDM project activities
(Version 02.1)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Douala Landfill gas recovery and flaring project UNFCCC reference number: 4175
Version number of the verification and certification report	03
Completion date of the verification and certification report	10/07/2018
Monitoring period number and duration of this monitoring period	02; 01/06/2015 to 31/12/2017 (including the dates mentioned above)
Version number of the monitoring report to which this report applies	1.1
Crediting period of the project activity corresponding to this monitoring period	1 st crediting period: 30/06/2013 – 29/06/2023 (10 years, Fixed)
Project participants	Hygiène et Salubrité du Cameroun (HYSACAM) Norwegian Ministry of Climate and Environment
Host Party	Cameroon
Applied methodologies and standardized baselines	ACM0001 - "Consolidated baseline and monitoring methodology for landfill gas project activities, Version 11.0".
Mandatory sectoral scopes linked to the applied methodologies	13 : Waste handling and disposal
Conditional sectoral scope(s) linked to the applied methodologies	NA
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	338,959 tCO _{2e}
Certified amount of GHG emission reductions or GHG removals for this monitoring period	191,692 tCO _{2e}
Name and UNFCCC reference number of the DOE	Carbon Check (India) Private Limited; [CDM-E-0052]
Name, position and signature of the approver of the verification and certification report	Amit Anand, CEO 

SECTION A. Executive summary

Introduction:

The Project Participant, Hygiène et Salubrité du Cameroun (HYSACAM), has commissioned the DOE, Carbon Check (India) Private Ltd. (CCIPL) to perform an independent verification of the CDM Project Activity “project “Douala Landfill gas recovery and flaring project” (Registration Ref No. 4175) in Cameroon (hereafter referred to as “Project Activity”). The project activity consists of capturing, flaring and consequently destroying LFG in a highly efficient flaring station, which consist of (1) Cells capping/coverage (2) LFG extraction and collection system (3) LFG flaring and monitoring system. The project contributes to a reduction of global warming as it involves the extraction of landfill gas (LFG) at the Douala landfill site in Cameroun by avoiding the uncontrolled release of LFG in the atmosphere. Landfill gas is a significant source of global warming as it contains a high share of the greenhouse gas methane CH₄.

This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM Modalities & Procedures, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings and resolutions from the verification and a certification statement for the certified emission reductions.

Objective:

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the project activity for the period from 01/06/2015 to 31/12/2017 (including both the days).

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data, and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. CCIPL’s objective is to perform a thorough, independent assessment of the registered project activity.

In particular, the monitoring plan, monitoring report and the project’s compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the component project/s has/have been implemented in accordance with the previously registered/included component project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the registered PDD and the approved monitoring methodology.

Scope:

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered PDD
- To verify the implemented monitoring plan with the registered PDD or approved revised PDD and applied baseline and monitoring methodology.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.

- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The verification comprises a review of the monitoring report over the monitoring period from from 01/06/2015 to 31/12/2017 and based on the approved revised PDD in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

On-site visit and stakeholders’ interviews are also performed as part of the verification process.

The verification team assigned by the DOE concludes that the PDD /B04/ and the Monitoring report /01/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for project activities, version 01.0 /B01-1/.

The project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered PDD /B04/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on site visit the verification team confirms that the project activity has resulted in the 191,692 t CO₂e emission reductions during the second monitoring period.

CC IPL as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

Three (03) Corrective Action Requests (CAR) and Two (02) Clarification Actions (CL) had been raised and satisfactorily closed.

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	IR	Singh	Vikash Kumar	CC IPL	X	X	X	X
2.	Local Expert	EI	MANDENG Theresa Irma	Sabrina	CC IPL	X	X	X	

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	Agarwalla	Sanjay Kumar	CC IPL
2.	Final Approval	IR	Anand	Amit	CC IPL

SECTION C. Application of materiality

The Project is a large-scale CDM project activity achieving total emission reductions of less than 300,000 tons of CO₂e per year; as such, a 2 per cent materiality threshold is applied /B01-1/. Accordingly, the materiality threshold is 3,834 (2 % of average ER estimation of PDD) tons of CO₂e. The materiality thresholds have been calculated in accordance with the § 329 (c) of CDM VVS for project activities, version 01 /B01-1/.

C.1. Consideration of materiality in planning the verification

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.	Human Error: Recording and reporting of the information in the ER spreadsheet.	Medium	ER spreadsheet data as per the registered monitoring plan (data consolidation process as illustrated in Figure 3 of the Monitoring Report)	The risk can be mitigated by the training of the personnel involved in the data capture, calculation and by following the monitoring responsibilities. The competency of the personnel involved were checked by interview and also by reviewing documents/information (mainly the data consolidation process as illustrated in Figure 3 of the Monitoring Report). Verification team based on site interview and review of data consolidation for the monitoring period confirms that the personnel involved in this process is competent.
2.	Information System: Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security	Low	The data is recorded in the DCS in TXT file and then data consolidation process as illustrated in Figure 3 of the Monitoring Report, which involves step 1 to 4.	The identified risk can be mitigated by managing access to the records. It is confirmed that the project has adequate controls related to data changes/updates, version tracking, traceability, security based on interviews and review of data/information flow (from recording) until CER calculation which involves step 1 to 4 as per data consolidation process as illustrated in Figure 3 of the Monitoring Report. The data quality control is maintained by the Executive chief of Doula Landfill or an appointed delegate.
3.	Accuracy of the measuring equipment	Low	Check the calibration records for the measurement equipment for all monitoring parameters.	The risk due to accuracy of the measuring equipment can be ensured by planning to check calibration certificates of the measuring equipments. Verification team during the on site inspections have reviewed the calibration certificates of all the monitoring equipments.

C.2. Consideration of materiality in conducting the verification

In line with Guidelines for Application of materiality in verifications /B03/, a reasonable level of assurance is defined for the verification of the project by complete verification of all the monitoring records (measurement records and the calibration certificates) was done by the verification team and compared with the values indicated in the emission reduction spread-sheet.

Some mistakes were identified and subsequently finding was raised. The identified mistakes as listed in findings in Appendix 4 to this report have been determined to be immaterial. And thus it is confirmed that there are no material errors, omissions or misstatements and a reasonable level of assurance is established.

