

VERIFICATION & CERTIFICATION REPORT

For the GS-VER VPA – 71 to 80, 82, 83, 139 to
141, 184 to 187

GS1247 VPA 71:Lango Safe Water Project (GS5106)
GS1247 VPA 72:Lango Safe Water Project (GS5186)
GS1247 VPA 73:Lango Safe Water Project (GS5187)
GS1247 VPA 74:Lango Safe Water Project (GS5188)
GS1247 VPA 75:Lango Safe Water Project (GS5189)
GS1247 VPA 76:Lango Safe Water Project (GS5190)
GS1247 VPA 77:Lango Safe Water Project (GS5191)
GS1247 VPA 78:Lango Safe Water Project (GS5192)
GS1247 VPA 79:Lango Safe Water Project (GS5193)
GS1247 VPA 80:Lango Safe Water Project (GS5194)
GS1247 VPA 82:Lango Safe Water Project (GS5196)
GS1247 VPA 83:Lango Safe Water Project (GS5197)
GS1247 VPA 139:Lango Safe Water Project (GS6349)
GS1247 VPA 140:Lango Safe Water Project (GS6350)

GS1247 VPA 141:Lango Safe Water Project (GS6351)
GS1247 VPA 183:Lango Safe Water Project (GS7362)
GS1247 VPA 184:Lango Safe Water Project (GS7363)
GS1247 VPA 185:Lango Safe Water Project (GS7364)
GS1247 VPA 186:Lango Safe Water Project (GS7365)
GS1247 VPA 187:Lango Safe Water Project (GS7366)

Under the PoA

GS 1247- Improved Kitchen Regimes Multi-Country PoA

Monitoring Period: MP3

GS7362: 01/04/2021 to 31/03/2022
GS7363: 01/04/2021 to 31/03/2022
GS7364: 01/04/2021 to 31/03/2022
GS7365: 01/04/2021 to 31/03/2022
GS7366: 01/04/2021 to 31/03/2022

MP4

GS5196: 01/04/2021 to 31/03/2022
GS5197: 01/04/2021 to 31/03/2022
GS6349: 01/04/2021 to 31/03/2022
GS6350: 01/04/2021 to 31/03/2022
GS6351: 01/04/2021 to 31/03/2022

MP5

GS5189-94: 01/04/2021 to 31/03/2022

MP6

GS5106 & GS5186-8: 01/04/2021 to 31/03/2022

REPORT No.

GS.22.VER.010 MP06

Date of this issue: 08/06/2023	KBS Ref. No.: GS.22.VER.010
VPA Title/s:	GS1247 VPA 71: Lango Safe Water Project (GS5106) GS1247 VPA 72 Lango Safe Water Project (GS5186) GS1247 VPA 73 Lango Safe Water Project (GS5187) GS1247 VPA 74: Lango Safe Water Project (GS5188) GS1247 VPA 75 Lango Safe Water Project (GS5189) GS1247 VPA 76 Lango Safe Water Project (GS5190) GS1247 VPA 77 Lango Safe Water Project (GS5191) GS1247 VPA 78 Lango Safe Water Project (GS5192) GS1247 VPA 79 Lango Safe Water Project (GS5193) GS1247 VPA 80 Lango Safe Water Project (GS5194) GS1247 VPA 82 Lango Safe Water Project (GS5196) GS1247 VPA 83 Lango Safe Water Project (GS5197) GS1247 VPA 139: Lango Safe Water Project (GS6349) GS1247 VPA 140 Lango Safe Water Project (GS6350) GS1247 VPA 141 Lango Safe Water Project (GS6351) GS1247 VPA 183 Lango Safe Water Project (GS7362) GS1247 VPA 184 Lango Safe Water Project (GS7363) GS1247 VPA 185 Lango Safe Water Project (GS7364) GS1247 VPA 186 Lango Safe Water Project (GS7365) GS1247 VPA 187 Lango Safe Water Project (GS7366)
Organization:	KBS Certification Services Pvt. Ltd.
Client:	CO2balance
Monitoring Period:	MP3 GS7362: 01/04/2021 to 31/03/2022 GS7363: 01/04/2021 to 31/03/2022 GS7364: 01/04/2021 to 31/03/2022 GS7365: 01/04/2021 to 31/03/2022 GS7366: 01/04/2021 to 31/03/2022 MP4 GS5196: 01/04/2021 to 31/03/2022 GS5197: 01/04/2021 to 31/03/2022 GS6349: 01/04/2021 to 31/03/2022 GS6350: 01/04/2021 to 31/03/2022 GS6351: 01/04/2021 to 31/03/2022 MP5 GS5189-94: 01/04/2021 to 31/03/2022 MP6 GS5106 & GS5186-8: 01/04/2021 to 31/03/2022

Summary:

KBS Certification Services Pvt. Ltd. has performed verification of the below stated GS-VPA under the PoA – Improved Kitchen Regimes Multi-Country PoA -

VPA GS ID	VPA No	Name of VPA
GS5106	71	GS1247 VPA 71 Lango Safe Water Project
GS5186	72	GS1247 VPA 72 Lango Safe Water Project
GS5187	73	GS1247 VPA 73 Lango Safe Water Project
GS5188	74	GS1247 VPA 74 Lango Safe Water Project
GS5189	75	GS1247 VPA 75 Lango Safe Water Project
GS5190	76	GS1247 VPA 76 Lango Safe Water Project
GS5191	77	GS1247 VPA 77 Lango Safe Water Project
GS5192	78	GS1247 VPA 78 Lango Safe Water Project
GS5193	79	GS1247 VPA 79 Lango Safe Water Project
GS5194	80	GS1247 VPA 80 Lango Safe Water Project
GS5196	82	GS1247 VPA 82 Lango Safe Water Project
GS5197	83	GS1247 VPA 83 Lango Safe Water Project
GS6349	139	GS1247 VPA 139 Lango Safe Water Project
GS6350	140	GS1247 VPA 140 Lango Safe Water Project
GS6351	141	GS1247 VPA 141 Lango Safe Water Project
GS7362	183	GS1247 VPA183 Lango Safe Water Project
GS7363	184	GS1247 VPA 184 Lango Safe Water Project
GS7364	185	GS1247 VPA 185 Lango Safe Water Project
GS7365	186	GS1247 VPA 186 Lango Safe Water Project
GS7366	187	GS1247 VPA 187 Lango Safe Water Project

The verification includes confirming the implementation of the monitoring plan of the registered VPA DD and the application of the monitoring methodology “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” Version 1.0.

