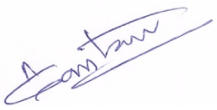
Verification report for GS4GG project activities (Gold Standard for the Global Goals)	
BASIC INFORMATION	
Title of the GS4GG Project Activity	Nairobi River Basin Biogas Project
Reference number of the Project Activity	GS939
Version number of the verification and certification report	3.0
Completion date of the verification and certification report	10/10/2024
Monitoring period number and duration of this monitoring period	5th monitoring period Duration: 31/12/2020 to 30/12/2022 (inclusive of both days)
Version number of the monitoring report to which this report applies	4.0 Dated: 18/09/2024
Crediting period of the project activity corresponding to this monitoring period	31/12/2012 to 30/12/2022 (Fixed)
Project representative	atmosfair GmbH
Host Party	Kenya
Applied methodologies and standardized baselines	AMS I.E. (version 04) Switch from Non-Renewable Biomass for Thermal Applications by the User No standardized baseline applied
Activity requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Mandatory sectoral scopes	1: Energy industries (renewable - / non-renewable sources) Conditional Sectoral Scope- 13: Waste handling and disposal
Product requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label

	☐ N/A

Sustainable Development Goals	SDG Impact	Estimated amount of annual average certified SDG impact (as per approved PDD)	Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period	Units/Products
SDG 3	Biogas owners are asked how air quality in the kitchen has changed since using biogas, whether they experienced respiratory problems before using the biogas unit and, if yes, whether they have perceived an improvement as a result of cooking with biogas.	100% (Improvement in Indoor Air Quality)	Perceived improvement of air quality for 91% of the installed units	Interview (%)
SDG 7	Biogas users primary rely on biogas which is a clean fuel and technology	10,000 units of biogas to be commissioned BY 2016 with an overall maximal thermal capacity of 33.20 MW	3.228	MW, installed thermal capacity
SDG 8	Number of Jobs generated	Over 60 masons trained and sub-contracted by SES	47 people working for SES during MP	People working for SES in MP
SDG 13	Emission Reduction	89,724	7,222	t CO_2e
SDG 17	Technology transfer of deenbandhu biogas digester model	10,000 biogas units by 2016 Over 60 masons	973 47 people working for SES during MP 4 handyman became masons during MP	Biogas plants constructed. People working for SES in MP

Name of the Gold Standard approved auditor (VVB)	Earthood Services Private Limited

Name, position and signature of the approver of the verification and certification report	 Ashok Gautam Director

SECTION A. Executive summary

Description of project activity:
The project is small-scale project activity that aims to set up 10,000 domestic biogas units to produce renewable biogas for cooking and heating purpose. Storage capacity can be $2m^3$ and $3m^3$ each for individual household of at least 2 zero-grazing cows in Nairobi River Basin. The project activity saves greenhouse gas emissions by replacing non-renewable biomass with renewable biogas. The project activity is designed to generate emission reductions by installation of the biogas units in the Kiambu county in Kenya. Dairy farmers and member of rural dairy Saccos (Saving Credit Cooperatives) are the main beneficiaries of this project.
Project has employed "Deenbandhu Model 2000" which is a well-known and widely used technology in India. The technology has been developed by the India based NGO, Action for Food Production (AFPRO) since the 1970s. The lifeline of this biogas place is over 15 years with a fixed dome type construction which assures the durable quality and low cost. Installation of this project will replace the non-renewable biomass like fuel wood and charcoal as well as fossil fuel (LPG and Kerosene).
The PP has applied this for the GS VERs. The project was previously registered on CDM till the fourth Monitoring Period. The project has now transitioned to GS4GG which was approved by Gold Standard, as can be seen in the approved Transition Request Form /37/.

The basic details of the project activity are mentioned below:

Project title	Nairobi River Basin Biogas Project
GS registration number	GS939
Sectoral scope	Sectoral Scope 1: Energy Industries (renewable/non-renewable sources)
Methodology/ies applied	AMS I.E. (version 04) Switch from Non-Renewable Biomass for Thermal Applications by the User
Project participant	Kenya (host): Sustainable Energy Strategies Ltd. Germany: atmosfair gGmbH
Location of Project Activity	Kenya
Geographical coordinates	1° 14' 45" S and 36° 39' 55" E

Scope of Verification

This verification is an independent and objective review and ex-post determination of the monitored SDG outcomes by the VVB. The verification addresses the implementation and operation of the GS PA and tests the data and assertions set out in the monitoring report based on the following:

(i) The registered GS/CDM PDD and preliminary review feedback/7/
(ii) The approved methodology "AMS I.E. (version 04) Switch from Non-Renewable Biomass for Thermal Applications by the User"/6/
(iii) "Gold Standard for Global Goals Transition Annexure", for the PA/3/
(iv) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
(v) Latest GS4GG requirements/22//23/
(vi) CDM Validation and Verification Standard (VVS) for project activity/25/
(vii) Principles and Requirements for GS4GG/22/
(viii) Validation and Verification Body requirements, Product requirements and references relevant to the project activity's reported SDG outcomes.

The verification has considered both quantitative and qualitative aspects on stated/reported emission reductions. The monitoring report (all versions) and corresponding supporting documentation were assessed in accordance with the rules defined by UNFCCC and GS for GG, as appropriate to the PA. The verification is not meant to provide any consulting or recommendations to the PP/others. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

Verification Process:
The verification process is conducted as per internal GS Requirements, which includes the following steps:

a) Contract with PP and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
b) Desk review (refer Section D.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section D.4 of this report) to be applied, if any)
c) On site audit (refer Section D.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consisting of Team Leader, as a minimum
d) Follow up activities e.g., interviews (refer Section D.3 of this report)
e) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)
f) Independent technical review (refer Section B.2 of this report) of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidence)
g) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section G and H of this report).
h) Issuance of final verification report to contracted PP (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion*:*
Based on the outcome of the verification process of the PA "Nairobi River Basin Biogas Project" for the monitoring period 31/12/2020 to 30/12/2022 (including both dates) we confirm that the implementation of referenced registered PA is complying with applicable CDM and GS rules and regulations as stated in the final version of the Monitoring Report/8/. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology "AMS I.E. (version 04) Switch from Non-Renewable Biomass for Thermal Applications by the User" /6/ and the monitoring plan contained in the registered PDD/1/ and "Gold Standard for Global Goals Transition Annexure" for PA/3/.

Earthood Services Private Limited is able to certify that the emission reductions from the registered PA "Nairobi River Basin Biogas Project" for the monitoring period 31/12/2020 to 30/12/2022 (including both dates) amount to 7,222 tCO_2e. Therefore, this is being submitted for request for issuance, as per Gold Standard procedures.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader	IR	Kalita	Jahnabi	Central Office	Y	Y	Y	Y
2.	Verifier and GS approved auditor	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
3.	Trainee Verifier	IR	Yadav	Vaishali	Central Office	Y	N	N	Y
4.	Technical Expert (1.1 and 13.2)	IR	Singh	Kaviraj	Central Office	Y	Y	Y	Y
5..	Local Expert	IR	Njeri Njata	Virginia	Central Office	Y	Y	Y	Y

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 VVB or outsourced entity)
1.	Technical reviewer	IR	Guleria	Shifali	Central Office
2.	TA expert to TR (1.1)	IR	Kaushik	Vardhan	Central Office
3.	TA expert to TR (13.2)	EI	Arora	Kalpana	Central Office
4.	Approver	IR	Gautam	Ashok	Central Office

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in conducting the verification

In accordance with CDM VVS for PAs, Version 03.0 /25/ para 326 the prescribed thresholds for materiality for CDM PAs are as under;

Emission Reductions (tCO2e)/year	500,000 or more	300,001 to 499,999	300,000 or less	Small Scale CDM PAs	Micro Scale CDM PAs
Materiality Threshold (para 326)	**0.5%**	**1.0%**	**2.0%**	**5.0%**	**10.0%**

The applicable materiality threshold is 5.0 % for this CDM project activity.

Particulars / Monitoring Report	MR Version (Public)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO2e) in this monitoring period	8,837 tCO2e	7,222 tCO2e
Applicable Threshold (%) as per para 326 of CDM VVS for PAs Version 03.0	5%	5%

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data (Total) Total (100%)	Sample selected for verification Sample(%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
N_y	Continuous monitoring and recording of N_i	973 (100%)	973 (100%)	No error identified	No impact	No impact
DO_y	One monitoring campaign for this monitoring period	53 (5.43%)	11 (19.64%)	No error identified	No impact	No impact

Based on the above table it can be confirmed that the materiality threshold is not breached applicable for the registered PA as per CDM VVS Version 3.0 /25/. As no material errors, omissions or misstatements could be found, a reasonable level of assurance is achieved.

SECTION D. Means of verification

D.1. Desk review

The verification is performed primarily as a desk review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols (checklists).