SECTION D. Means of verification

D.1. Desk/document review

The verification was performed primarily based on the review of the Monitoring report /1/ and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

D.2. On-site inspection

Duration of on-site inspection: 06/06/2018 to 07/06/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	An assessment of the implementation and operation of the registered project activity as per the registered PDD.	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh, MANDENG Theresa Irma Sabrina
2.	A review of information flows for generating, aggregating and reporting the monitoring parameters	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
3.	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
4.	A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
5.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology and corresponding tool(s), where applicable	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
6.	A review of calculations and assumptions made in determining the GHG data and emission reductions	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
7.	An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Douala (the project is located 10 km east of the city centre)	06/06/2018 to 07/06/2018	Vikash Kumar Singh MANDENG Theresa Irma Sabrina

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	CHOUA YANKAM	Armel Géraud	Hygiène et Salubrité du Cameroun (HYSACAM)	06/06/2018 to 07/06/2018	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
2.	Mayr	Sebastian	Aera Group	06/06/2018 to 07/06/2018	Project operation, CER calculation and completeness of monitoring report, Quality Assurance – Management and operating system, compliance of monitoring plan with monitoring methodology and PDD.	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
3.	Dongmo Fokana	Christelle	Hygiène et Salubrité du Cameroun (HYSACAM)	06/06/2018 to 07/06/2018	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
4.	Nkosu	Yannick	Hygiène et Salubrité du Cameroun (HYSACAM)	06/06/2018 to 07/06/2018	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
5.	Bikoe	Bertrand	Hygiène et Salubrité du Cameroun (HYSACAM)	06/06/2018 to 07/06/2018	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh MANDENG Theresa Irma Sabrina
6.	SIPETCHE U	Hervé	Hygiène et Salubrité du Cameroun (HYSACAM)	06/06/2018 to 07/06/2018	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh MANDENG Theresa Irma Sabrina

D.4. Sampling approach

>> N/A

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			
Post-registration changes	--	--	--
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	02	03	--
Compliance of monitoring activities with the registered monitoring plan	--	--	--
Compliance with the calibration frequency requirements for measuring instruments	01	03	--
Assessment of data and calculation of emission reductions or net removals	--	--	--
Assessment of reported sustainable development co-benefits	--	--	--
Global stakeholder consultation	--	--	--
Others (please specify)	--	--	--
Total	02	03	--

SECTION E. Verification findings

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

Means of verification	Document Review, Interview
Findings	--
Conclusion	<p>CCIPL had made the version 1, dated 26/03/2018 of the Monitoring report /01/, covering the monitoring period from 01/06/2015 to 31/12/2017 (both days inclusive) publicly available on 29/03/2018 through its dedicated interface on the UNFCCC website /B05/. The MR /01/ uses the latest form available at UNFCCC website. The MR /01/ is complete and meets all requirements of the Instructions for filling out the monitoring report form version 06.0 /B05/ and CDM project standard version 01.0 /B01/.</p> <p>This confirms compliance with the §355 and §356 of CDM VVS for project activities, version 01.0 /B01-1/.</p>

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

>> N/A

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

Means of verification	Document Review, Interview
Findings	--
Conclusion	<p>As verified during the on site inspection and document review /03/,/B04/, the project activity consists of capturing, flaring and consequently destroying LFG in a highly efficient flaring station, which consist of (1) Cells capping/coverage (2) LFG extraction and collection system (3) LFG flaring and monitoring system.</p> <p>Verification team further confirms existence of an off-grid captive power generator (120 kW) Diesel generator /30/ which is used for back up of electricity needs of the blower, flaring unit, control devices, monitoring installations, etc., in case of grid blackout.</p> <p>As verified, the collection of the LFG takes place with a series of vertical wells which help the collection of the LFG from deep points in the landfill body. These wells /B04/ are drilled and then pipes are installed to the holes; the collected LFG via wells are transferred to the interconnected gas collection network which comprises of primary and secondary gas pipes. The main pipe is connected to the intake pipe of the LFG blower that creates a pressure gradient in the piping system necessary for the extraction of the LFG. A cleaning system extracts the humidity</p>

from the collected LFG.

The verified LFG flaring system /03/ comprises of an enclosed high temperature flare operated by an electrical control system and equipped with a monitoring system for methane, oxygen, gas flow, pressure and temperature.

The gas flaring station /03/ is divided into three separate components:

- A blower
- A high-temperature flare system able to burn LFG at very low flow and methane contents
- Electrical control switchboard and gas analysis system equipped with a control panel.

The verified /03/ flare specifications is provided below:

Technology provider:	France Biogaz Environnement
Type	Enclosed; 1600 CiCH
Power	1,600 kW – 8000 kW
Capacity / flow level	300 - 1600 Nm ³ /h LFG
Operation temperature:	500 - 1,200°C
Dimensions	Height: 7m, Diameter: 1.6m

The landfill site was opened in 2003 and project construction began in January 2013. The LFG flaring system and its monitoring have been in operation since its start-up on 13/05/2014.

During the reported monitoring period, the project has flared supplied 22,956,827 NM³ /04/ of landfill gas and the same has been monitored by calibrated flow meters /07/. The average methane /08/, /09/ content in LFG is reported as 48.1 %.

The project has been implemented as described in the registered PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification. The verification team took cognizance of §341 (b)(i), §357, §358 and §359 of CDM VVS for project activities, version 01 /B01-1/.

- The implementation status and equipment installation of the Project are consistent with the approved revised PDD;
- The actual operation of the Project is as per the approved revised PDD;
- Information (data and variables) provided in the monitoring report is in accordance with that stated in the approved revised PDD.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines

>> N/A

E.4.2. Corrections

>> N/A

E.4.3. Change to the start date of the crediting period of the project activity

>> N/A

E.4.4. Inclusion of a monitoring plan

>> N/A

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

>> N/A

E.4.6. Changes to the project design

>> N/A

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

>> N/A

E.5. Compliance of the registered monitoring plan with the methodology including applicable tools and standardized baselines

Means of verification	Document Review, Interview
Findings	CL-01, CL-02, CAR-01, CAR-02 and CAR-03 ha been raised and resolved.
Conclusion	<p>The verification team has checked the actual monitoring plan against the latest approved monitoring plan and monitoring methodology and applicable tools. Furthermore, the verification team has checked monitoring system during the onsite inspection by means of comparison with the information given in the monitoring plan and monitoring methodology. The monitoring plan is completely in accordance with the approved methodology applied by the approved revised PDD.</p> <p>All the parameters need to be monitored and corresponding monitoring approach have been discussed in the monitoring plan in the registered PDD and QA/QC procedure has been stipulated.</p> <p>The verification team confirms that the monitoring plan complies with the applied methodology and the monitoring system and all applied procedures are completely in compliance to the latest approved monitoring plan and the methodology ACM0001 version 11.0 /B02/.</p> <p>The verification team took cognizance of §360, §361 and §362 of CDM VVS for project activities, version 01 /B01-1/.</p>