Remote audit was conducted to check the implementation of registered monitoring plan and verify the data submitted in the monitoring report. KBS confirms the following has been reviewed:

- The registered VPA DD, monitoring plan and the corresponding validation opinion;
- Design change validation opinion for this particular VPA;
- The validation report;
- The applied monitoring methodology;
- The monitoring report to verify that it is as per the standardized format;
- Any other information and references relevant to the project activity’s emission reductions (e.g. IPCC reports, internal surveys, laboratory analysis and national regulations);
- VER calculations sheets and all supporting documents;

KBS Certification Services Pvt. Ltd. confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

Based on the information reviewed and evaluated, KBS confirm that the implementation of the project has resulted in 51,730 tCO₂e emission reductions during the monitoring period decided for all the VPA’s as below.

S.no	VPA GS ID	Monitoring Period	Emission Reductions (tCO ₂ e)
1.	GS7128	01/04/2021 to 31/03/2022 (including both days)	2,649
2.	GS5106	01/04/2021 to 31/03/2022 ((including both days)	3,702
3.	GS5186	01/04/2021 to 31/03/2022 (including both days)	2,208
4.	GS5187	01/04/2021 to 31/03/2022 (including both days) (including both days)	2,386
5.	GS5188	01/04/2021 to 31/03/2022 (including both days)	1,370
6.	GS5189	01/04/2021 to 31/03/2022 (including both days)	2,284
7.	GS5190	01/04/2021 to 31/03/2022 (including both days)	1,807
8.	GS5191	01/04/2021 to 31/03/2022 (including both days)	2,606
9.	GS5192	01/04/2021 to 31/03/2022 (including both days)	3,655
10.	GS5193	01/04/2021 to 31/03/2022 (including both days)	1,749
11.	GS5194	01/04/2021 to 31/03/2022 (including both days)	2,939
12.	GS5196	01/04/2021 to 31/03/2022 (including both days)	1,640
13.	GS5197	01/04/2021 to 31/03/2022 (including both days)	1,600
14.	GS6349	01/04/2021 to 31/03/2022 (including both days)	2,688
15.	GS6350	01/04/2021 to 31/03/2022 (including both days)	1,702
16.	GS6351	01/04/2021 to 31/03/2022 (including both days)	3,606
17.	GS7362	01/04/2021 to 31/03/2022 (including both days)	3,568
18.	GS7363	01/04/2021 to 31/03/2022 (including both days)	3,509
19.	GS7365	01/04/2021 to 31/03/2022 (including both days)	3,209
20.	GS7366	01/04/2021 to 31/03/2022 (including both days)	2,853
Total			51,730
Subject Group GS Verification Version of GS rules: GS Version 2.2		Sectoral Scope(s): 1.1 and 3.1	Methodology: "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" Version 1.0
Verification Team:			Verification report:
Team Leader	Mr. Srinivasan Selvaraj		First version 16/11/2022

Technical Expert (1.1, 3.1)	Mr. Tushar Chaudhari		
Verifier (trainee)	Ms. Shruti Shrivastava	Final version	08/06/2023
Local Expert	Ms. Gloria Namazzi		
Independent Technical Reviewer Team		Verification status:	
Date:			
Technical Reviewer	Ms. Shikha Sharma (till 27/03/2023)	☐ Findings not closed.	
	Mr. S. Ranganathan (Since 30/05/2023)	☐ Draft verification opinion	
		☒ Final verification opinion	
Date:	30/05/2023		
Manager T&C	Ms. Shikha Sharma (till 27/03/2023) Ms. Shilpa Sharma (Since 30/05/2023)		
Authorized Signatory: Managing Director			
Date: 08/06/2023			
Managing Director	Mr. Kaushal Goyal	☒ No distribution without permission from client	
Revision history:		☐ Unrestricted distribution	
Date	Rev. No.	☐ Limited distribution	
16/11/2022		01	
08/06/2023		02	

Abbreviations

BS	Baseline survey
CAR	Corrective Action Request
CL	Clarification Request
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
ER	Emission Reduction
FT	Fuel Test
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GS4GG	Gold Standard for Global Goals
HH	Household
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-governmental Organization
f _{NRB}	Fraction of Non-renewable biomass
NRB	Non-renewable biomass
VPA-DD'S	Project Design Document
PS	Project Survey
PP	Project proponent
PTD	Project Technology Days
RA	Remote Audit
QA/QC	Quality Assurance/Quality Control
SD	Sustainable Development
US	Usage survey
UNFCCC	United Nations Framework Convention on Climate Change
VER	Voluntary Emission Reduction
VVB	Validation/Verification Body
VVS	Validation and Verification Standard for project activities
WCFT	Water Consumption Field Test

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1. INTRODUCTION

1.1 Objective

KBS has been commissioned by “CO2balance” to perform an independent verification of its registered GS-VER VPA’s-