The assessment team cross checks the information provided in the documents (MR) and information from sources other than those used, if available, and also conducts independent background investigations. Earthood conducted a desk review as under;

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;

The list of documents reviewed during the verification is provided under appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 27/09/2023 and 28/09/2023				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Opening meeting by Team Leader	Kenya	27/09/2023	Jahnabi Kalita, Kaviraj Singh, Deepika Mahala and Virginia Njeri Njata (LE)
2.	Implementation and operation of project activity (project boundary, technology, project equipment, monitoring and metering equipment) as per registered PDD/previous verification.	Kenya	27/09/2023	Jahnabi Kalita, Kaviraj Singh, Deepika Mahala and Virginia Njeri Njata (LE)
3.	Management and monitoring procedures followed at project site.	Kenya	27/09/2023	Jahnabi Kalita, Kaviraj Singh, Deepika Mahala and Virginia Njeri Njata (LE)
4.	Physical inspection of the project activity: Site visit and interview of monitoring personnel and end user of the biogas units	Kenya	27/09/2023-28/09/2023	Jahnabi Kalita, Kaviraj Singh, Deepika Mahala and Virginia Njeri Njata (LE)
5.	Review of the Monitoring survey forms and relevant documents	Kenya	-	Done through desk review
6.	Compliance of monitoring procedures followed at project site with registered PDD and monitoring methodology.	Kenya	-	Done through desk review
7.	Closing meeting by Team Leader	Kenya	28/09/2023	Jahnabi Kalita, Kaviraj Singh, Virginia Njeri Njata

In the context of verification, the GS4GG principles and requirements version 1.2/22/, para 5.1.26 requires VVB to conduct a site visit including the assessment of the monitoring report and all supporting evidence and documents included by the Project Developer to demonstrate conformity. Accordingly, the VVB conducted the on-site inspection.

The objective of the on-site assessment is to:

- Confirm the implementation and operation of the project;

- Review the data flow for generating, aggregating and reporting the monitoring parameters;
- Confirm the correct implementation of procedures for operations and data collection;
- Cross-check the information provided in the MR documentation with other sources;
- Review the calculations and assumptions used to obtain the GHG data and ER;
- Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.
- Confirm the SDG goals/ Sustainable monitoring parameter as per the revised PDD & Transition Annex
- To understand grievance (if any) from the villagers during the monitoring period.

D.3. Interviews

D.3.1. Interview with PP/Stakeholders

S.No.	Last Name	First Name	Affiliation	Date	Subject	Team Member
1.	Karanja	David	Sustainability Energy Strategies Ltd. (Executive)	27/09/2023 - 28/09/2023	Project implementation and operation, monitoring procedure, data and information flow, Survey records, Sales/Distribution records	Jahnabi Kalita, Kaviraj Singh, Deepika Mahala and Virginia Njeri Njata
2.	Bretschneider	Lisa	Project developer, atmosfair	27/09/2023 - 28/09/2023	Construction of biogas units, Monitoring, plumbing and payment of dues	
3.	Wachera	Anne	End-User (I805)	27/09/2023 - 28/09/2023	VVB Sampling	
4.	Muthami	Jackline	End-User (I928)	27/09/2023 - 28/09/2023	VVB Sampling	
5.	Mugure Gichogu	Esther	End-User (I743)	27/09/2023 - 28/09/2023	VVB Sampling	
6.	Kamau Kiarie	James	End-User (I847)	27/09/2023 - 28/09/2023	VVB Sampling	
7.	Wanjiku Kamau	Phyllis	End-User (I950)	27/09/2023 - 28/09/2023	VVB Sampling	
8.	Nyambura	Mercy	End-User (I106)	27/09/2023 - 28/09/2023	VVB Sampling	
9.	Wangui	Mary	End-User (I438)	27/09/2023 - 28/09/2023	VVB Sampling	
10.	Ngendo	Magdaline	End-User (I87)	27/09/2023 - 28/09/2023	VVB Sampling	
11.	Mochanga	Fraciah	End-User (I704)	27/09/2023 - 28/09/2023	VVB Sampling	

12.	Gacambi	Regina	End-User (I761)	27/09/2023 - 28/09/2023	VVB Sampling	
13.	Kaigai	Lucy	End-User (I55)	27/09/2023 - 28/09/2023	VVB Sampling	

D.4. Sampling approach

In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities version 9.0/34/, the verification team applied acceptance sampling in the verification (in accordance with para 28). The verification team selected random samples of PD's sampled records, checked the acceptability (or otherwise) of the data for each such record with PD's sample records, and then based on the number of records where there is agreement, determined if the PD's sample records meet the requirements.

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgement and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities, Version 9.0' /34/:

• The proportion of discrepancies between the PD's data and verification team's (field or onsite inspection results) data that can be considered acceptable. This is referred to as the AQL (Acceptable Quality Level): 0.5% was considered in this verification.

• The proportion of discrepancies between the PD's data and verification team's (field or onsite inspection results) data that would be considered unacceptable. This is the UQL (Unacceptable Quality Level): 20% was considered in this verification.

• The producer risk and consumer risk of 10% was considered.

Considering the above input values, a sample size of 11 was required as per Table 2 in the referred Standard for this monitoring period. Accordingly, acceptance number (c) thus determined for the sample size is 0. A sample size of 11 meets the criteria. The samples to be surveyed by VVB were randomly selected from the list of monitored samples using the random sample generation function on Microsoft excel.

The assessment team picked 11 samples across all batches on random basis from the PD's survey records of 53 end users. The users were communicated in advance to ensure they are comfortable in responding to the survey questionnaire. There was no sample that was left unresponsive, and therefore, verification team visited 11 households. During the on-site interviews with end-users, no discrepancies were observed in the monitoring survey data. CL#03 was raised based on the observation made during the site visit in which 2 households were found to be using other fuels as well which is not captured by the monitoring survey. However on further interview it was clarified by the end users that the units are functional. PP has conservatively applied an extrapolated value to reduce the ERs,

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	00	00	00
Compliance of the project implementation and operation with the registered Passport/Transition Annex	00	00	00
Implementation and operation of the management system	00	00	00
Post-registration changes	00	00	00

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring plan with the methodologies including applicable tools and standardized baselines	CL#03	00 00	00
Compliance of monitoring activities with the registered monitoring plan	CL#01 CL#02 CL#03	CAR#01 CAR#02	FAR#01
Compliance with the calibration frequency requirements for measuring instruments	00	00	00
Assessment of data and calculation of emission reductions or net removals	00	CAR#01 CAR#02	00
Comparison of actual SDG impacts with estimates in approved PDD	00	CAR#01	00
Safeguards Reporting	00	00	00
Stakeholder inputs and legal disputes	00	00	00
Others (please specify)	00	00	FAR#01*
Total	**03**	**02**	**02**

* FAR was raised during last CDM verification (Fourth Monitoring Period: 31/12/2018 to 30/12/2020 (Inclusive of both days)) /32/.

SECTION E. Verification findings

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

Means of verification	The Gold Standard for Global Goals prescribes a template for MR, Version 1.1. Therefore, PP has used the Gold Standards for Global Goals (GS4GG) latest MR template/30/ which has been issued by Gold Standards. In addition, all the GS4GG requirements are included in accordance with the Principles and requirements/22/.
Findings	No finding.
Conclusion	PP has submitted Monitoring Report, version 1.1 and found that all sections are filled appropriately. The final monitoring report/8/ was found to be in compliance with the applicable latest monitoring report form and instructions therein/30/.

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

The project was earlier registered with CDM, with the UNFCCC reference number: 6549. During the last CDM verification (Fourth Monitoring Period: 31/12/2018 to 30/12/2020 (Inclusive of both days)) /32/, a FAR was raised. It has been satisfactorily addressed by the PP and correspondingly resolved and closed by the assessment team, as specified in Appendix 4 of this report. The project has now transitioned to GS4GG, which was approved by Gold Standard, as evident in the approved Transition Request Form /37/. For the current (fifth) Monitoring Period of this project, the PP is only claiming for GS VERs.