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	Document Review, Interview
Findings	--
Conclusion	<p>All the data and parameters (except $EF_{EL,y}$, Regulatory requirements relating to landfill gas & GWP_{CH_4}) fixed ex-ante is for the ex-ante estimation of emission reduction from the project and verification team confirms it correct. The emission factor of grid $EF_{EL,y}$, & GWP_{CH_4} have been reported as 1.3 tCO₂e/MWh and 25 respectively which is correct as per ex-ante value in the approved revised PDD /B04/. The verification team confirms that the MR and the ER calculation spreadsheet have considered the parameters fixed ex-ante correctly, no deviations have been observed.</p> <p>The verification team took cognizance of §363 of CDM VVS for project activities,</p>

version 01 /B01-1/

E.6.2. Data and parameters monitored

Means of verification	Document Review, Interview
Findings	--.
Conclusion	<p>All relevant monitoring parameters (as listed in section B. 7.1 of the PDD and D.2 of the MR) have been verified with regard to the appropriateness of the applied measurement / determination method, frequency, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures (refer appendix 5 for the verified calibration details). Referring to §367 of CDM VVS for project activities, version 01 /B01-1/, the verification team has reviewed all the monitoring parameters as listed below (ID.0 – ID.9) and verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the values in the monitoring report.</p> <ol style="list-style-type: none"> 1. ID.0 / $LFG_{flare,y}$- Amount of landfill gas flared at Normal Temperature and Pressure in year y 2. ID.1 / w_{CH_4}- Methane fraction in the landfill gas 3. ID.2 / T - Temperature of the landfill gas 4. ID.3 / $FV_{RG,h}$- Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h 5. ID.4 / P - Pressure of the landfill gas 6. ID.5 / T_{flare}- Temperature in the exhaust gas of the flare 7. ID.6 / $f_{V_{CH_4,FG,h}}$- Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h. 8. ID.7 / $t_{O_2,h}$- Volumetric fraction of O_2 in the exhaust gas of the flare in the hour h 9. ID.8 / $EC_{PJ,grid,y}$ - Quantity of electricity consumed from the grid by the project activity during the year y 10. ID.9 / $EC_{PJ,diesel,y}$ - Quantity of electricity produced in the diesel generator by the project activity during the year y 11. ID.10 / TDL_y- Average technical transmission and distribution losses for providing electricity <p>The assessment in this regard is provided below:</p> <p>For monitoring parameter (ID.0 – ID.7), the verification team, during the on-site inspection, noted that the overall data collection procedure consists of 4 main steps. Step 1 represents the initial (raw) data generation through monitoring instruments and its logging in the central control unit. All data is processed electronically and all measurements of gas flow, pressure, temperature, and gas concentration from monitoring points 1 (landfill gas) and 2 (exhaust gas) are transmitted via analog signals (in mA) to the central control unit. Average minutely values are calculated and recorded, based on the data streams received from both gas analyzers and other measurement instruments. The DCS can store recorded data of the last 17 hours. The DCS collects and transmits all raw data to the computer where the data is stored in a database. The user can access this data with the CLIPTOOL program. This program allows the creation of TXT files with all minutely data recorded. It creates a TXT file once a day. Verification team has reviewed the TXT files /04-1/, /08-1/, /10-1/, /12-1/, 14-1/, /16-1/, 18-1/, /20-1/ during</p>

the on-site inspection for all the monitoring parameters. Step 2 represents the data transfer to low-level .xls files. The verification team has reviewed the .xls files of minutely data /04-2/, /08-2/, /10-2/, /12-2/, 14-2/, /16-2/, 18-2/, /20-2/ during the on-site inspection for all the monitoring parameters. In this step the minutely recorded data of the day in the TXT file is transferred manually to the .xls files by using a precise procedure. Step 3 represents the data aggregation in the low-level .xls files. Cliptool program converts the flow to normal flow directly. The concentration, temperature and pressure are averaged. The parameter of flare temperature is treated as number of occurrences $\geq 500^{\circ}\text{C}$. Verification team has reviewed the low level .xls file for hourly data /04-3/, /08-3/, /10-3/, /12-3/, 14-3/, /16-3/, 18-3/, /20-3/ during the on-site inspection for all the monitoring parameters. Step 4 represents the data calculation (and further aggregation) in the high-level file in .xls (workbook). The workbook shows all relevant calculation steps required by the methodology and flaring tool¹ in order to further process and finally calculate the emission reductions. The results are aggregated over the complete monitoring period.

The verification team based on the on-site inspection interviews noted that the controllers are responsible for keeping all monitoring data electronically and in an external storage device (CD ROM). Records of all monitored parameters are stored at least 2 years after last issuance. Data storage relevant for the monitoring parameters ID.0 – ID.7 are handled as follows:

- TXT files are generated and saved daily. Every day it is checked if the data from the day before was saved successfully in a TXT file.
- Low level files are generated and saved daily on the PC unit. Each low level file consists of an appropriate number of days.
- The high-level workbook file is updated and saved daily on the PC unit (meaning the overall corresponding emission reductions are automatically updated on a daily basis).
- All data for ID.0 – ID.7 is stored automatically on the PC unit and manually once a month to a CD-ROM as back-up. The CD-ROM includes all new TXT files, low-level files as well as the latest workbook file of the month.

Data from ID.8 and ID.9 (electricity consumption) is recorded manually once per day. The records were checked /22/, /24/ during the on-site inspection and found it to be correct as reported in the emission reduction sheet /02/.

ID.10 / TDL_y is a default parameter based on 'Tool to calculate the emission factor for an electricity system', EB 50, Version 2.

The QA/QC procedure for all the monitoring are in place as per the registered monitoring plan. The personnel involved in the monitoring and operation project were interviewed during the on site inspection and they are found as competent to perform their roles & responsibility and also to ensure QA/QC procedures. The verification team has checked the relevant monitoring equipment to verify the fulfilment of the calibration requirements, especially if calibration frequency and accuracy levels are in line with the requirements of the revised PDD and/or the applicable calibration standards. During this monitoring period, the installed measuring instruments have been operating correctly and were duly maintained/calibrated (for monitoring parameter ID.0 – ID.7) by a third party /06/ who is authorised/accredited /05/ to perform the same. The electricity meters (ID.8 & ID.9) were not calibrated during the reported monitoring period as it is confirmed by the manufacturer of the meter that their calibration remain valid /23/, /25/ beyond the reported monitoring period (refer appendix 5 of this report for the verified calibration details). As assessed above, verification team has checked the information flow (from data generation, aggregation, to recording, calculation and reporting) for all the monitoring parameters. Furthermore verification team based on the assessment above, appendix 5 of this report and in section E.7 and E.8

¹ "Tool to determine project emissions from flaring gases containing methane"

	<p>confirms the following for each of the monitoring parameter:</p> <ul style="list-style-type: none"> ✓ the appropriateness of the applied measurement / determination method, frequency as per the monitoring plan of approved revised PDD. ✓ the accuracy of monitoring equipment including the applied QA/QC measures and calibration at specified frequency as per the monitoring plan of approved revised PDD ✓ the correctness of the values applied for ER calculation. <p>The verification team took cognizance of §363, §364 and 367 of CDM VVS for project activities, version 01 /B01-1/.</p> <p>The monitoring has been carried out in accordance with the monitoring plan in the registered PDD.</p> <p>All parameters required by the monitoring plan have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.</p>
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E.6.3. Implementation of sampling plan

Means of verification	N/A
Findings	N/A
Conclusion	The PDD does not have any provision of sampling.