S.No.	VPA GS ID	VPA No	Monitoring Period
1.	GS5106	71	01/04/2021 to 31/03/2022
2.	GS5186	72	01/04/2021 to 31/03/2022
3.	GS5187	73	01/04/2021 to 31/03/2022
4.	GS5188	74	01/04/2021 to 31/03/2022
5.	GS5189	75	01/04/2021 to 31/03/2022
6.	GS5190	76	01/04/2021 to 31/03/2022
7.	GS5191	77	01/04/2021 to 31/03/2022
8.	GS5192	78	01/04/2021 to 31/03/2022
9.	GS5193	79	01/04/2021 to 31/03/2022
10.	GS5194	80	01/04/2021 to 31/03/2022
11.	GS5196	82	01/04/2021 to 31/03/2022
12.	GS5197	83	01/04/2021 to 31/03/2022
13.	GS6349	139	01/04/2021 to 31/03/2022
14.	GS6350	140	01/04/2021 to 31/03/2022
15.	GS6351	141	01/04/2021 to 31/03/2022
16.	GS7362	183	01/04/2021 to 31/03/2022
17.	GS7363	184	01/04/2021 to 31/03/2022
18.	GS7364	185	01/04/2021 to 31/03/2022
19.	GS7365	186	01/04/2021 to 31/03/2022
20.	GS7366	187	01/04/2021 to 31/03/2022

The Gold Standard projects must undergo independent third-party verification and certification of emission reductions as the basis for issuance of Gold Standard for Global Goals certified Voluntary Emission Reductions (GS VERs).

The objectives of this verification exercise is, by review of objective evidence, to establish that:

- The VPA has been implemented and operated as per the registered GS-VPA DD 0 and that all physical features (technology, project equipment, and monitoring and) of the VPA are in place;
- Monitoring report /01/ /02/ and other supporting documents are complete;

- The actual monitoring systems & procedures, and monitoring report conforms with the requirements of the approved monitoring plan and the approved monitoring methodology;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on review of monitoring report, supporting information and

- (a) The registered PoA DD and VPA DD 0, including the monitoring plan,0 and the corresponding validation opinion(s);
- (b) Previous verification reports, deviation requests, requests for revision of monitoring plan (if applicable);
- (c) Monitoring report /01//02/ for the monitoring period under verification including GS4GG VER calculations sheets /03//04/ and all supporting documents;
- (d) The applied monitoring methodology/019/
- (e) Relevant decisions, clarifications and guidance from the CMP and the Gold Standard Board;
- (f) All information and references relevant to the project activity's resulting in emission reductions.

The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

KBS has, based on the recommendations in the applicable version of Gold Standard requirements (GS4GG Principles and requirements, version 1.2) and CDM Validation and Verification Standard /021/, employed a rule-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

1.3 Description of the Project Activity

Title of VPA & Gold Standard IDs:	GS1247 VPA 71 Lango Safe Water Project (GS5106)
	GS1247 VPA 72 Lango Safe Water Project (GS5186)
	GS1247 VPA 73 Lango Safe Water Project (GS5187)
	GS1247 VPA 74 Lango Safe Water Project (GS5188)
	GS1247 VPA 75 Lango Safe Water Project (GS5189)
	GS1247 VPA 76 Lango Safe Water Project (GS5190)
	GS1247 VPA 77 Lango Safe Water Project (GS5191)
	GS1247 VPA 78 Lango Safe Water Project (GS5192)
	GS1247 VPA 79 Lango Safe Water Project (GS5193)
	GS1247 VPA 80 Lango Safe Water Project (GS5194)
	GS1247 VPA 82 Lango Safe Water Project (GS5196)
	GS1247 VPA 83 Lango Safe Water Project (GS5197)
	GS1247 VPA 139 Lango Safe Water Project (GS6349)
	GS1247 VPA 140 Lango Safe Water Project (GS6350)
	GS1247 VPA 141 Lango Safe Water Project (GS6351)
	GS1247 VPA183 Lango Safe Water Project (GS7362)
	GS1247 VPA 184 Lango Safe Water Project (GS7363)
	GS1247 VPA 185 Lango Safe Water Project (GS7364)
	GS1247 VPA 186 Lango Safe Water Project (GS7365)
	GS1247 VPA 187 Lango Safe Water Project (GS7366)
Applied methodology:	"Technologies and Practices to Displace Decentralized Thermal Energy Consumption" Version 1.0 /019/
Crediting period:	GS5106: 10/12/2016 to 09/12/2023
	GS5186: 09/12/2016 to 08/12/2023
	GS5187: 12/10/2016 to 11/10/2023
	GS5188: 14/10/2016 to 13/10/2023
	GS5189: 01/03/2017 to 28/02/2024
	GS5190: 02/03/2017 to 01/03/2024
	GS5191: 28/02/2017 to 27/02/2024
	GS5192: 03/05/2017 to 02/05/2024
	GS5193: 03/05/2017 to 02/05/2024
	GS5194: 18/10/2016 to 17/10/2023
	GS5196: 03/05/2018 to 02/05/2025
	GS5197: 03/05/2018 to 02/05/2025

	GS6349: 07/05/2018 to 06/05/2025
	GS6350: 21/09/2018 to 20/09/2025
	GS6351: 19/09/2018 to 18/09/2025
	GS7362: 12/06/2019 to 11/06/2026
	GS7363: 12/06/2019 to 11/06/2026
	GS7364: 12/06/2019 to 11/06/2026
	GS7365: 11/06/2019 to 10/06/2026
	GS7366: 11/06/2019 to 10/06/2026
CME	CO2balance
Location of the project activity:	Lango sub-region, Northern Uganda

The GS1247 Lango Safe Water Project is registered with GS and it aims to deliver clean and safe water by rehabilitation of existing borehole in Lango sub-region, Uganda. The project is located in four districts of Uganda i.e. Alebtong, Dokolo, Otuke and Kole, where people (in pre-project scenario) used wood fuel to purify their drinking, cleaning and washing water. This process results in the release of greenhouse gas emissions from the combustion of wood. This can be avoided if a technology that does not require fuel (wood or fossil) supplies clean water desired by households.