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

Means of verification	The project is a small scale project activity that aims to construct 10,000 biogas units of mainly $2m^3$ and $3m^3$ gas storage capacities. The project activity is located in Republic of Kenya, in Nairobi River Basin of Central Province and the administrative border of the project activity is Kiambu country. The coordinates of the first commissioned biogas units, located in Thogoto in the close proximity to Kikuyu town, are used to represent the physical location of the project activity: Latitude: 1° 14' 45'' S Longitude: 36° 39' 55'' E The following districts and all settlements within these districts belong to Kiambu county: Lari Gatundu North Gatundu Thika West Thika East Limuru Githunguri Ruiru Kiambu Kabete **Technology:** Project has employed "Deenbandhu Model 2000" which is a well-known and widely used technology in India. The technology has been developed by the India based NGO, Action for Food Production (AFPRO) since the 1970s. In year 2000 AFPRO improved the fixed dome Deenbandhu model to finally promote Deenbandhu model 2000. The lifeline of this biogas place is over 15 years with a fixed dome type construction which assures the durable quality and low cost. Installation of this project will replace the non-renewable biomass like fuel wood and charcoal as well as fossil fuel (LPG and Kerosene). Basic components of the Deenbandhu 2000 biogas model are /11/: **Foundation:** The foundation of the plant is bowl shaped with a collar around the circumference. The construction of the digester dome is done on this collar. **Dome:** The dome of the digester is divided in 2 parts, digester and gas storage. **Digester**: The bottom part is called digester. The mixture of dung and water decomposes in this part and produces gas due to bacterial activity. **Gas storage**: The upper part of the digester dome is called gas storage. The gas produced by the bacterial activity is stored in this place. **Gas outlet pipe:** A nipple is fitted on the top of the dome, which is connected to a pipe. The gas reaches the kitchen through this pipe. The recovered gas is combusted and used on a biogas burner for cooking in the household. **Inlet:** The pipe through which fresh dung and water enters the plant is called Inlet pipe. This pipe is connected to a small tank for mixing dung and water.

	Outlet: The portion of the plant where the slurry accumulates after coming out of the digester is called outlet tank. It is in two parts. The first bottom part is small and rectangular, which is connected to the dome opening, while the other part of outlet tank is dome shaped. A small slurry discharge hole is provided in the outlet tank. **Plant size (Gas storage)** | **Dung to be fed into the digester (kg)** | **Water to be fed into the digester (liter)** | **Number of cows per household** | **Number of eaters per household** 2 m^3 | 50 | 50 | Min. 2 | 5-8 3 m^3 | 75 | 75 | Min. 3 | 9-15 The project has followed the given timeline as per co-operation agreement atmosfair and Sustainable Energy Strategies limited (SES)/14/: The first biogas plant was commissioned on 09/10/2010 and according to the sales record till the end of fifth monitoring period total of 973 units were constructed and commissioned. The details and number of all the biogas units were found to be consistent with the data provided by the PP. 11 samples were checked by the verification team to confirm the implementation status of the PA. The local expert has shared all the photos clicked during the assessment which were checked by the verification team to confirm that the project activity is implemented in line with the registered PDD/1/. The project activity is consistent with the description given in the registered PDD/1/. Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period is 7,222 tCO_2e. **Double counting:** It has been checked from GHG registries No ERs have been issued under Verified Carbon Standard (VCS) Registry, Climate Action Reserve (CAR), international carbon registry (ICR) including CDM. Additionally, it shall be noted the project is a single project activity claiming credits since 2012(https://cdm.unfccc.int/Projects/DB/RWTUV1340886479.47/view), is not eligible to register under any other registry. The same has been added in the verification report.
Findings	CL#01 was raised and resolved
Conclusion	The project activity was fully implemented according to the description presented in the GS PDD/1/. The assessment team confirms, through the interviews with PP /29/ & document review /10/,/11/,/18/ that all physical features of the proposed project activity including data collecting systems and storage have been implemented in accordance with the GS PDD/1/, Passport/2/ and approved Transition Request Form/37/.

E.3.1. Implementation and operation of the management system

Means of verification	The responsibilities of data measurement, collection, verifying, archiving etc. have been clearly defined in the PDD /1/ & Transition Annex/3/. It is

	confirmed by the assessment team during the on-site visit by the team leader and interviews with PP/29/. The information flow of each parameter has been verified by the assessment team by interviewing with responsible personnel. It's verified during the interviews with PP & document review, the monitoring procedure as well as the internal quality management and control procedures are stipulated in the PDD/1/. The monitoring personnel have been interviewed by the assessment team (including LE) and it's confirmed that the monitoring is implemented as per the procedure/29/. Also, the training record/16/ has been checked by the assessment team and it is confirmed that the monitoring personnel are well trained to perform the monitoring/16/.
Findings	No findings
Conclusion	The Assessment team has checked all the parameters of management system via interview with the PP and all the necessary documents submitted by the PP are cross-checked with MR/8/ and PDD/1/. All the information provided was found to be correct and consistent through all the documents.

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

Not applicable

E.3.2.2. Corrections

Not applicable

E.3.2.3. Inclusion of a monitoring plan in a registered PDD

Not applicable

E.3.2.4. Permanent changes to the monitoring plan as described in the registered PDD, applied methodology, or applied standardized baseline

Not applicable

E.3.2.5. Changes to the project design of the registered PDD

Not applicable

E.3.2.6. Changes to the start date of the crediting period

Not applicable

E.3.2.7. Types of changes specific to afforestation and reforestation component project activities

Not applicable

E.3.3 Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	The verification team has confirmed that the monitoring plan is in accordance with the approved methodology AMS I.E. (version 04) Switch from Non-Renewable Biomass for Thermal Applications by the User/6/, applied by the proposed GS project activity by onsite verification by the local expert and interviews with PP/29/. Based on this review it was found the monitoring plan includes all the required parameters to be monitored in the context of project design and description/1/ and allows proper determination of emission reductions and in accordance with the applied methodology/6/.
Findings	CL#03 was raised and resolved.
Conclusion	The verification team confirms that the registered monitoring plan is in accordance with the approved methodology/6/ and correctly applied by the registered GS project activity.

E.3.4. Compliance of monitoring activities with the registered monitoring plan

E.3.4.1 Data and parameters fixed ex ante or at renewal of crediting period

Means of verification

The values considered ex-ante for this monitoring period were cross-checked with registered PDD/1/, GS Passport/2/ & Transition Annex/3/ and their respective sources. The summary of all the ex-ante parameters has been given below:

Parameter/ Description	Value applied	MoV
SDG 13: Climate Action 13.2.1 **B_y, net per unit** Quantity of fuelwood and woodfuel consumption displaced	4.257 tons/year/household	The value of the parameter was checked from registered PDD/1/. The value of the parameter is consistent with the Study On Kenya's Energy Demand, Supply And Policy Strategy For Households/18/, Small Scale Industries And Service Establishments (Final Report, 2002, prepared by Kamfor Ltd.)/15/ and PDD/1/.
SDG 13: Climate Action 13.2.1 $f_{NRB,y}$ Fraction of non-renewable biomass	96.2%	The value of the parameter was checked from registered PDD/1/. The value of the parameter is consistent with FAO (Forest Resource Assessment)/36/ and PDD/1/.
SDG 13: Climate Action 13.2.1 $NCV_{biomass}$ Net calorific value	0.015 TJ/tonne	The value of the parameter was checked from registered PDD/1/. The value of the parameter was found to be consistent with the

			applied methodology/6/ and PDD/1/.
	SDG 13: Climate Action 13.2.1 $EF_{projected\_fossilfuel}$ Emission factor	81.6 tCO2/TJ	The value of the parameter was checked from registered PDD/1/. The value of the parameter was found to be consistent with the applied methodology/6/ and PDD/1/.
Findings	None		
Conclusion	The value mentioned in the Monitoring Report /8/ and Emission Reduction Spreadsheet /9/ are consistent with the registered PDD/1/. The applied value are correct and justified.		

E.3.4.2 Data and parameters monitored (Carbon & SDG)

SDG 13 and SDG 17, Adjusted number of biogas units commissioned, N_y (Target 13.2 and 17.7; Indicator 13.2.1 and 17.7.1)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring / Reading/ Recording Frequency	The data of number of total units commissioned is continuously collected.
	Is measuring and metering frequency are in according with the monitoring plan and monitoring methodology? (Yes/No)	Yes
	Monitoring equipment	NA
	Is accuracy of the monitored equipment as started in the monitoring plan? If the monitoring plan does not specific the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacture's specifications?	NA
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to the different measuring ranges?	NA

	Calibration Frequency/interval:	NA
	Is the calibration interval inline with the monitoring plan and or the methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacture's specifications?	NA
	Is the calibration of the measuring equipment carried out by an accredited person or institution?	NA
	Is(are) calibration(s) valid for the whole reporting period?	NA
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	NA
	How were the values in the monitoring report verified?	The net value of total unit commissioned is found to be 881 and the number of units were confirmed from the end used agreement and sales receipt that was shared by the PP.
	If applicable, has the reported data been cross-checked with other available data?	Yes, the values reported in the monitoring report and ER sheet are further cross verified from the sales invoices. All reported values were found consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data management system was found to be reliable and appropriate.

	In case project participants have temporarily not monitored the parameter, has either (i) a deviation been approved by the CDM EB or (ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues identified during the monitoring period.
Findings	No findings	
Conclusion	The VVB confirms that: • Monitoring of parameter is implemented in accordance with registered monitoring plan/1/. • Monitoring results are consistently recorded as per approved frequency. • The value of the monitored parameter is 881 and was found to be consistent throughout all the reports.	