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

Means of verification	Document Review, Interview
Findings	CL-02, CAR-01, CAR-02 and CAR-03 had been raised and resolved.
Conclusion	<p>The verification team has checked the relevant monitoring equipment to verify the fulfilment of the calibration requirements, especially if calibration frequency and accuracy levels are in line with the requirements of the revised PDD and/or the applicable calibration standards. During this monitoring period, the installed measuring instruments have been operating correctly and were duly maintained/calibrated by a third party /06/ who is authorised/accredited /05/ to perform the same. The electricity meters were not calibrated during the reported monitoring period as it is confirmed by the manufacturer of the meter that their calibration remain valid /23/, /25/ beyond the reported monitoring period (refer appendix 4 for the verified calibration details).</p> <p>Verification team confirms that the accuracy of monitoring equipment is assured. The verification team took cognizance of §368 of CDM VVS for project activities, version 01 /B01-1/.</p>

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	Document Review, Interview
Findings	CL-01 had been raised and satisfactorily closed.
Conclusion	<p>The verification team has performed the following activities to assess the data and calculations of GHG emission reductions achieved by the Project as per the methodology ACM0001 version 11.0 /B02/:</p> <ul style="list-style-type: none"> • Verification team based on desk review and on-site inspection confirms that a complete set of data for the specified monitoring period is available. • Review of the calculations of baseline GHG emissions have been carried out in accordance with the formula and methods described in the monitoring plan in

the approved revised PDD and applied methodology.

- Crosscheck of the calculated emission reductions with the provisions as per the Monitoring Plan with the actual practice during the monitoring period.
- Review of the emission factor of the grid (EF_y) and other reference values as per the registered PDD /B04/.

Verification team using the concept of materiality, as discussed in section C.1, has prepared a verification plan for verification of monitored data for all the parameters (except electricity data; grid and DG) during the reported monitoring period. Based on this verification plan, the team reviewed and reproduced sample sheets (from step 1 to 4 as discussed above) /04/, /08/, /10/, /12/, 14/, /16/, 18/, /20/ and found that there are no material errors, omissions or misstatements and a reasonable level of assurance is established.

Verification team also verified that PP maintains a logbook; where they record observations or any other information which is necessary to document. In opinion of verification team, the approach can be used to identify the anomalies or periods with abnormal operating conditions can be identified and explained. All events relevant for ER calculations are transferred to the workbook /02/ which is transparent approach and thus the verification team found it to be appropriate.

The verified /02/ values of BE are shown in the following table:

Monitoring period	LFG _{flare,month}	W _{CH4}	MD _{project,month}	BE _{MD} – methane destroyed	Total BE
	(m ³)	(%)	(tCH ₄)	(tCO _{2e})	(tCO _{2e})
June-15	568,547	52.6%	213.5	5,337	5,337
July-15	593,525	51.1%	216.3	5,408	5,408
August-15	627,580	53.7%	240.7	6,018	6,018
September-15	623,213	51.4%	214.4	5,359	5,359
October-15	686,430	51.3%	251.9	6,298	6,298
November-15	618,867	49.2%	215.2	5,380	5,380
December-15	657,478	50.6%	237.2	5,929	5,929
January-16	667,780	52.5%	250.4	6,260	6,260
February-16	742,169	47.7%	253.0	6,324	6,324
March-16	819,347	45.9%	264.4	6,609	6,609
April-16	778,115	48.2%	261.3	6,532	6,532
May-16	738,874	49.6%	261.3	6,532	6,532
June-16	795,735	44.4%	251.3	6,283	6,283
July-16	813,066	44.9%	260.2	6,505	6,505
August-16	761,696	45.4%	246.7	6,167	6,167
September-16	705,930	49.4%	248.7	6,218	6,218
October-16	833,964	46.7%	277.2	6,930	6,930
November-16	846,396	50.1%	302.8	7,571	7,571
December-16	905,285	49.9%	323.0	8,076	8,076
January-17	863,895	50.6%	312.5	7,812	7,812
February-17	740,219	52.9%	279.6	6,989	6,989
March-17	873,926	53.6%	330.4	8,259	8,259
April-17	823,870	55.5%	327.1	8,177	8,177
May-17	807,060	53.7%	309.5	7,736	7,736
June-17	674,245	56.2%	267.8	6,695	6,695
July-17	772,123	38.9%	211.8	5,295	5,295
August-17	552,274	44.4%	136.5	3,412	3,412
September-17	510,921	41.7%	104.7	2,618	2,618

October-17	878,400	39.1%	233.3	5,833	5,833
November-17	764,297	43.5%	214.8	5,371	5,371
December-17	911,601	25.0%	154.4	3,859	3,859
Total	22,956,828	48.1%	7.672	191,791	191,791

The verification took cognizance of § 375 of CDM VVS for project activities, version 01.0) /B01-1/ and confirms that:

- A complete set of data for the monitoring period is available.
- Information on the baseline GHG emission calculation provided in the monitoring report has been cross-checked with other sources /04/, /08/, /10/, /12/, 14/, /16/, 18/, /20/ as referred above in the assessment.
- Calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology.
- Appropriate emission factor values have been correctly applied
- No errors, miscalculations, omissions, misstatements or incomplete information has been identified.

Please also refer to the assessment in section E.6.2 of this report.