CO2balance has identified broken-down boreholes and rehabilitated them in this monitoring period (water point) as a part of this project. By providing safe water, this project ensures that households consume less firewood during the process of water purification and therefore reduce greenhouse gas emissions from the combustion process.

The project is implemented by CO2balance. The project is a micro-scale project activity and the borehole that was rehabilitated at water point /07/ are Afridev, U3 Modified and India Mark II hand pumps, as confirmed during the remote audit.

The individual project technology days for each borehole were calculated by multiplying the number of days each borehole operated during this monitoring period with the number of people using the borehole for the current monitoring period (with a Cap of 300 users for each borehole).

By providing safe water, this project ensures that households consume less firewood during the process of water purification and therefore reduce greenhouse gas emissions from the combustion process.

2. METHODOLOGY

KBS followed a rule-based verification approach, wherein, as a first step, the contract review is undertaken as per latest version of Gold Standard specific rule/guidelines/standard for GS4GG and CDM Accreditation Standard./021/. Subsequently, after the contract is signed, the monitoring report /01//02/ of the project activity is reviewed in accordance with Gold Standard Rules and CDM rules and guidelines.

A desk review of the project documentation is undertaken, which is followed by a remote audit /018/ by the members of verification team in accordance with the latest version of GS4GG. The findings raised during Verification process provides transparent means to record the observations and compliances by the verification team members. The verification protocol is filled by the verification team that is based on standard auditing practices and latest version of CDM VVS/21/, to capture the assessment of applicable GS4GG & CDM requirements viz., latest version of Project Standard, registered/revised VPA-DD, applied methodology/ies and/or tools and recent decisions. The verification protocol provides transparent means to record the observations and compliances by the verification team members and the nonconformities, if any. The verification protocol is an internal document and is available on request. Following are the major milestones for the verification under consideration.

Duration of verification

<i>Verification Contract</i>	24/03/2022
<i>Remote audit</i>	26/08/2022, 30/08/2022, 01/09/2022, 02/09/2022
<i>Draft Verification Report</i>	11/10/2022
<i>Final Verification Report</i>	29/05/2023

2.1 Review of Documentation

A desk review is undertaken, involving but not limited to,

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, , and the quality assurance and quality control procedures;
- 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 is included in the section 'References'.

2.2 Remote audits

The current verification period (01/04/2021 to 31/03/2022) is 3rd verification period for GS7362, GS7363, GS7364, GS7365, GS7366; 4th verification period for GS5196, GS5197, GS6349, GS6350, GS6351; 5th verification period for GS5189-94 and 6th verification period for GS5106 & GS5186-8. In addition to above, project developer requested for remote audit (reference email) /36/ because of following two reasons:

- No physical audit could be planned due to international travel restrictions, owing to spread of COVID-19 variants.
- Physical site visit could not be postponed due to GS-VERs delivery agreement between CO2balance and a client.

Considering the above reasons from project developer, KBS conducted the risk analysis to assess the feasibility of remote audit, in line with Risk assessment guidelines:

- a) For any outstanding FAR(s)/pending issue (s) since the previous physical site visit:

No physical site visit has been conducted for this particular VPA. However, there were two FARs in the previous verification – One FAR was raised that PP shall submit the updated household list at the time of next verification. The PD has submitted the updated household list /7b/ during this verification. The

Verification team cross checked the value for number of households for each borehole provided in the user list to those values, used in the ER calculations (Column I of Tab 'Project Technology Days' in the ER calculation spreadsheet). The verification team noted that the number of households are correctly considered for all boreholes and for those boreholes, where the users are more than 300, the PD has considered a cap of 300 users. The verification team has verified for all 163 boreholes. Hence this FAR 01 is closed for this verification period.

Second FAR was that PP shall take into account the seasonal variations while conducting WCFT during the next monitoring period (01/04/2021 to 31/03/2022). The verification team noted that the PP has conducted WCFT during the last monitoring period. The PP has provided explanation on how the requirement stated in TPDDTEC v1 methodology, Annex 3.3.d that the WCFT must apply guidance from sII.4.C on representativeness, sample sizing and variability is satisfied. The verification team noted this explanation is presented in the verification report of the previous verification period and that the FAR had been closed.

- b) Any gaps in monitoring data, if any, that cannot be justified as per applicable requirements. There are no gaps observed.

Given the above reasons, KBS skipped the physical site visit for this verification and conducted remote audit following alternative measures for auditing as discussed below.

As per para 4.1.1 (b) of COVID 19 Interim Measures /031/, Verification team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of verification of the VPA. Along with desk review, audit team has conducted remote audit interview corresponding to the VPA as follows:

- A complete desk review of the MR (initial and final versions), as well as all applicable country legal requirement and supportive evidences have been checked by the verification team.
- Verification team has performed Whatsapp video calls with the local expert as well as the stakeholders in order to check implementation of the monitoring plan, current situation, evaluation of data management, QA/QC system, management system of the VPA, project technology, location, trainings, SD parameters etc. Interview questions were filled as per Verification team interview checklist /032/ and also screenshots of the same /32a/ were captured. Cross checks between information provided by interviewed personnel (i.e. by checking sources) to ensure that no relevant information has been omitted.
- The associated users of all the rehabilitated boreholes were inspected through Whatsapp video calls and interviewed in order to assess the baseline practice and usage of borewells in the project case.
- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in the MR and supporting documents.

The remote assessment for this verification assessment was undertaken by Mr. Srinivasan Selvaraj (Team Leader), Mr. Tushar Chaudhari¹ (Technical Expert for 1.1 & 3.1). Ms. Gloria Namazzi (Local Expert) and Ms. Shruti Shrivastava (Verifier Trainee).