SDG 13 Dropout rate, DO_y (Target 13.2, Indicator 13.2.1)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring / Reading/ Recording Frequency	One time monitoring campaign for each monitoring period is mandatory.
	Is measuring and metering frequency are in according with the monitoring plan and monitoring methodology? (Yes/No)	Yes
	Monitoring equipment	NA
	Is accuracy of the monitored equipment as started in the monitoring plan? If the monitoring plan does not specific the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacture's specifications?	NA
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to the different measuring ranges?	NA
	Calibration Frequency/interval:	NA

	Is the calibration interval inline with the monitoring plan and or the methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacture's specifications?	NA
	Is the calibration of the measuring equipment carried out by an accredited person or institution?	NA
	Is(are) calibration(s) valid for the whole reporting period?	NA
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	NA
	How were the values in the monitoring report verified?	The dropout rate for this monitoring period was found to be 18.18%. Primary data collected from the monitoring campaign was used for the verification of the value of dropout rate.
	If applicable, has the reported data been cross-checked with other available data?	The values reported in the monitoring report /8/ and ER sheet /9/ are further cross verified from the survey forms, and onsite interviews with the end users by the verification team.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data management system was found to be reliable and appropriate.
	In case project participants have temporarily not monitored the parameter, has either (i) a deviation been approved by the CDM EB or (ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues identified during the monitoring period.
Findings	FAR#01 and CL#03 were raised and resolved.	
Conclusion	The mentioned monitoring parameter is cross-checked through questionnaire for sample households during monitoring campaign.	

SDG 3, GS Monitoring Parameter 01: Air quality; Status of respiratory Problems (Target 3.9, Indicator 3.9.1)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring / Reading/ Recording Frequency	One time monitoring campaign for each monitoring period is mandatory.
	Is measuring and metering frequency are in according with the monitoring plan and monitoring methodology? (Yes/No)	Yes
	Monitoring equipment	NA
	Is accuracy of the monitored equipment as started in the monitoring plan? If the monitoring plan does not specific the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacture's specifications?	NA
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to the different measuring ranges?	NA
	Calibration Frequency/interval:	NA
	Is the calibration interval inline with the monitoring plan and or the methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as	NA

	per the manufacture's specifications?	
	Is the calibration of the measuring equipment carried out by an accredited person or institution?	NA
	Is(are) calibration(s) valid for the whole reporting period?	NA
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	NA
	How were the values in the monitoring report verified?	The status of air quality and respiratory problems for this monitoring period was found to be 91% improvement in the air quality and 100% improvement in the respiratory problems. The response of end-users in the questionnaire of monitoring campaign verifies the improvement in the ambient air quality.
	If applicable, has the reported data been cross-checked with other available data?	The values reported in the monitoring report /8/ and ER sheet /9/ are further cross verified from the survey forms, and onsite interviews with the end users by the verification team.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data management system was found to be reliable and appropriate.
	In case project participants have temporarily not monitored the parameter, has either (i) a deviation been approved by the CDM EB or (ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues identified during the monitoring period.
Findings	No finding	
Conclusion	The mentioned monitoring parameter is cross-checked through questionnaire for sample households during monitoring campaign. As per the campaign there is 91% improvement in the air quality and 100% of the households who reported health problems earlier perceived improvement in respiratory health. The applied value is correct, consistent and justified.	

SDG 17; GS Monitoring Parameter 02: Quality of employment; Report on training for masons carried out up to the specific monitoring period (Target 17.7, Indicator 17.7.1)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring / Reading/ Recording Frequency	One time for each monitoring period
	Is measuring and metering frequency are in according with the monitoring plan and monitoring methodology? (Yes/No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	The value of number of people trained in this monitoring period was found to be 4 (mason) and the remaining 7 handymen were under training. It is cross checked with the training records/16/ and value was in line with the MR/8/ and PDD/1/. All the employees are trained by the Sustainable Energy Strategies/16/. The applied value is correct, justified and consistent.
	If applicable, has the reported data been cross-checked with other available data?	The values reported in the monitoring report /8/ was further cross verified with the training records/16/ provided by the PP.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data management system was found to be reliable and appropriate.
	In case project participants have temporarily not monitored the parameter, has either (i) a deviation been approved by the CDM EB or (ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues identified during the monitoring period.
Findings	CL#02 and CAR#01 were raised and resolved.	

Conclusion	The value of number of people trained as masons is 4, and the remaining 7 handymen were undergoing training as mentioned in the Monitoring Report/8/ and Emission Reduction Spreadsheet/9/ as per the registered PDD/1/, GS Passport/2/ & Transition Annex/3/. The applied value is correct, consistent, and justified.

SDG 7: GS Monitoring Parameter 03: Access to affordable and clean energy services; Thermal Capacity of commissioned biogas units (Target 7.1, Indicator 7.1.2)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring / Reading/ Recording Frequency	Continuously and calculation of thermal capacity once per monitoring period.
	Is measuring and metering frequency are in according with the monitoring plan and monitoring methodology? (Yes/No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	The thermal capacity of commissioned biogas units was found to be 3.228 MW, this value is the outcome of commissioning database /9/ and with the help of equations provided in the PDD/1/.
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data management system was found to be reliable and appropriate.
	In case project participants have temporarily not monitored the parameter, has either (i) a deviation been approved by the CDM EB or (ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues identified during the monitoring period.
Findings	No finding was raised.	

Conclusion	The value of Thermal capacity of commissioned biogas units is 3.228 MW as mentioned in the Monitoring Report/8/ and Emission Reduction Spreadsheet/9/ as per the registered PDD/1/. The applied value is correct, consistent and justified.

SDG 8 and SDG 17; GS Monitoring Parameter 04: Quantitative employment and income generation; Number of masons working for SES in the specific monitoring period (Target 8.5., Indicator 8.5.2 and Target 17.7, Indicator 17.7.1)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring / Reading/ Recording Frequency	Once per monitoring period.
	Is measuring and metering frequency are in according with the monitoring plan and monitoring methodology? (Yes/No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	The number of handyman and marketing people working for SES are 47 and was found to be consistent with the MR/8/ and values are cross checked with the training records/16/.
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data management system was found to be reliable and appropriate.
	In case project participants have temporarily not monitored the parameter, has either (i) a deviation been approved by the CDM EB or (ii) has the parameter been estimated as stipulated by	No such issues identified during the monitoring period.

	Appendix 1 to the CDM Project Standard?	
Findings	CL#02 was raised and resolved.	
Conclusion	The value of employment number is 47 as mentioned in the Monitoring Report/8/ and Emission Reduction Spreadsheet/9/ as per the registered PDD/1/, GS Passport/2/ & Transition Annex/3/. The applied value is correct, consistent and justified.	

E.3.4.3. Comparison of monitored parameters with last monitoring period

Means of verification

The table below gives a comparison between the values obtained in the last monitoring period (31/12/2018 to 30/12/2020) with the values obtained during the current monitoring period (31/12/2020 to 30/12/2022):

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
N_y Number of installed biogas units	973 units	796 units
Drop out rate DO_y	18.18%	0%
Status of respiratory problems	91% improvement of air quality 100% improvement of respiratory problems	91% improvement of air quality 100% improvement of respiratory problems
Total Thermal Capacity	3.228 MW	2.641 MW
Employment	47 people working for SES during MP 4 people completed training during MP	40 people working for SES during MP 7 people completed training during MP
Emission reductions	7,222 tCO_2e	7,419 tCO_2e

Findings	CAR#01 and CAR#02 were raised and resolved.
Conclusion	This is the fifth monitoring period of this project's verification. The verification team confirms that all the values of monitoring parameters obtained in this monitoring period is accurately calculated and reported in monitoring report and ER sheet.

E.3.4.4. Implementation of sampling plan

Means of verification	According to AMS I.E. (Version 4.0), par. 12 and 14, monitoring plan was framed with frequency biennial to determine the percentage dropouts units in the population. **Sampling Design/Target Population:**

Target population for the monitored parameters is the total number of biogas installed/distributed to the households in the project.

Parameter to be checked:

- Statistically adjusted dropout from total population of units in period y.(DO_y)

Sampling Frame:.
There is one model of biogas digester installed in all the households. Thus, only one sampling frame is considered.

Sampling Method and Selection:

Simple random sampling has been done in line with the registered PDD/1/

Sampling Size and its implementation:

A sample size of 51 users was calculated for DOy following sample size formula sourced from Guidelines: Sampling and surveys for CDM project activities and programmes of activities /33/.
The PP had selected 57 samples for the entire population randomly. Out of the 57 sampled households, 53 users could be contacted. All houses reported biogas plants to be well-maintained and in use. The information was recorded in the survey forms and submitted to the verification team. The verification has verified the monitored data for 11 samples following acceptance sampling plan outlined under section D.4. of this report.

Monitoring survey (by PP) duration:

The monitoring survey (field survey / tests) was carried out by PP representatives between following duration for the current monitoring period.

Technology	MP4 (Previous MP)	MP5 (Current MP)
Domestic Biogas Units	08/04/2021 to 30/05/2021	15/02/2023 and 18/03/2023

It was confirmed that the monitoring survey has been conducted biennially which was found to be in-line to the stated frequency.