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

Means of verification	Document Review, Interview																																																																																																												
Findings	--																																																																																																												
Conclusion	The verified /02/ project emissions from the project is tabularised below:																																																																																																												
	<table border="1"> <thead> <tr> <th>Monitoring Period</th> <th>EC_{PJ,grid,y} (MWh)</th> <th>EC_{PJ,diesel,y} (MWh)</th> <th>PE (tCO₂)</th> </tr> </thead> <tbody> <tr><td>June-15</td><td>1.82</td><td>0.02</td><td>2.9</td></tr> <tr><td>July-15</td><td>2.14</td><td>0.01</td><td>3.4</td></tr> <tr><td>August-15</td><td>1.94</td><td>0.01</td><td>3.0</td></tr> <tr><td>September-15</td><td>2.11</td><td>0.03</td><td>3.3</td></tr> <tr><td>October-15</td><td>2.15</td><td>0.02</td><td>3.4</td></tr> <tr><td>November-15</td><td>2.20</td><td>0.02</td><td>3.5</td></tr> <tr><td>December-15</td><td>2.15</td><td>0.05</td><td>3.4</td></tr> <tr><td>January-16</td><td>2.25</td><td>0.01</td><td>3.5</td></tr> <tr><td>February-16</td><td>2.28</td><td>0.03</td><td>3.6</td></tr> <tr><td>March-16</td><td>2.13</td><td>0.02</td><td>3.4</td></tr> <tr><td>April-16</td><td>2.27</td><td>0.02</td><td>3.6</td></tr> <tr><td>May-16</td><td>2.09</td><td>0.04</td><td>3.3</td></tr> <tr><td>June-16</td><td>1.47</td><td>0.12</td><td>2.5</td></tr> <tr><td>July-16</td><td>1.83</td><td>0.01</td><td>2.9</td></tr> <tr><td>August-16</td><td>1.86</td><td>0.03</td><td>2.9</td></tr> <tr><td>September-16</td><td>1.53</td><td>0.05</td><td>2.5</td></tr> <tr><td>October-16</td><td>1.69</td><td>0.24</td><td>3.0</td></tr> <tr><td>November-16</td><td>1.93</td><td>0.03</td><td>3.0</td></tr> <tr><td>December-16</td><td>2.38</td><td>0.02</td><td>3.8</td></tr> <tr><td>January-17</td><td>2.37</td><td>0.04</td><td>3.8</td></tr> <tr><td>February-17</td><td>1.74</td><td>0.05</td><td>2.8</td></tr> <tr><td>March-17</td><td>2.25</td><td>0.03</td><td>3.6</td></tr> <tr><td>April-17</td><td>1.78</td><td>0.10</td><td>2.9</td></tr> <tr><td>May-17</td><td>2.20</td><td>0.01</td><td>3.4</td></tr> <tr><td>June-17</td><td>2.13</td><td>0.04</td><td>3.4</td></tr> <tr><td>July-17</td><td>2.98</td><td>0.03</td><td>4.7</td></tr> </tbody> </table>	Monitoring Period	EC_{PJ,grid,y} (MWh)	EC_{PJ,diesel,y} (MWh)	PE (tCO₂)	June-15	1.82	0.02	2.9	July-15	2.14	0.01	3.4	August-15	1.94	0.01	3.0	September-15	2.11	0.03	3.3	October-15	2.15	0.02	3.4	November-15	2.20	0.02	3.5	December-15	2.15	0.05	3.4	January-16	2.25	0.01	3.5	February-16	2.28	0.03	3.6	March-16	2.13	0.02	3.4	April-16	2.27	0.02	3.6	May-16	2.09	0.04	3.3	June-16	1.47	0.12	2.5	July-16	1.83	0.01	2.9	August-16	1.86	0.03	2.9	September-16	1.53	0.05	2.5	October-16	1.69	0.24	3.0	November-16	1.93	0.03	3.0	December-16	2.38	0.02	3.8	January-17	2.37	0.04	3.8	February-17	1.74	0.05	2.8	March-17	2.25	0.03	3.6	April-17	1.78	0.10	2.9	May-17	2.20	0.01	3.4	June-17	2.13	0.04	3.4	July-17	2.98	0.03	4.7
Monitoring Period	EC_{PJ,grid,y} (MWh)	EC_{PJ,diesel,y} (MWh)	PE (tCO₂)																																																																																																										
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August-17	2.10	0.03	3.3
September-17	2.24	0.07	3.6
October-17	1.19	0.12	2.0
November-17	1.24	0.01	2.0
December-17	1.88	0.03	3.0
Total	62.3	1.3	99.3

This is in accordance with ACM0001 version 11.0 /B02/, approved revised PDD /B04/.

The verification took cognizance of § 375 of CDM VVS for project activities, version 01.0) /3/.

E.8.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Interview
Findings	--
Conclusion	The leakage from the project is zero, thus is in accordance with ACM0001 version 11.0 /B02/, registered PDD /B04/.

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

Means of verification	Document Review, Interview
Findings	--
Conclusion	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately:</p> <ol style="list-style-type: none"> Total baseline emissions, Total Project emissions Total emission reductions. <p>The emission reductions during the monitoring period 01/06/2015 to 31/12/2017 are calculated as:</p> $ER_y = BE_y - PE_y - LE_y = 191,971.6 - 99.33 - 0 = 191,692 \text{ tCO}_2\text{e.}$ <p>According to § 375 of CDM VVS for project activities, version 01.0 the verification team confirms that:</p> <ul style="list-style-type: none"> A complete set of data for the monitoring period is available. Information provided in the monitoring report has been cross-checked with other sources, electricity sales receipts; Calculations of baseline emissions and emission reduction has been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology. Appropriate/correct emission factor value has been applied

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

Means of verification	Document Review, Interview
Findings	--
Conclusion	The comparison of actual GHG emission reductions with estimates in registered

	<p>PDD /B04/ has been checked by the verification team. Based on the above assessment, the emission reduction during the monitoring period 01/06/2015 to 31/12/2017 is verified as 191,692 tCO_{2e}. Verification team noted that the verified emission reductions are less than the estimated value in the monitoring period.</p> <p>According to § 375 of CDM VVS for project activities, version 01.0 the verification team confirms that:</p> <p>A comparison of actual GHG emission reductions or net anthropogenic GHG removal of the project activity achieved during this monitoring period with the estimates in the registered PDD has been provided.</p> <p>The verification team considers the calculation of the comparison is correct.</p>
--	--

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

Means of verification	Document Review, Interview
Findings	--
Conclusion	Not applicable since the actual GHG emission reductions are lower than the estimates in the registered PDD

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	Document Review, Interview
Findings	--
Conclusion	<p>The verification team has checked section E.4 of the MR and the ER calculation spreadsheet. The MR in section E.4 includes a summary table of the ER breakdown which states that the GHG emission reductions have completely been generated from 1 January 2013 onwards. Actual GHG emission reductions have been generated from 1 January 2013 onwards.</p> <p>CERs achieved upto 31st Dec 2012 = 0 tCO_{2e}. CERs achieved from 1st Jan 2013 = 191,692 tCO_{2e}</p>

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

Means of verification	Not applicable
Findings	
Conclusion	Not applicable

E.10. Global stakeholder consultation

Means of verification	Not applicable (this is not first MP)
Findings	
Conclusion	Not applicable (this is not first MP)

SECTION F. Internal quality control

The verification report passed a technical review before being submitted to the UNFCCC Executive Board. The technical review is performed by a technical reviewer qualified in accordance with CCIPL's qualification scheme for CDM validation and verification.

SECTION G. Verification opinion

Carbon Check (India) Private Ltd. (CCIPL) has performed the 2nd periodic verification of the registered CDM Project Activity "Douala Landfill gas recovery and flaring project" having UNFCCC reference number as 4175. The project activity consists of capturing, flaring and consequently destroying LFG in a highly efficient flaring station, which consist of (1) Cells capping/coverage (2) LFG extraction and collection system (3) LFG flaring

and monitoring system. The project contributes to a reduction of global warming as it involves the extraction of landfill gas (LFG) at the Douala landfill site in Cameroun by avoiding the uncontrolled release of LFG in the atmosphere. Landfill gas is a significant source of global warming as it contains a high share of the greenhouse gas methane CH₄.

The verification team assigned by the DOE concludes that the project activity as described in the registered PDD /B04/ and the Monitoring report /01/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM Modalities & Procedures, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS requirements for project activities, version 01.0 /B01-1/.

Verification methodology and process

The Verification team confirms the contractual relationship signed on 08/01/2018 between the DOE, Carbon Check (India) Private Ltd. and the Project Participant, (HYSACAM). The team assigned to the verification meets the CCIPL’s internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CCIPL’s procedures and requirements.