¹ Mr. Tushar Chaudhari, who acted as Team member, in the verification team, was an approved auditor in GS. Mr. Tushar was involved in all the stages of the verification process including Desk assessment, Site assessment and Preparation of Final verification report (FVR). FVR was issued to PD, for submission to Sustain Cert on 04/02/2023. Mr. Tushar has left the VVB (KBS Certification) on 31/03/2023.

Dates:	03/08/2022; 26/08/2022; 30/08/2022; 01/09/2022 and 02/09/2022
Key points discussed:	Name of person, interviewed
Project design, start date, project implementation & execution, SDGs, organizational structure, monitoring, quality check & control.	Issie Hatfield, Project Manager, CO2 Balance, London
Training, maintenance, data collection and processing.	Issie Hatfield, Project Manager, CO2 Balance, London
The impact of the project activity on the local community was discussed.	Issie Hatfield, Project Manager, CO2 Balance, London and endusers
The impact of the project activity on local community including Households was discussed.	Issie Hatfield, Project Manager, CO2 Balance, London and endusers
Usage, baseline, sustainable parameters	Issie Hatfield, Project Manager, CO2 Balance, London and endusers

Verification team has done the sampling to check households/borehole's during the remote audit to verify the implementation, baseline, monitoring etc.

The form used for the survey is attached below.

VPA No.	Borewell Name	Bore well ID	Name of the stakeholder	Gender
1. What is the main source of water in current scenario? How far it is located from your house?				
2. What are different uses of water collected?				
3.No. of persons at home				
4.Total water consumed in each household per day?				
5. Do they still fetch water from another well/other source in the project scenario?				
6. What was source of water in pre project scenario?				
7. How far was this source?				
8. Did you boil the water in pre project condition? Why?				
9. If water boiled in pre project scenario, what was the source of fire wood ? What is time spent initially for collecting firewood and water per household per day (hours)				
10. Project time spent initially for collecting firewood and/or water per household per day (hours)				
11. Do you still boil the water from boreholes?				

12. Boreholes Breakdown details/ Maintenance Frequency	
13. When was the last visit by the maintenance/project team?	
14. Do you receive call from the project team? if yes, when was the last time?	
15. Alternative source during project bore well shutdown period	
16. Reduction in Household Air Pollution for project activity in year	
17. Reduction in water borne illness after borehole?	
18. Experience with the borehole?	

The stakeholders/end users for the interview were selected randomly from the list of stakeholders/end users provided by the PP in excel sheet. A total 11 boreholes (covering 1 user from each borehole) out of 169 boreholes (168 Borehole from VPA 71-80, VPA-82-83, VPA-139-141, VPA-183-187 and 1 borehole from VPA 81) were randomly selected (using acceptance sampling – more details added below) and inspected by the verification team through video calls and interviewed in order to assess the baseline appliance and usage of boreholes in the baseline and project case for VPA.

The details of people interviewed & surveyed near the Boreholes by the Verification team are as given below: The interview with the stakeholders/end users were carried out on 26/08/2022; 30/08/2022; 01/09/2022 and 02/09/2022. Screenshots of this interview /32b/ are maintained. The verification team noted that survey data are entered in Kobo mobile monitoring platform by the field team, which are then downloaded (by the project office team), into the final survey forms in the form of excel sheets. The verification team has reviewed the downloaded excel forms (PS and US) and also cross checked these details by reviewing the original data, screenshots of the Kobo mobile monitoring platform /38/ and confirmed that the interview details including submission dates are correctly captured.

S.No	Name	Borehole ID	Borehole Name
1.	Atine Patrick	LAN067	Aminakech
2.	Abuka David	LAN103	Acoke
3.	Obwal Simon	LAN086	Omoror
4.	Betty	LAN017	Kulu Okani
5.	Opunu Anjelos	LAN076	Te-yao
6.	Justine Odwar	LAN098	Okeda A
7.	Olek Tom	LAN150	Adwongdokinyom
8.	Okello Leo	LAN014	TE-Obwolo
9.	OKELLO COSANTINO	LAN069	ACEDE
10.	Atim Alex	LAN114	Apado
11.	Aluko Alex	LAN159	Aringading

2.3 Reporting of Findings

During the course of verification, the findings may be raised as under:

CAR is raised if one of the following occurs:

- Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

FAR is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

The verification report contains (section 7) all CARs, CLs and FARs raised during this verification in transparent manner and provides clear information of the issues raised, response received and its resolutions, including the changes in the documents.

2.4 Verification Assessment

Based on the desk review and remote audit, the team leader follows the verification protocol to identify and record the findings in the context of the project activity. The findings are communicated to the client in the findings document (section 7 of report). The project documentation, including responses to the findings is reviewed by the team leader in consultation with team members, wherever appropriate. The team leader prepares the draft verification report subject to closure or non-closure of the findings.

2.5 Internal Quality Control

The draft verification report prepared by team leader is reviewed by an independent technical reviewer (having competence of relevant technical area himself/herself or through an independent technical area expert) to confirm the internal procedures established by KBS are duly followed and the verification report/opinion is reached in an objective manner and complies with the applicable GS4GG requirements.

The independent technical reviewer may approve or reject the draft verification report. The findings may be identified even at this stage, which needs to be satisfactorily resolved, before the request for issuance is submitted to Gold Standard. The final decision is taken by the Manager Technical and Certification. The technical reviewer and Manager T&C can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager T&C.

3. VERIFICATION FINDINGS

3.1 Remaining Issues (FARs from Previous Validation or Verification)

Discussion:

This is the 3rd, 4th, 5th and 6th periodic verification of the project activity. There were two FARs raised during last verification for PP to update the updated household lists at the time of next monitoring period (01/04/2021 to 31/03/2022) as well as the seasonal variations to be taken into account for the next WCFT during the next monitoring period.

Findings:

Total 02 FAR raised during last verification period that have been addressed during the current verification. Section 7 may be referred for more details.