Reliability and precision calculation:

The verification team has verified the ER calculation spreadsheets /9/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under Guidelines for sampling and surveys for CDM project activities and programme of activities Version 4.0/33/ and confirms that the calculation of achieved reliability was done correctly.

All parameters of interest are included in the ER spreadsheet/9/ as per the applied methodology/6/. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the ER calculation sheets /9/ corresponding to final Monitoring Report /8/, which were also found correct.
Thus, the verification team confirms that required precision has been met and the results are reliable.

Version of Sampling Standard applied:

	The PP has applied Standard: “Sampling and surveys for CDM project activities and programmes of activities”, version 8.0/34/ as it was the latest available standard at the time sampling survey being conducted.
Findings	CL#01 was raised and resolved.
Conclusion	The sampling plan has been followed in line with the registered PDD/1/.

E.3.4.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	No instrument was used that needs to be calibrated in this monitoring period.
Findings	Not applicable
Conclusion	Not applicable

E.3.5. Assessment of data and calculation of emission reductions or net removals

E.3.5.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Baseline emission estimation has been done in accordance with registered monitoring plan/01/ and applied methodology/06/. The equation used is as follows: $ER_y = B_y * f_{NRB,y} * NCV_{biomass} * EF_{projected\ fossil\ fuel}$ $B_y = N_y * B_y(\text{net per unit}) * (1-DO_y)$ $ER_y = N_y * B_y(\text{net per unit}) * (1-DO_y) * f_{NRB,y} * NCV_{biomass} * EF_{projected\ fossil\ fuel}$ Where: ER_y - Emission reduction during the year *y* in tCO_{2e} N_y- Adjusted total number of biogas units deployed until year y of end users who confirmed that non-renewable biomass was displaced/substituted DO_y - Statistically adjusted drop out from total population of units in period y B_y *(net per unit)* - Quantity of fuelwood and woodfuel consumption for charcoal that is substituted or displaced in tons $f_{NRB,y}$ - Fraction of non-renewable woody biomass used in the absence of the project activity in year y $NCV_{biomass}$ - Net calorific value of the non-renewable woody biomass that is substituted $EF_{projected\_fossilfuel}$ - Emission factor for substitution of non-renewable woody biomass by similar consumers Accounting leakage has been done through para 10a of AMS I.E., ver.4/6/ by multiplying the net to gross adjustment factor of 0.95. Therefore, By (net per unit) is calculated according to the following formula:

	By(net per unit) = B_y* LE_{NRB} **Where:** *B_y (net per unit)* - Quantity of fuelwood and woodfuel consumption for charcoal that is substituted or displaced in tons (including potential leakage) *B_y (gross per unit)* - Quantity of fuelwood and woodfuel consumption for charcoal that is substituted or displaced in tons LE_{NRB} - 0.95 default value The equations applied were found to be consistent with the applied methodology/6/ and the registered PDD/1/. The parameters have been assessed in detail under section E.6.2.and E.6.1. From the above equation and the parameter values, ERy = 7,222 tCO2e.
Findings	CAR#01 and CAR#02 were raised and resolved.
Conclusion	Baseline emissions calculations were found to be in line as per the monitoring plan/1/ and the applied methodology/6/. Values defined for each parameter were cross check with the PDD/1/ and other related documents. The final value of ERy is 7,222 is correct, consistent and justified.

E.3.5.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	Not applicable as per the methodology and also no source of project emission could be identified.
Findings	Not applicable
Conclusion	Not applicable

E.3.5.3. Calculation of leakage GHG emissions

Means of verification	No leakage as per the registered PDD/1/.
Findings	Not Applicable
Conclusion	Not Applicable

E.3.5.4. Calculation of net benefits or direct calculation for each SDG Impact

Means of verification	The calculations presented in this regard in the final monitoring report /8/ and corresponding ER calculations sheet/9/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of PDD/1/ and applied methodology/6/. The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.
Findings	No finding was raised.
Conclusion	The verification team confirms that a) The complete data was available and is duly reported; b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter; c) Appropriate methods and formulae for calculating net GHG removals and leakage emissions were followed; d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied. e) There is no pro-rata approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.

E.3.6. Comparison of actual SDG Impacts with estimates in approved PDD

Means of verification

SDG	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period
Goal 13, Target 13.2: Reduction of GHG emissions	89,724 tCO_{2e}	7,222 tCO_{2e}
Goal 3, Target 3.9: Reduction of indoor air pollution	Construction of 10,000 biogas units under the project until 2016	Construction of 973 biogas units, perceived improvement of air quality for 91%[1] of the installed units
Goal 7, Target 7.1: Availability of affordable and clean energy	Commissioned biogas units (10,000 units in total) have an overall maximal thermal capacity of 33.20 MW.	3.228 MW installed thermal capacity
Goal 8, Target 8.5 Achieve decent work and employment	> 60 masons trained and sub-contracted by SES, conditional to the implementation plan	4 handyman became masons during MP 47 People working for SES during MP

[1] Value from survey was 96%. Since the required precision was not achieved, the lower bound value is used instead.

	Goal 17, Target 17.7 Transfer of an innovative and clean energy technology	10,000 biogas units under the project until 2016 > 60 masons trained and sub-contracted by SES, conditional to the implementation plan	973 biogas units under the project until 2022 47 People working for SES during the current MP 4 People became masons during the current MP
	The actual emission reduction achieved in the monitoring period is 7,222 (731 days) tCO_2e, whereas the estimated ERs in the registered PDD/1/ is 89,724 tCO2e. Actual emission reduction is 90.15% lower than the emission reductions for the considered monitoring period.		
Findings	CAR#01 finding was raised and resolved.		
Conclusion	The achieved emission reduction for the monitoring period is lower than the estimation as per the PDD/1/.		

E.3.6.1. Remarks on difference from estimated value in registered PDD

Means of verification	The assessment team checked the ER sheet and found that the actual emission reduction achieved in the monitoring period is 7,222 tCO_2e (731 days), whereas the estimated ERs in the registered PDD /1/ is 89,724 tCO2e. Actual emission reduction is 90.15% lower than the emission reductions for the considered monitoring period.
Findings	None
Conclusion	The achieved emission reduction for the monitoring period is lower than the estimation as per the PDD /1/ as significantly lesser number of plants were installed.

E.3.7. SAFEGUARDS REPORTING

Means of verification	Not applicable
Findings	Not applicable
Conclusion	Not applicable

E.3.8. STAKEHOLDER INPUTS AND LEGAL DISPUTES

Means of verification	Not Applicable
Findings	Not Applicable
Conclusion	Not Applicable

SECTION F. Internal quality control

The draft verification report that is prepared by verification team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable Gold Standard rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the verification team.

During the technical review process additional findings may be identified or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is finalised. The independent technical reviewer may either approve the report as such or reject/return the same in such

case providing the comments/findings/issues that needs to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized on behalf of Earthood Services Private Limited.

SECTION G. Verification opinion

Earthood Services Private Limited (Earthood), contracted by atmosfair GmbH , has performed the independent verification of the emission reductions for the GS PA "Nairobi River Basin Biogas Project" in Kenya for the monitoring period 31/12/2020 to 30/12/2022 (Inclusive of both days) as reported in the Monitoring Report Version 4.0 dated 18/09/2024 /8/, atmosfair GmbH is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. The atmosfair GmbH is claiming only for the GS VERs and this project is also registered under the CDM (currently at Information and Reporting Check) for fifth monitoring period. This project has issued the VERs under CDM/35/ till 30/12/2020.

The VVB commenced the verification on the basis of the baseline and monitoring methodology AMS I.E. (version 04) /6/ Switch from Non-Renewable Biomass for Thermal Applications by the User, "Gold Standard for Global Goals Transition Annexure", the monitoring plan contained in the PDD, Monitoring Report.

VVB's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

The verification team confirms that:

- The PA was found completely implemented as per the description given in the registered PDD.
- The actual operation conforms to the description in the registered PDD

SECTION H. Certification statement

Earthood Services Private Limited (Earthood), contracted by atmosfair GmbH, has performed the independent verification of the emission reductions for "Nairobi River Basin Biogas Project" for the monitoring period 31/12/2020 to 30/12/2022 (Inclusive of both days) as reported in the Monitoring Report Version 4.0 dated 18/09/2024 /8/, atmosfair GmbH is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

VVB commenced the verification on the basis of the baseline and monitoring methodology AMS I.E. (version 04) /6/ Switch from Non-Renewable Biomass for Thermal Applications by the User, the monitoring plan contained in the PDD /1/ "Nairobi River Basin Biogas Project", and Monitoring Report Version 4.0 dated 18/09/2024.