The verification has been performed as per the requirements described in the CDM VVS for project activities, version 01.0 and constitutes the review and completion of the following steps:

- Reviewing the approved revised PDD /B04/ including the monitoring plan and the corresponding validation report /B04/;
- Publication of the MR (version 1, 26/03/2018) /1/ on the UNFCCC website on 29/03/2018
- Desk review of the validation report, MR and other relevant documents including documents related to the projects activities in emission reductions
- Review of the applied monitoring methodology (ACM0001 version 11.0) /B02/;
- Review of any CMP and EB decisions, clarifications and guidance /B05/;
- On-site assessment (06/06/2018-07/06/2018)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered PDD. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on-site visit, the verification team confirms that the project activity has resulted in the 191,692 tCO₂e emission reductions during the second monitoring period.

The break-up of emission reduction up-to 31/12/2012 and 01/01/2013 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
Emission reductions (t CO₂e)	0	191,692

CC IPL as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

SECTION H. Certification statement

Carbon Check (India) Private Ltd., the DOE, has performed the verification of the registered project activity “Douala Landfill gas recovery and flaring project” having UNFCCC reference number as 4175.

The PP is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions. It is DOE’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. The DOE does not express any opinion on the selected baseline scenario or on the validated and registered PDD. The verification is carried out in-line with the requirements of CDM VVS for project activities, version 01.0 /B01-1/.

The verification was performed to identify the compliance with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information

on-site that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

The verification is based on:

- ✓ Approved revised PDD version 1.7 dated 08/09/2016 and the corresponding validation report /B04/;
- ✓ Approved monitoring methodology ACM0001 “Consolidated baseline and monitoring methodology for landfill gas project activities”, version 11.0;
- ✓ Monitoring reports versions 1, dated 26/03/2018 and version 1.1, dated 21/06/2018.

This statement covers verification period from 01/06/2015 to 31/12/2017 (including both the dates).

The DOE has raised 02 clarifications and 03 corrective action request and satisfactorily closed.

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the monitoring plan contained in the registered PDD are fairly stated.


The DOE, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 191,692tCO₂ equivalent and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records. The break-up of emission reduction up-to 31/12/2012 and 01/01/2013 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
Emission reductions (t CO₂e)	0	191,692

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective action request
CC IPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide Equivalent
DNA	Designated National Authority
ER	Emission Reduction
HYSACAM	Hygiène et Salubrité du Cameroun
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MoV	Means of verification
MP	Monitoring Plan
MR	Monitoring Report
LFG	Land Fill gas
PDD	Project Design Document
PP	Project Participant
UNFCCC	United Nations Framework Convention for Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Ltd.

Vikash Kumar Singh

has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

Validator	<input checked="" type="checkbox"/>	Team Leader	<input checked="" type="checkbox"/>	Technical reviewer	<input checked="" type="checkbox"/>
Verifier	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>	Local Expert ¹	<input checked="" type="checkbox"/>

In the following Technical Areas:

TA 1.1	<input type="checkbox"/>	TA 3.1	<input checked="" type="checkbox"/>	TA 5.2	<input type="checkbox"/>	TA 9.2	<input type="checkbox"/>	TA 13.2	<input checked="" type="checkbox"/>
TA 1.2	<input checked="" type="checkbox"/>	TA 4.1	<input checked="" type="checkbox"/>	TA 8.1	<input type="checkbox"/>	TA 10.1	<input type="checkbox"/>	TA 14.1	<input type="checkbox"/>
TA 2.1	<input type="checkbox"/>	TA 5.1	<input type="checkbox"/>	TA 9.1	<input type="checkbox"/>	TA 13.1	<input checked="" type="checkbox"/>		

— Amit

Mr. Amit Anand
CEO

Date of Approval 24/12/2017	Valid Till 23/12/2018
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Revision History of the Document

26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2017	Annual Revision
24/12/2017	Annual Revision

¹India, South Africa

CARBON CHECK (INDIA) PRIVATE LIMITED
Registered in India: U74930DL2012PTC232495
Regd. Off: 2071/38, 2nd Floor, Naiwala, Karol Bagh, New Delhi - 110005
Corporate off: G 49 & 50, 3rd Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301
Tel: +91 120 4373114 | URL: www.carboncheck.co.in
e-mail: info@carboncheck.co.in



Carbon Check (India) Private Ltd.

Sanjay Agarwalla

has been qualified as per CCIPL’s internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

Validator Team Leader Technical reviewer
 Verifier Technical Expert Local Expert¹

In the following Technical Areas:

TA 1.1 TA 3.1 TA 5.2 TA 9.2 TA 13.2
 TA 1.2 TA 4.1 TA 8.1 TA 10.1 TA 14.1
 TA 2.1 TA 5.1 TA 9.1 TA 13.1

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

Date of Approval
24/12/2017

Valid Till
23/12/2018

Revision History of the Document

26/12/2014	Initial Adoption
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¹India

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 Corporate off: G 49 & 50, 3rd Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301
 Tel: +91 120 4373114 | URL: www.carboncheck.co.in
 e-mail: info@carboncheck.co.in

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/01/	PP	a) Monitoring Report b) Monitoring Report	Version 1, dated 26/03/2018 Version 1.1, dated 21/06/2018	Project Participant
/02/	PP	a) Emission reduction calculation sheet corresponding to /01-a/ b) Emission reduction calculation sheet corresponding to /01-b/	-- --	Project Participant
/03/	PP	Evidence for the technical specifications of the flaring unit	--	Project Participant
/04/	PP	Data source of the parameter "Amount of landfill gas flared at Normal Temperature and Pressure in year y": 1. Low level .txt file- Minutely raw data. 2. Low level file in .xls- minutely raw data 3. Low level file in .xls- hourly raw data 4. 4. High level work book	--	Project Participant
/05/	FUJI electric	Accreditation by FUJI electric to France Biogaz Environment for the calibration of their monitoring equipments.	26/01/2010	Project Participant
/06/	France Biogaz Environment & HYSACAM	Yearly contract between France Biogaz Environment & HYSACAM for the annual maintenance and calibration of the monitoring equipment.	27/04/2015, 24/02/2016, 28/04/2017	Project Participant
/07/	FUJI electric & France Biogaz Environment	Specification of pitot flow meter and calibration: 1. Manufacturer specification for the technical specification 2. Calibration certificates 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017.	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017.	Project Participant
/08/	PP	Data source of the parameter "Methane fraction in the landfill gas" 1. Low level .txt file- Minutely raw data. 2. Low level file in .xls- minutely raw data 3. Low level file in .xls- hourly raw data 4. High level work book .	--	Project Participant
/09/	FUJI electric & France Biogaz Environment	Specification of gas analyzer including the traceability of standard gas used for the calibration: 1. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017. 2. Calibration certificate of the standard gas (s.no. 7193) used for the calibration dated	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017 19/12/2011	Project Participant