3.2 Compliance of project implementation with registered VPA DD

Discussion:

Project Participants:	CO2balance
Title of project activity:	GS1247 VPA 71: Lango Safe Water Project (GS5106) GS1247 VPA 72 Lango Safe Water Project (GS5186) GS1247 VPA 73 Lango Safe Water Project (GS5187) GS1247 VPA 74: Lango Safe Water Project (GS5188) GS1247 VPA 75 Lango Safe Water Project (GS5189) GS1247 VPA 76 Lango Safe Water Project (GS5190) GS1247 VPA 77 Lango Safe Water Project (GS5191) GS1247 VPA 78 Lango Safe Water Project (GS5192) GS1247 VPA 79 Lango Safe Water Project (GS5193) GS1247 VPA 80 Lango Safe Water Project (GS5194) GS1247 VPA 82 Lango Safe Water Project (GS5196) GS1247 VPA 83 Lango Safe Water Project (GS5197) GS1247 VPA 139: Lango Safe Water Project (GS6349) GS1247 VPA 140 Lango Safe Water Project (GS6350) GS1247 VPA 141 Lango Safe Water Project (GS6351) GS1247 VPA 183 Lango Safe Water Project (GS7362) GS1247 VPA 184 Lango Safe Water Project (GS7363) GS1247 VPA 185 Lango Safe Water Project (GS7364) GS1247 VPA 186 Lango Safe Water Project (GS7365) GS1247 VPA 187 Lango Safe Water Project (GS7366)
GS registration No:	GS5106 GS5186 GS5187 GS5188 GS5189 GS5190 GS5191 GS5192 GS5193 GS5194 GS5196 GS5197 GS6349 GS6350 GS6351 GS7362 GS7363 GS7364 GS7365 GS7366
Baseline and monitoring methodology:	Gold Standard Voluntary Methodology “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” Version 1.0 /20/
Project Type:	The project activity involves rehabilitating and maintaining nonfunctional borehole handpumps, which will reduce the amount of firewood used in purifying water from unsafe sources for the community.

Project Scale:	Micro - scale Verification team confirms that the project activity is a micro-scale project activity as per the registered PoA-DD, dated 27/04/2017, ver 1.0.
Location of the project activity:	Project areas: Alebtong, Dokolo, Otuke and Kole Districts, Lango sub-region, Uganda As verified during the remote audit conducted between 26 August 2022 and 02 September 2022, verification team confirms that the rehabilitated boreholes are located in given districts in Uganda as given above and hence within the project boundary.
Project's crediting period:	GS5106: 10/12/2016 to 09/12/2023 GS5186: 09/12/2016 to 08/12/2023 GS5187: 12/10/2016 to 11/10/2023 GS5188: 14/10/2016 to 13/10/2023 GS5189: 01/03/2017 to 28/02/2024 GS5190: 02/03/2017 to 01/03/2024 GS5191: 28/02/2017 to 27/02/2024 GS5192: 03/05/2017 to 02/05/2024 GS5193: 03/05/2017 to 02/05/2024 GS5194: 18/10/2016 to 17/10/2023 GS5196: 03/05/2018 to 02/05/2025 GS5197: 03/05/2018 to 02/05/2025 GS6349: 07/05/2018 to 06/05/2025 GS6350: 21/09/2018 to 20/09/2025 GS6351: 19/09/2018 to 18/09/2025 GS7362: 12/06/2019 to 11/06/2026 GS7363: 12/06/2019 to 11/06/2026 GS7364: 12/06/2019 to 11/06/2026 GS7365: 11/06/2019 to 10/06/2026 GS7366: 11/06/2019 to 10/06/2026
Period verified in this verification:	The monitoring period verified is within the crediting period i.e. 01/04/2021 to 31/03/2022.

As part of the remote audit, the verification team was able to confirm that the project implementation is in accordance with the project description contained in the revised GS VPA DD /05/.

The VPA aims to identify and rehabilitate non-functional water points by, renovating them and provide a maintenance programme to ensure that clean, safe water is delivered as a result of this project. By providing safe water, thereby removing the need to boil water, the project will ensure that households consume less firewood during the process of water purification leading to reduction in greenhouse gases. Apart from this, the project offers co-benefits to users by providing relief from high fuel cost, reduced time for fuel collection and/or improved health due to less indoor pollution during the boiling process.

The VPA is implemented in line with the registered revised VPA DDs /05/ i.e. rehabilitation of existing boreholes in Lango sub-region, Uganda. In total 168 boreholes (water point) have been rehabilitated between 11/10/2016 to 16/09/2019 and accordingly used for the emission reduction calculations. Based on the document review /02/, /04/, /07/ and /18/, Verification team confirms that the rehabilitated borehole is as per the registered latest version of VPA DD /05/.

Verification team has checked the technical description of the Hand pumps /06/ submitted by the project developer /06/ which was accurately verified at the project location during the remote audit /18/.

The borehole rehabilitated between 11/10/2016 to 16/09/2019 mentioned in the Water Point Project database /07/ are verified from Repair Confirmation Form /17/ which was signed by the mechanic carrying out the repair along with a village administrator from the local community and found to be correct.

The GHG offsets during this monitoring period is 51,730 tCO₂e. The borehole ID and its date of rehabilitation were verified during the remote audit by the verification team and from Repair Confirmation Form /18/.

During remote audit, verification team has checked the selected borehole which was found to be in line with the description provided in registered VPA DDs /05/ and Repair Confirmation Form /18/ provided by project developer.

Monitoring procedure of GHG data is found sufficient and in accordance with the procedures stipulated under the registered monitoring plan.