VVB's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 31/12/2020 to 30/12/2022 (Inclusive of both days) are fairly stated in the Monitoring Report Version 4.0 dated 18/09/2024/8/. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS I.E. (version 04) Switch from Non-Renewable Biomass for Thermal Applications by the User, the monitoring plan contained in the PDD "Nairobi River Basin Biogas Project". Earthood Services Private Limited is able to certify that the emission reductions from the GS PDD "Nairobi River Basin Biogas Project" during the period 31/12/2020 to 30/12/2022 (Inclusive of both days) amount to 7,222 tCO_2e.

Verified and certified emission reductions as per commitment period:

Commitment period	Amount
31/12/2020 - 31/12/2020	9 tCO_2e.
01/01/2021 - 31/12/2021	3450 tCO_2e.
01/01/2022 - 30/12/2022	3763 tCO_2e.

Appendix 1. Abbreviations

Abbreviations	Full Texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
PP	Coordinating and Managing Entity
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CP	Crediting Period
DNA	Designated National Authority
VVB	Validation/Verification Bodies
DR	Document Review
EB	Executive Board
ER	Emission Reduction
ER	Emission Reduction
ESPL	Earthood Services Private Limited (Earthood)
FAR	Forward Action Request
GHG	Green House Gas
GS	Gold Standard
IPCC	Intergovernmental Panel on Climate Change
IR	Internal Resource
ODA	Official Development Assistance
OSV	On-Site Visit
PCP	Project Cycle Procedure
PDD	Project Design Document
PFA	Pre-Feasibility Assessment
PMU	Project Management Unit
PA	Project Activities
PP	Project participant
PS	Project Standard
SFR	Stakeholders Feedback Round
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reductions

Appendix 2. Competence of team members and technical reviewers

Competence Statement (CDM)	
Name	Jahnabi Kalita
Education	M.Sc. Environment Management
Experience	1+ year
Field	Environment, Climate change
Approved Roles	
Team Leader	YES
Validator	YES

Verifier	YES		
Methodology Expert	NO		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Reviewed by	Shifali Guleria, Quality Manager	**Date**	06/05/2023
Approved by	Deepika Mahala, Technical Manager	**Date**	06/05/2023

Competence Statement			
Name	Virginia Njeri		
Country	Kenya		
Education	Diploma (Business Management)		
Experience	10+ Years		
Field	Administration		
Approved Roles			
Team Leader	No		
Validator	Yes		
Verifier	Yes		
Methodology Expert	No		
Local expert	Kenya		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	No		
Reviewed by	Shifali Guleria	**Date**	14/12/2022
Approved by	Deepika Mahala	**Date**	14/12/2022

Competence Statement	
Name	Kaviraj Singh
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore
Experience	15 Years +
Field	Climate Change & Environment
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H, ACM0002, ACM0001, AM0080, ACM0018, AM0056, AM0073 VM0042, AMS-III.G, AMS-III.AF., VM0032, VM0018, ACM0010, ACM0022, AMS-III.D, AMS-III.F and AMS-III.A.Q
Local expert	YES (India)
Financial Expert	YES

Technical Reviewer	YES		
TA Expert (X.X)	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1, TA 13.2)		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	02/02/2023
Approved by	Deepika Mahala (Technical Manager)	**Date**	02/02/2023

Competence Statement			
Name	Vaishali Yadav		
Education	M.Sc. environmental studies		
Experience	7 months		
Field	Climate Change & Environment / Industry		
Approved Roles			
Team Leader	NO		
Validator	YES (VM only)		
Verifier	YES (VM only)		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	23/02/2024
Approved by	Deepika Mahala (Technical Manager)	**Date**	23/02/2024

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environment Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G, AMS-II.C		
Local expert	YES (India, Bangladesh)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shifali Guleria (QM)	**Date**	28/04/2022
Approved by	Kaviraj Singh (MD)	**Date**	28/04/2022

Competence Statement			
Name	Kalpana Arora		
Country	India		
Education	M.Sc. (MicroBiology), Ph.D. (Waste Management)		
Experience	5.5 Years +		
Field	Waste management, Animal Waste, Environment		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local Expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (TA 13.2 & TA 15.1)		
Reviewed by	Shreya Garg	**Date**	17/01/2019
Approved by	Anshika Gupta	**Date**	18/01/2019

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

Competence Statement	
Name	Vardhan Kaushik
Education	Master of Chemical Engineering B.Tech. in Chemical Engineering

Experience	1 year and 9 months		
Field	Energy, Carbon Calculation, Process Integration, Heat Integration, Heat and mass balance		
Approved Roles			
Team Leader	NO		
Validator	Yes		
Verifier	Yes		
Methodology Expert	NO		
Local expert	Yes (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	TA 1.1, 3.1, 5.1		
Trainee Validator/ Verifier	YES		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	30/05/2024
Approved by	Deepika Mahala (Technical Manager)	**Date**	30/05/2024

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	PP	CDM 6549 PDD, Version 02.4	Dated 11/06/2012	PP
2.	PP	GS 939 Passport, Version 03.1	Dated 19/02/2013	PP
3.	GS	GS 939 Transition Annex for PA, Version 2.2	Dated 22/10/2019	PP
4.	TUV Nord	Validation Report Version 01.0	Dated 19/10/2012	PP
5.	GS	GS webpage for the project: https://registry.goldstandard.org/projects/details/1267	Last accessed on 09/02/2024	Others
6.	UN	AMS I.E.-Switch from Non-Renewable Biomass for Thermal Application by the User	Version 4	Others
7.	PP	Preliminary Review feedback	-	PP
8.	PP	Monitoring Report	Version 3.0 dated 18/09/2024	PP
9.	PP	ER calculations sheet	-	PP
10.	PP	Commissioning certificate	-	PP
11.	PP	Product Specifications of Deenbandhu biogas plant AFPRO	-	PP

No.	Author	Title	References to the document	Provider
12.	PP	Invoices raised by PP covering monitoring period	-	PP
13.	PP	Technical details of project activity	-	PP
14.	PP	Co-operation agreement atmosfair and Sustainable Energy Strategies limited	-	Others
15.	Kamfor Ltd.	Small Scale Industries And Service Establishments	2002	PP
16.	PP	Training records for year 2020, 2021 & 2022	-	PP
17.	PP	Breakdown record for the monitoring period	-	PP
18.	Ministry of Health, Kenya	Final Report on Study on Kenya's Energy Demand, Supply and Policy Strategy for Household	-	PP
19.	VVB	ESPL interim Travel Policy	-	ESPL
20.	PP	Baseline survey Report	NA	PP
21.	IPCC	IPCC Guidelines for National Greenhouse Gas Inventories 2.1 (http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf)	Vol. 2	Others
22.	GS4GG	Principles and Requirements	Version 1.2	Others
23.	GS4GG	GS4GG Activity Requirements	Version 1.3	Others
24.	UNFCCC	PS for PA https://cdm.unfccc.int/Reference/Standards/index.html	Version 3.0	Others
25.	UNFCCC	VVS for PA https://cdm.unfccc.int/Reference/Standards/index.html	Version 3.0	Others
26.	UNFCCC	PCP for PA https://cdm.unfccc.int/Reference/Standards/index.html	Version 3.0	Others
27.	GS	Interim measures released by GS for site visit exemptions	-	Other
28.	PP	Grievance records /Grievance register maintained at plant	-	PP
29.	NA	Interviews with PP during on-site audit	27/09/2023-28/09/2023	NA
30.	GS	GS MR template & guidelines to complete it https://www.goldstandard.org/	-	Other
31.	PP	Monitoring Questionnaire	-	PP
32.	CDM	Verification Report of fourth Monitoring period	20/10/2022	Other
33.	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities https://cdm.unfccc.int/Reference/Standards/i	Version 4.0	Others

No.	Author	Title	References to the document	Provider
		ndex.html		
34.	UNFCCC	Standard: Standard for sampling and surveys for CDM project activities and programme of activities https://cdm.unfccc.int/Reference/Standards/index.html	Version 8.0	Others
35.	VVB	CDM Project 6549: CDM: Nairobi River Basin Biogas Project (unfccc.int)	-	Others
36.	PP	Forest Resource Assessment	-	PP
37.	PP	Transition Request Form & approval screenshot	01/11/2022	PP

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

CAR: Corrective Action Request
CL: Clarification Request
FAR: Forward Action Request

Table 1. Remaining FAR from previous verification

FAR ID	01	**Section no.**	E.2	**Date :** 04/05/2022
Description of FAR				
PP shall update the monitoring survey questionnaire to include a question that confirms that each household continues to own at least 2 non-grazing cows.				
Project participant response				**Date :** 30/05/2024
Documentation provided by project participant				
VVB assessment				**Date:** 31/05/2024
The registered PDD (page 3 and page 10) requires the installation of the biogas units to be done in the households owning at least 2 zero-grazing cows. But till the last CDM verification for the fourth monitoring period, the PP had not incorporated any query in the monitoring questionnaire regarding the number of cows present in the household. As required by the FAR raised during the last CDM verification, the PP updated the monitoring survey questionnaire this time (fifth Monitoring period) to include a question ("How may cows do you own?") that confirms that each household owned at least 2 non-grazing cows. Moreover, the condition has also been checked through the following sources: a) The verification team has physically visited the households with a prepared checklist to confirm that all the sampled households (11) have biogas stoves and all households own at least 2 non-grazing cows throughout the duration of the current Monitoring Period. The on-site interviews confirmed that all the sampled households owned more than 2 non-grazing cows during the current Monitoring Period. b) PP has provided end user agreement signed by the household owners. The end user agreement clearly mention that the end user must ensure that they have said number of cows with insurance. Thus, the verification team confirms that the project has been implemented in line with the registered PDD, and the FAR#01 stands CLOSED.				