		19/12/2011 3. Manufacturer specification for the technical specification		
/10/	PP	Data source of the parameter "Temperature of the landfill gas" 1. Low level .txt file- Minutely raw data. 2. Low level file in .xls- minutely raw data 3. Low level file in .xls- hourly raw data 4. High level work book .	--	Project Participant
/11/	FUJI electric & France Biogaz Environment	Evidence of specification and calibration of thermoresistance: 1. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017. 2. Manufacturer specification for the technical specification	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017	Project Participant
/12/	PP	Data source of the parameter "Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h" 1. Low level .txt file- Minutely raw data. 2. Low level file in .xls- minutely raw data 3. Low level file in .xls- hourly raw data 4. High level work book	--	Project Participant
/13/	FUJI electric & France Biogaz Environment	Specification of turbine pitot flow meter and evidence of calibration: 1. Manufacturer specification for the technical specification 2. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017.	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017	Project Participant
/14/	PP	Data source of the parameter "Pressure of the landfill gas" 1. Low level .txt file- Minutely raw data. 2. Low level file in .xls- minutely raw data 3. Low level file in .xls- hourly raw data 4. High level work book .	--	Project Participant
/15/	FUJI electric & France Biogaz Environment	Specification and evidence of calibration of "pressure meter" 1. Manufacturer specification for the technical specification 2. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017.	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017	Project Participant
/16/	PP	Data source of the parameter "Temperature in the exhaust gas of the flare" 1. Low level .txt file- Minutely raw data.	--	Project Participant

		<p>2. Low level file in .xls- minutely raw data</p> <p>3. Low level file in .xls- hourly raw data</p> <p>4. High level work book .</p>		
/17/	FUJI electric & France Biogaz Environment	<p>Specification and calibration of Thermocouple :</p> <p>1. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017.</p> <p>2. Replacement certificate by France Biogaz Environment dated 02/06/2015 (new meter S. No. FBEDA3150624 with old meter FBEDA3140513)</p> <p>3. Replacement certificate by France Biogaz Environment dated 15/04/2016 (new meter FBEDA3160415 with old meter FBEDA3150624)</p> <p>4. Replacement certificate by France Biogaz Environment dated 12/04/2017 (new meter S. no FBETB027401 with old meter FBEDA3160415).</p> <p>5. Manufacturer specification for the technical specification</p>	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017	Project Participant
/18/	PP	<p>Data source of the parameter "Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h."</p> <p>1. Low level .txt file- Minutely raw data.</p> <p>2. Low level file in .xls- minutely raw data</p> <p>3. Low level file in .xls- hourly raw data</p> <p>4. High level work book .</p>	--	Project Participant
/19/	FUJI electric & France Biogaz Environment	<p>Specification and evidence of calibration of Gas analyzer including the traceability of standard gas used for the calibration of the exhaust gas of the flare</p> <p>1. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017.</p> <p>2. Manufacturer specification for the technical specification</p>	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017	Project Participant
/20/	PP	<p>Data source of the parameter "Volumetric fraction of O2 in the exhaust gas of the flare in the hour h"</p> <p>1. Low level .txt file- Minutely raw data.</p> <p>2. Low level file in .xls- minutely raw data</p> <p>3. Low level file in .xls- hourly raw data</p> <p>4. High level work book .</p>	--	Project Participant
/21/	FUJI electric & France	<p>Specification and evidence calibration of Gas analyzer including the traceability of standard gas used for</p>	13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017	Project Participant

	Biogaz Environmen t	the calibration 1. Calibration Certificates dated 13/05/2014, 02/06/2015, 15/04/2016 and 12/04/2017. 2. Manufacturer specification for the technical specification		
/22/	PP	Data source of the parameter "Quantity of electricity consumed from the grid by the project activity during the year y" 1. Sample hard copy of register (log book) of daily/weekly monitoring. 2. Spread sheet – data is being transferred from log book on daily basis and monthly in ER work sheet.	--	Project Participant
/23/	Enerdis	Specification and evidence of and calibration of electricity meter used to measure grid electricity <i>1. Installation certificate by Phenix dated 13/05/2014 for meter S. No. AB4N400034 2. Confirmity Certificate from Enerdis dated 19/06/2014.</i>	13/05/2014, 19/06/2014	Project Participant
/24/	PP	Data source of the parameter "Quantity of electricity produced in the diesel generator by the project activity during the year y" 1. Sample hard copy of register (log book) of daily/weekly monitoring. 2. Spread sheet – data is being transferred from log book on daily basis and monthly in ER work sheet. 3. Register (monthly) of diesel purchase.	--	Project Participant
/25/	Enerdis	Specification and evidence calibration of electricity meter used to measure diesel generation <i>1. Installation certificate by Phenix dated 26/05/2015 for meter S. No. AB40800192 2. Confirmity Certificate from Enerdis dated 19/09/2014</i>	26/05/2015, 19/09/2014	Project Participant
/26/	PP	Landfill site Layout drawing	--	Project Participant
/27/	Presidency in charge of defense, centrale de Douala	Statutory clearances as applicable to operate. 1. Letter from Presidency in charge of defense to CUD-28Nov2008 2. Certificate de mise en service de la centrale de Douala	28/11/2008	Project Participant
/28/	PP	Proof of training and competency of the project operators.		Project Participant
/29/	BVC	ISO 9001 certificate validity till 14/11/2017		Project Participant
/30/	CCIPL	Photograph of the project monitoring equipments and plant records.	--	CCIPL
/31/	HYSACAM	Legal Register of HYSACAM	--	Project Participant
/32/	HYSACAM & CCIPL	Verification Contract between HYSACAM & CCIPL	08/01/2018	CCIPL

/B01/	UNFCCC	1. CDM Validation and Verification Standard version for project activities 01.0 2. CDM Project Standard version 01.0	https://cdm.unfccc.int/	UNFCCC website
/B02/	UNFCCC	ACM0001 ver. 11 - Consolidated baseline and monitoring methodology for landfill gas project activities	https://cdm.unfccc.int/	UNFCCC website
/B03/	UNFCCC	Guideline: Application of materiality in verifications version 02.0	https://cdm.unfccc.int/	UNFCCC website
/B04/	UNFCCC	Monitoring report and Verification report of the 1 st Monitoring period from 30/06/2013 to 31/05/2015 Approved revised PDD version 1.7 dated 08/09/2016 and the corresponding validation opinion Validation Report at the time of registration	https://cdm.unfccc.int/	UNFCCC website
/B05/	UNFCCC	Attachment. Instructions for filling out the monitoring report form version 06.0	https://cdm.unfccc.int/	UNFCCC website

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

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

FAR ID	xx	Section no.	E.2	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
-				

Table 2. CL from this verification

CL ID	01	Section no.	E.5	Date: 09/06/2018
Description of CL				
Review of section C of the monitoring report reveals the following statement :				
“In addition, monthly invoices for power delivered by the grid to the plant and diesel purchased are received and can be used as cross-check.”.				
PP is requested to clarify the above, while doing so please note that the actual practice at the site does not require this comparison since invoices for purchase of electricity can be different from the consumption at plant as clarified by the representative of HYSACAM.				
Project participant response				Date: 19/06/2018
<i>As per observation above, the statement is not necessary. Therefore, it has been deleted in the MR.</i>				
Documentation provided by project participant				

<i>Revised Monitoring Report, version 01.1</i>	
DOE assessment	Date: 02/07/2018
The irrelevant information has been removed from the revised Monitoring report; checked and confirmed by the verification team. CL is closed.	