Any Project Design Change been sought and approved by GS Secretariat for the project?	☐ Yes ☒ No	NA
Any Changes in the monitoring Plan	☐ Yes ☒ No	NA
Any changes in the sustainable development monitoring plan?	☐ Yes ☒ No	NA

The project activity was implemented, and 168 boreholes were rehabilitated in Lango sub-region, Uganda as described in the registered VPA DD/05/. On the basis of remote audit, stakeholder interview and the reviewed project documentation along with documentary evidence, it can be confirmed that the project implementation is in accordance with registered VPA DD /05/. The monitoring and sustainable development indicators parameters are also monitored as per the VPA DD and GS guidelines /20/ and found to be appropriate.

Assessment of actual emission reductions with the estimate emission reductions in VPA DD's:

Estimated Emission Reduction as per Registered VPA DD:	184,661 tCO ₂ e/year (estimated for 365 days) GS5106: 9,977 GS5186: 9,977 GS5187: 9,977 GS5188: 9,977 GS5189: 9,977 GS5190: 9,977 GS5191: 9,977 GS5192: 9,977 GS5193: 9,977 GS5194: 9,977 GS5196: 9,973 GS5197: 9,973 GS6349: 9,973 GS6350: 9,973 GS6351: 9,973 GS7362: 7,978 GS7363: 7,978 GS7364: 7,978 GS7365: 5,546 GS7366: 5,546
Actual Emission Reduction for the Monitoring Period	51,730 tCO ₂ e GS5106: 2,649 GS5186: 3,702 GS5187: 2,208 GS5188: 2,386 GS5189: 1,370 GS5190: 2,284 GS5191: 1,807 GS5192: 2,606 GS5193: 3,655 GS5194: 1,749 GS5196: 2,939 GS5197: 1,640 GS6349: 1,600 GS6350: 2,688 GS6351: 1,702 GS7362: 3,606 GS7363: 3,568 GS7364: 3,509 GS7365: 3,209 GS7366: 2,853
Is any increase of CER's occurred?	No
Reason for Increase of CER's	NA

In summary, verification team found that the actual emission reductions are lower than the estimate of registered VPA for the current monitoring period.

Verification team considers the project description in the project activity contained in the Monitoring report to be in line with the registered VPA DD /05/ and complete & accurate. The Monitoring report complies with the relevant methodology, tools, forms and guidance applied in the registered VPA DD's /05/.

Sampling Plan:

In line with the requirement of applied Gold Standard methodology - Technologies and Practices to Displace Decentralized Thermal Energy Consumption, version 1.0, Project developer has selected survey samples randomly from borehole user record (project survey, Usage survey and water consumption field test) and meeting the satisfaction level of 90/30 precision for the monitored parameters. Based on interview with the PD, the verification team noted that all 168 boreholes were included in the sampling frame at the beginning. A sample size of 154 HH has been considered by PP for project survey and Usage survey, both of which are conducted in annual basis and a sample size of 68 HH has been selected for Water consumption field test which is conducted on biennial basis.

The project proponent has elected to cross-sample technologies across all its homogenous borehole VPAs located within the Lango sub-regions. The VVB noted that as all VPAs are homogenous - located in the same region, use the same technology, and share a common baseline, the VVB found it appropriate to apply cross-sampling across all VPAs rather than on a VPA by VPA basis.

The appropriateness of sample has been checked against the methodology requirements as well as against the CDM "Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 04.0" /23a/ and the "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 09.0"/23/. The comparison is as provided below:

Survey	Frequency of monitoring	Minimum Sample size as per meth	Sample selected by PP
Water consumption field test	Biennial	40	68
Project survey	Annual	100 for group size > 1000	154
Usage Survey	Annual	100 for group size > 1000	154

The verification team noted that survey results for each monitored parameter meet the desired level of precision (90/30). The verification team followed the “Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities” version 09, para 29 and 33, esp./23/ for taking samples out of the PP’s sample. Verification team has adopted the acceptance sampling approach in order to verify the sampling result of the PP from project survey, usage survey and WCFT, for the applied verification period.

For the determination of VVB’s acceptance sample size in the checklist /32/, verification team assumed the following factors:

1. Acceptable quality level (AQL) - 0.5%
2. Unacceptable Quality Level (UQL) – 20%
3. Producer risk- 10%
4. Consumer risk- 10%

Verification team has determined acceptance sample size based on the “Table 2. Sample size and acceptance number based on AQL, UQL, and producer and consumer risks” of standard “Sampling and surveys for CDM project activities and programme of activities” version 09.0./23/. From the above assumed factors, the verification team determined the minimum sample size (n) as 11 minimum samples for households under the project and acceptance number (c) as 0. Sample size of 11 is deemed appropriate in line with “Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities” version 09, para 29 and 33, esp./23/. Going further, KBS verification team shared a randomly selected list of households from the sample records of project survey, usage survey and WCFT, with the PP prior to remote audit.

Verification team during the remote audit spoke to representatives of 11 households and observed no discrepancy with the PP’s sample records which is in line with present acceptance number of 0 as per sampling standard.

The actual number of sample size where the acceptance survey was done is given below:

Parameters	Total Population	PP’s sample size	Acceptance sample size (n)	Acceptance Number (z)	Sampling method used
Monitoring parameters as per the MR	169 boreholes (168 Borehole from VPA 71-80, VPA-82-83, VPA-139-141, VPA-183-187 and 1 borehole from VPA 81)	Please see the below table	11 boreholes/Households	0	Acceptance sampling using Random sample

As per the frequency of monitoring mentioned in registered VPA PD and as recommended by applied Gold standard methodology - the sampling conducted by project developer is as follows:

Type of Monitoring Survey	Sample Details	Frequency
Water Consumption Field Test (WCFT) /014/ (23/03/2021 to 27/03/2021)	68 nos.	Biennial
Usage Survey /09/ (11/03/2022 to 23/04/2022)	154 nos.	Annual
Project Survey /010/ (11/03/2022 to 23/04/2022)	154 nos.	Annual