Table 2. CL from this verification

CL ID	01	**Section no.**	E.3	**Date :** 12/07/2023
Description of CL				
1. The lifespan could not be confirmed from the manual shared for previous verification. The project activity started in 2010. PP shall confirm if initially installed units are still functional. 2. PP shall provide sampling survey dates of previous monitoring/sampling surveys under section C, sample surveys of the MR and demonstrate that frequency set in the PDD has been followed.				
Project participant response				**Date :** 26/07/2023

(1) See page 9 of Manual on Deenbandhu Biogas Plant_AFPRO.pdf *"(…) its useful working life should be at least 25-30 years, once it is installed."* *Therefore, assuming a lifespan of 15 years is still conservative and even the initially installed units fall within this period. Furthermore, during the last verification, all units from the sample were still functional and SES is in close contact with the users, so any problems that may have occurred, would have been communicated to SES, so they can take care of it.* *(2) The requested information was added in section C, page 13, of the report.*
Documentation provided by project participant
Manual on Deenbandhu Biogas Plant_AFPRO.pdf *"Survey Results" folder*
VVB assessment — **Date:** 04/08/2023
1. PP is requested to confirm if any complaints have been reported from the existing end-users during the current monitoring period (MP5). PP is also requested to confirm the grievance mechanism and share the grievance logbook for MP5. The finding is OPEN. 2. The sampling survey dates of previous monitoring/sampling surveys were added in the above stated section of the MR. It is clear that the frequency (biennial) set in the PDD, as per the V4.0 of the methodology AMS-I.E., has been followed. The finding is closed.
Project participant response — **Date :** 23/02/2024
1. According to David Karanja, within the 2 years of the monitoring period, the problem of overfeeding occurred less than 5 times. Overfeeding results in a reduction in biogas but not in a complete cut-off. It is easy to sort out once it is explained to the users how to do it. Users with overfeeding problems called the project partner and he sent one of his workers to fix the problem and give extra training on usage. During the site visit, the users confirmed that David Karanja or his workers sometimes come by or are otherwise available via phone. At the start of the project, we had a grievance logbook but it turned out to not be a suitable means for grievance. The book is no longer in place. Instead, the more direct way of grievance was established where users directly call David Karanja or one of his masons. Furthermore, there is a regular personal exchange with the users and David and his workers because they frequently visit the region and the users. During the site visit, the users confirmed that David Karanja or his workers sometimes come by or are otherwise available via phone. As we are aware that this is a noncompliance with the PDD, we will take corrective actions and install a new logbook, in which we will record any feedback and grievance that is received.
Documentation provided by project participant
VVB assessment — **Date:** 04/04/2024
While sharing the grievance redressal mechanism (which is the direct call and contact with the concerned person, i.e., David Karanja and his team), the PP has summarized the common issues occurring in the project area, and the solutions that they provided on the ground. The PP has also confirmed that a few complaints were reported from the existing end-users during the current monitoring period (MP5). The absence of the grievance book presents a compliance issue with the provisions specified in the PDD. PD has placed a new grievance logbook at the project site and provided the same to the VVB. Even though the project activity has a fixed crediting period of 10 years and this is the last MP, the project technology is expected to be running till the end of its lifetime, which is 15 years of operation and expected to have a lifetime of 25-30 years (as per section D.1.2 of the registered transition annex). Thus, the implementation of the logbook has been found appropriate for the future perspective of the beneficiaries.The finding CL#01 stands CLOSED.

CL ID	02	**Section no.**	E.3.4.2	**Date :** 12/07/2023

Description of CL	
For the parameter “Report on trainings for masons carried out up to the specific monitoring period”, it shall be clarified as when the trainings were conducted and who were the trainers for the conducted trainings. Further how many each of “Masons” and “Supervisors” were involved in the trainings.	
Project participant response	**Date :** 26/07/2023
We provide a table with the requested information including signatures of the trainers.	
Documentation provided by project participant	
Trainings Monitoring period 31.12.2020-30.12.2022.jpg	
VVB assessment	**Date:** 04/08/2023
The sheet shared by the PP was reviewed by the assessment team and was found to be acceptable. Hence, the finding is CLOSED.	

CL ID	03	Section no.	E.3.4.2	Date : 30/11/2023

Description of CL

During the VVB On-site audit, the following discrepancies were observed between the end-user responses recorded by the verification team and monitoring survey results recorded under “Monitoring Results” worksheet of the ER sheet:

- For sample ID I805 (Anne Wachera), only 1 cow was found in the household, contrary to the recorded number of 3 cows during monitoring survey. Please clarify in line with the condition stated in the registered PDD “households with at least two cows in their premises will be a part of the project PA”

Please clarify the compliance with applicability criteria define by para 1 of applied methodology AMS I.E., version 4.0 “The project activity is saving greenhouse gas emissions by replacing non-renewable biomass (mainly fuel wood and charcoal) with renewable biogas” for the following observations:

- For sample ID I928 (Jackline Muthami), it was found that the baseline stove was still used regularly in the household.
- For sample ID I743 (Esther Mugure Gichogu), the baseline was found to be an electric stove, and not three-stone firewood. As per the OSV record, the electric stove is used in the household twice a week.
- For sample ID I847(James Kamau Kiarie), baseline was found to be LPG and charcoal, which are used twice a week.
- For sample ID I106(Mercy Nyambura), in addition to charcoal and wood, LPG was also a baseline stove. Moreover, the end-user agreement date doesn’t match with the commissioning date recorded during the OSV.
- For sample ID I87(Magdaline Ngendo), commissioning date is not specified on the end-user agreement.
- For sample IDs I704 and I761, in addition to charcoal, fuel like LPG was also used in the baseline scenario.

Project participant response	Date : 08/02/2024

- *Sample ID I805 (Anne Wachera): Anna Wachera confirmed that she had 3 cows over the whole monitoring period MP5. One of her cows got sick in 2023 and died in July. She had to sell another cow in September 2023 to pay her children’s school fees. She confirmed that she will get a new cow as soon as possible. All this information is confirmed in the attached document.*

General comment about the use of LPG:
The PDD, the baseline description and the emission reduction calculation include the fact that LPG was used in the baseline scenario.

"Please note that for simplification, fossil fuel use which is prevalent in the baseline scenario was excluded in the calculation of emission reductions. This is conservative since the accounting of fossil fuel use would have led to higher emission reductions." *(PDD, page 10-11)*

*"*Prevailing practice is the use of firewood, charcoal, kerosene and LPG for cooking (the baseline scenario)*." (PDD, page 15)*

"(…) besides fuelwood and charcoal use also Kerosene and LPG are used in the project area. The use of the fossil fuels is part of the baseline, but not for calculation of emission reductions. This is deemed conservative because inclusion of fossil fuels in the project would have led to higher emission reductions*." (PDD, page 17)*

This means that the emission reductions only correspond to the part of the emissions, that were emitted by cooking with non-renewable biomass (firewood and charcoal). According to the PDD it is neither a problem that users used LPG in the baseline scenario, nor that they still use LPG in the project situation to some degree for cooking.