CL ID	02	Section no.	E.5	Date: 09/06/2018
Description of CL				
During the document review, verification team noted that there is no calibration frequency for any of the monitoring parameter in the registered PDD. Also, the accuracy class of monitoring equipment as indicated in the PDD and Monitoring Report are different. Furthermore, during the on site inspection, verification team noted that the capacity of Diesel Generator on site is 120 kW (150 kVA). However, the PDD indicates the same as 70 kW. PP is requested to clarify.				
Project participant response				Date: 19/06/2018
<i>As per FAR 1 detailed in the Validation Report (Table 4, p. A-55), "the calibration frequency will be specified during the first monitoring period", which was deemed "acceptable" by the DOE validating the PDD. Accordingly, the calibration frequency as well as final accuracy class of equipment was specified in section D.2 of the verified first monitoring period V.1.2. In the same section of the same report and on the same grounds, final capacity of the diesel generator (120 kW) was determined in a comment to the parameter table ID.9 / ECPJ,diesel,y.</i>				
Documentation provided by project participant				
<i>Revised Monitoring Report, version 01.1</i>				
DOE assessment				DOE assessment
Verification team has referred to the Monitoring report (which mentions DG capacity as 120 kW and also provides frequency and accuracy class of the monitoring report) of 1 st periodic verification and also the FAR-01 of the validation report; based on review of these documents, PP's claim as provided in the response is found justified and correct. CL is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	E.7	Date: 09/06/2018
Description of CAR				
The information in the work sheet "10)_CALIBRATION" is inconsistent with the information in section D.2 of the monitoring report. For e.g. it does not reflect change in thermocouple for parameter ID.5. T flare.				
Project participant response				Date: 19/06/2018
<i>The information in the work sheet 10) Calibration and in the monitoring report (section D.2) has been revised to be consistent with the data sources and between each other, notably with regard to ID.5 – ID.7.</i>				
Documentation provided by project participant				
<i>Emission Reduction Spread sheet</i>				
DOE assessment				Date: 02/07/2018
Verification team reviewed the revised ER sheet and found that the information in the work sheet "10)_CALIBRATION" has been corrected; checked and confirmed by the verification team. CAR is closed.				

CAR ID	02	Section no.	E.7	Date: 09/06/2018
Description of CAR				
Inconsistencies were found in the details of monitoring equipment for different parameters as contained in section D.2 of the monitoring report.				
For e.g. ID.2/T, the expiry date is indicated as 12/04/2018, which is not consistent with the calibration certificate. Similarly, for parameter ID.5/T Flare, the change in thermocouple for year 2015 has not been indicated, also the model number for the thermocouple replaced in 2016 is incorrect. For parameter I.D.6/fv _{CH4,FG,h} the type and model number of monitoring equipment is incorrect.				
Project participant response				Date: 19/06/2018

<i>The expiry date of calibration of ID.2 has been revised to 11/04/2018, although 12/04/2018 would be consistent with calibration certificate as it allows for a margin of +/- 1 month.</i>	
<i>Parameter ID.5 has been revised to be consistent with calibration certificate, i.e. the changes of thermocouples have been provided.</i>	
<i>The model number the monitoring equipment of ID.6 and ID.7 (measured by the same meter) has been corrected.</i>	
Documentation provided by project participant	
<i>Revised Monitoring Report, version 01.1</i>	
DOE assessment	Date: 02/07/2018
<i>Verification team reviewed the revised Monitoring Report and found that the information in the revised Monitoring Report has been corrected; checked and confirmed by the verification team. CAR is closed.</i>	

CAR ID	03	Section no.	E.7	Date: 09/06/2018
Description of CAR				
<i>For the parameter "ID.8 / EC_{PJ,grid,y}" and ID.9 / EC_{PJ,diesel,y}", PP is requested to re-visit the information particularly for the dates of calibration/s, while doing so please note that the date 19/06/2014 and 19/09/2014 respectively are not the dates of calibration as per the provided evidences.</i>				
Project participant response				Date: 19/06/2018
<i>The parameters have been revisited and the information in section D.2 and in the worksheet 10) of the ER calculations revised in coherence with the certificates of conformity and registered PDD and the first monitoring report.</i>				
Documentation provided by project participant				
<i>Revised Monitoring Report, version 01.1</i>				
DOE assessment				Date: 02/07/2018
<i>Verification team reviewed the revised Monitoring Report and found that the information in the revised Monitoring Report has been corrected; checked and confirmed by the verification team. CAR is closed.</i>				

Table 4. 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

Appendix 5: Details of Monitoring equipments

ID No.	Measurement and verified documents	Producer	Type/model	Serial number	Date of installation	Accuracy	Calibration frequency chosen	1st calibration	2nd calibration	3rd calibration	4th calibration	Expiry date
ID.1	CH4 FRACTION (BIOGAS) /05/, /06/,/09/	FUJI ELECTRIC	ZREABL31-RYRY-YYYYV1BE-YHYAA	A2L8259T	13/05/2014	0.70 %	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18
ID.2	TEMPERATURE (BIOGAS) /05/, /06/,/11/	PYRO CONTROL-CHAUVIN ARNOUX	DIN/DAN i- 1PTC	KAX888	13/05/2014	0.15° C	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18
ID.3 (= ID.0)	FLOW /05/, /06/,/07/,/13/	FUJI ELECTRIC	FCX-AII / FKCP11V5AKDY YCA	ACM0161F / 0511803	13/05/2014	0.1% - 0.5%	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18
ID.4	PRESSURE /05/, /06/,/15/	FUJI ELECTRIC	FCX-AII / FKHT02V5AKAYY 0E	ACM0420F / C891740W	13/05/2014	0.20 %	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18
ID.5	TEMPERATURE (EXHAUST GAS) /05/, /06/,/17/	PYRO CONTROL-CHAUVIN ARNOUX	K-DIN	FBETB027 401*	13/05/2014	0.40 %	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18
ID.6	CH4 (EXHAUST GAS) /05/, /06/,/19/	FUJI ELECTRIC	ZREABE31-QYYYY-YYYYV1BE-YHYAA	A2L8260T	13/05/2014	0.70 %	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18
ID.7	O2 (EXHAUST GAS) /05/, /06/,/21/	FUJI ELECTRIC	ZREABE31-QYYY-YYYYV1BE-YHYAA	A2L8260T	13/05/2014	0.70 %	12 months (+/- 1 month)	13/05/14	02/06/15	15/04/16	12/04/17	11/04/18

ID.8	ELECTRICITY (Grid) /23/	ENERDIS	ULYS TDA80	AB4N4000 34	13/05/2014	1%	5 y	04/2013	--	--	--	April 2018
ID.9	ELECTRICITY (Generator) /23/	ENERDIS	ULYS TDA80	AB4O8001 92	26/05/2015	1%	5 y	08/2014	--	--	--	August 2019

*_This monitoring equipment is replaced each year during the calibration and the details of replacement has been verified by the verification team. The S.N. indicated above is for the monitoring equipment verified during the on site inspection