- *Sample ID I928 (Jackline Muthami): Jackline Muthami confirmed that her biogas stove is working fine and that it covers all daily cooking needs for her family. The baseline LPG stove is only used when she needs to cook more for her workers. The use of the baseline LPG stove is according to the PDD, see above.*
- *Sample ID I743(Esther Mugure Gichogu): In principle the sporadic use of an electric stove for cooking in the baseline situation is comparable to the use of an LPG stove in the baseline (see above). Thus, ER calculation for the project do also account for this. However, due to conservativeness reasons we excluded the biogas unit from the database and made the according changes in the monitoring report.*
- *Sample ID I847(James Kamau Kiarie): According to the family they only have an LPG stove as a back-up and use it very rarely. The use of the baseline LPG stove is according to the PDD, see above.*
- *Sample ID I106 (Mercy Nyambura): Mercy Nyambura only owned an LPG stove as a back-up but did not use it frequently. The use of the baseline LPG stove is according to the PDD, see above.*
  The commissioning date was checked again and confirmed with Mercy Nyambura to be the 15/04/2012 which was revised on the end user agreement and in the database. Thus, the biogas unit was commissioned before the start of the relevant MP.
- *Sample ID I87(Magdaline Ngendo): The commissioning date was checked again and confirmed with Magdaline Ngendo to be the 12/03/2012. The commissioning date was added on the EUA for completeness reasons and revised in the database. Thus, the biogas unit was commissioned before the start of the relevant MP.*
- *IDs I704 and I761: The use of the baseline LPG stove is according to the PDD, see above.*

Documentation provided by project participant

Document of Anne Wachera: Scan_confirmation-2cows_AnneWachera.pdf
PDD: 6549 PDD.pdf
EUA ID I106: Mercy Nyambura.jpg
EUA ID I87: Magdaline Ngendo.jpg
Updated Monitoring report: GS_MP5_monitoring_report_updated_08022024.docx
Updated Excel ER sheet: Kenya_MP5_CER complete database calculation_confidential_06022024_updated

VVB assessment	**Date:** 21/03/2024

- The PP has shared a declaration signed by Anne Wachera (Sample ID I805) confirming that she had 3 cows over the whole monitoring period MP5. She lost two cows recently and will get a new cow soon. The VVB found the clarification to be appropriate and sufficient. CLOSED

• For sample IDs I87 (Magdaline Ngendo), the commissioning dates and the end-user agreement dates have been duly updated and provided, and the information is found to be consistent. CLOSED. • During the onsite visit, it was observed that renewable biogas is being utilized in the sampled households. It implies that the project activity is saving greenhouse gas emissions by replacing non-renewable biomass (mainly fuel wood and charcoal) with renewable biogas. However, fossil fuels like LPG, charcoal and kerosene are also prevalent in the project area. Though the usage of fossil fuels is taken into consideration for the description of baseline scenario, but not for the estimation, calculation and accounting of emission reductions. This results in a conservative approach for ER calculations and hence, it is found acceptable. This resolves the query for sample IDs I704, I761 and I106. CLOSED. • It was observed during the OSV, for sampled ID I928 (Jackline Muthami), that the baseline LPG and Charcoal stoves are used frequently, similarly for ID I847(James Kamau Kiarie), the baseline LPG and Charcoal stoves are used often during the week, despite the households having functional biogas units. Please clarify as to how the prevalent use of baseline stoves on the households is in line with the applicability criteria define by para 1 of applied methodology AMS I.E., version 4.0 and section A.2 of the registered PDD, "The project activity is saving greenhouse gas emissions by replacing non-renewable biomass (mainly fuel wood and charcoal) with renewable biogas.". OPEN.
Project participant response **Date :** 24/04/2024
ID I928 (Jackline Muthami) & ID I847(James Kamau Kiarie): VVB shall consider the point that the usage has been presented on the situation existing at the time of conducting survey. Both the household ID I928 (Jackline Muthami) and ID I847(James Kamau Kiarie) stated that the baseline LPG stove is only used to cook for her workers (not within household and outside of baseline). To cook for her family, she uses the biogas stove, hence all cooking activities within her household (baseline) are completely done with the biogas. Due to uncertainties regarding the continuous use of the baseline stove and due to conservativeness reasons, we adjusted our emission reduction calculation. As conservative measure, as 2 out of 11 VVB samples are concerned, we increased the dropout rate from 0% (our monitoring) to 18.18% (2/11) which is a highly extrapolated value. This is adjusted in the excel-file on the "DOy MP5"-sheet and on the "CER Calculation"-sheet and was adjusted accordingly in the Monitoring Report. This approach is very conservative, as these two households were evidentially (confirmed during OSV) using the biogas for cooking, so are not actual dropouts, but were identified to be stove stacking (which at least to some degree is according to the PDD). We recognize that we will need to improve our monitoring for upcoming monitoring periods in order to be on the safe side. For that we will adjust our interview questions and add more precise questions about stove stacking and the continuous use of the baseline stove and adjust one question to "Have you displaced or substituted **ALL** firewood/charcoal consumption since using the biogas unit?" (and if not, how much are you still using it and on what occasions?). This way we will gain a more complete picture of the actual use of biogas.
Documentation provided by project participant
Kenya_MP5_CER complete database calculation_confidential_24042024_updated.xlsx *GS_MP5_monitoring_report_updated_24042024.docx*
VVB assessment **Date:** 29/04/2024
The PP has increased the dropout rate from 0% (monitoring) to 18.18% (2/11) as a conservative measure. The PP also claims to improve the monitoring approach to capture the other fuels being used in the households. The VVB found the response to be acceptable and conservative, Therefore, the finding CL#03 stands CLOSED.

Table 3. CAR from this verification

CAR ID	01	Section no.	E.3.4.2	Date : 12/07/2023
Description of CAR				
1. PP shall calculate the ex-ante estimation transparently in the ER sheet. 2. In MP 4, 92 new units were built by 7 trained masons. How were 178 units built by only 4 trained masons in the current MP. PP shall provide justification if it feasible for to install new units with reduced number of trained masons.				
Project participant response				**Date :** 26/07/2023
(1) *The calculation of ex-ante estimation of CERs was added as an excel sheet "initial CER Calculation" in the ER sheet. The number of estimated CERs was updated to the estimation of MP5 (Monitoring report Section E.5., page 30) based on the excel spreadsheet.* (2) *Four people were trained to be masons during the monitoring period. Together with the workers that were masons already, the actual number of masons working in that period was 18. This means, the actual number of workers has increased in this MP.*				
Documentation provided by project participant				
Updated excel sheet: Kenya_MP5_CER complete database calculation_confidential_26072023.xlsx *List_of_staff_in_2021_and_2022.pdf*				
VVB assessment				**Date:** 04/08/2023
1. The updated ER sheet and MR shared by the PP was reviewed by the assessment team and was found to be acceptable. 2. Although only 4 people completed their masonry training in the current monitoring period, an increased number of masons worked for the project. The details shared by the PP are sufficient to justify the construction of higher number of units during the current monitoring period. Hence, the finding is CLOSED.				

CAR ID	02	Section no.	E.3.4.3	Date : 12/07/2023
Description of CAR				
1. ER sheet, cell M6, worksheet titled 'vintage 2021', mentions 2020 while the figures in the worksheet are related to year 2021. PP shall rectify the error. 2. ER sheet, cell D7, worksheet titled 'Ny MP5', mentions the total no of units as 795 on 30/12/2020 while previous MP monitoring report stated 796 units to be installed by 30/12/2020. PP shall explain the reason for discrepancy in the numbers of biogas units reported.				
Project participant response				**Date :** 26/07/2023
(1) *Error was corrected* (2) *In a revision of our database we noticed that internal sample drawing numbers 404 and 409 (last monitoring ER sheet, "Database" worksheet) were identical (Anne Mbere). We corrected this mistake by taking out number 409 as you can see in the "Database" worksheet of the MP5 excel file.*				
Documentation provided by project participant				
Kenya_MP5_CER complete database calculation_confidential_26072023.xlsx *Kenya_MP4_CER complete database calculation_confidential_updated.xlsx*				
VVB assessment				**Date:** 04/08/2023

1. The error is still there in the ‘vintage 2021’ worksheet of the ER sheet.

2. The VVB confirms that no. of biogas installed are now consistent between MP4 and MP5 ER sheets, However, the commissioning dates of the following end users are inconsistent between the “Database” worksheet of MP4 and MP5 ER calculation sheets:

ENDUSER AGREEMENT DATE	**NAME OF USER**	**COMMISSIONING DATE** in MP5 Excel file	**COMMISSIONING DATE** in MP4 Excel file
19-12-2014	Ann Mberere	5.7.2014	6.4.2014
19-12-2014	Fidelis Kamau	23.12.2013	5.7.2014
19-12-2014	Roselyn Warui	5.4.2014	23.12.2013
19-12-2014	Rahab Njoroge	18.12.2014	5.4.2014
19-12-2014	Rebecca Wanjiru	6.04.2014	18.12.2014

The finding is OPEN.

Project participant response	**Date :** 08/02/2024

1.) *Error corrected in ‘vintage 2021’ worksheet.*
2.) *We corrected these errors. The commissioning dates in the MP4 excel file are correct and in agreement with the previous monitoring periods as well as with the EUAs. The dates in the MP5 file have shifted by one line and this error must have happened when the duplicate number (Ann Mberere) was removed from the database. Thank you for bringing this to our attention.*

Documentation provided by project participant

Updated Excel ER sheet: Kenya_MP5_CER complete database calculation_confidential_06022024_updated
EUAs included in the additional documents

VVB assessment	**Date:** 21/03/2024

1. The worksheet titled ‘vintage 2021’ in the ER sheet has been rectified to mention the correct year, i.e., 2021.
2. The commissioning dates of the above-listed end users have been made consistent between the ‘Database’ worksheet of MP4 and MP5 ER calculation sheets.

Hence, the finding CAR#02 stands CLOSED.

Table 4. FAR from this verification
No FAR was raised.