During remote site visit, Verification team visited sample households/boreholes applying the random selection technique to cross check the data reported by PP. Verification team has checked the PP samples result with the remote-site interview and result details, monitoring forms, households data base as per the ER sheet/04/ and found consistent. The result of the survey is given below:

Parameters	VVB Sample size (n)	No of PP's record beyond unacceptable level (C)	Accepted Samples by VVB	Accepted/ Rejected
Monitoring parameters as per the MR	11	0	11	Accepted

All the visited samples were showing similar result as reported by PP in its monitoring records. Remote audit results/observations are found to be in line with project developer surveys and results. Further, all the primary monitoring records were reviewed to assess the consistency of information in MR /02/ and ER calculation spreadsheet /04/ and found the monitoring data to be correctly transcribed. Based on that, verification team concludes that sampling results and values presented by PP in the MR and spread sheet and results of survey are consistent with the remote observation and interview with the end users.

Findings:

No Findings raised in this section.

Opinion:

- In the opinion of assessment team, the implementation and operation of the project activity is in compliance with the description in the registered VPA DDs /05/.
- The actual emission reductions for the current monitoring period for all 20 VPAs is 51,730 tCO₂e which are lower than the estimated ERs (184,661 tCO₂e as per registered VPA DD) for the comparable period.
- The verification team on the basis of objective evidence collections, data generation and recording analysis also considered the views obtained in the interviews while arriving at Verification Opinion.

3.3 Compliance of monitoring plan with the monitoring methodology including applicable tool(s)

Discussion:

The DOE verification team is able to confirm that the monitoring plan contained in the registered VPA-DD /05/ is in accordance with the approved methodology applied by the project activity “TVPA-DDTEC- Technologies and Practices to Displace Decentralized Thermal Energy Consumption” Version 1.0 /19/.

The monitoring plan is described in the registered GS VPA-DD /05/.

During the verification, all relevant monitoring parameters (as listed in the GS VPA-DD /05/) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures.

Findings:

CL 05 is raised in this regard and closed successfully. Refer section 7 for details.

Opinion:

The monitoring plan mentioned in the registered VPA-DD is in line with the applied methodology i.e. “TPDDTEC- Technologies and Practices to Displace Decentralized Thermal Energy Consumption” Version 1.0 /19/. The monitoring mechanism is in line with the methodology and is effective and reliable.

3.4 Post registration changes, if any

Not Applicable.

Findings: Not Applicable

3.5 Compliance of monitoring activities with registered monitoring plan

Discussion: The monitoring has been carried out in accordance with the monitoring plan contained in the registered VPA DD /05/.

During the course of verification, all relevant monitoring parameters have been verified with regard to the appropriateness of the applied measurement/ determination method and applied QA/QC procedures. It is confirmed that the monitoring parameters have been measured / determined without material misstatements. According to the methodology, Water Point Project database /07/ and the data regarding on-going monitoring studies /09/,/10/, /11/, /14/, /15/ is maintained.

The verification team reviewed the actual monitoring during the remote audit, which was again verified during the document review and compared against the requirements of the monitoring plan in the registered VPA-DD /05/ and found in line with the registered monitoring plan. The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology and VPA DD /05/.

According to the registered VPA DDs, the verification team summarize the findings of the monitoring approach applied.

Baseline Survey:

Verification team has reviewed the Water Point Project database /07/ which accurately includes the information of the borehole ID, Date of rehabilitation, Quantity of Boreholes rehabilitated, no. of people accessing water from each borehole and distance from the borehole to the household.

Randomly selected boreholes/household have been crosschecked to ensure that they were accurately reflected in the electronic records and further total number of households using each borehole has been confirmed through the lists /18a/ supplied while conducting the remote audit.

Data recording, maintenance and archival was assessed and verified during the remote audit by the verification team. Continuous data entry and recording is maintained by retaining relevant information of the boreholes rehabilitated and households accessing water from each borehole. The accuracy of maintaining Water Point Project database /07/ is found to be adequate by the verification team.

PP has an effective system to maintain the records of every particular borehole rehabilitated in the project activity in electronic forms. The boreholes have an individual unique ID, details of rehabilitation and individual list of people accessing water from each borehole, which avoids any chance of double counting in the entire crediting period which was verified with Repair Confirmation Form /17/, HH lists /07/ supplied by the community group and also verified during remote audit.

During remote audit, random Borehole ID in Project Database are cross checked with Repair confirmation Form /18/ and found to be correct. Further GPS coordinates of boreholes were also verified during the remote audit and found consistent with the database.

Based on above, verification team can confirm that the boreholes assessed during the remote audit were all found to have a unique ID. Therefore, it is concluded that the project is not a double-counting emission reduction.

Data Management:

The Water Point Project database /07/, Results of Water Consumption Field test (WCFT) from previous monitoring period (results of which are valid for current Monitoring period) /14/, Usage Survey /09/, Project Survey /10/ and Quality of the treated water /16/ are collated in excel spreadsheet and stored on a central server in an electronic format.

The documentation procedure ensures a minimum chance of original data being lost – all original copies of project documentation are retained in the office and are available scanned upon request of the UK team. The data management was physically verified and discussed at the time of remote audit and found correct.

Description of staff conducting monitoring activities:

The VVB noted that CO2Balance has technicians who do the installation, maintenance and monitoring of the boreholes. All surveys are administered by trained staff that is local to the area and conversant in the local dialects to ensure that responses were consistent and not biased by any regional language barriers. Each participant is provided with a briefing on the purpose of the survey and is assured that no individual names are used in the analysis. The staff conducting the monitoring activities were interviewed at the time of remote audit/18/ and found to be well versed with proper knowledge of conducting the monitoring activities. The field staff conducted the survey were trained time to time as verified by the remote interview.

Water Consumption Field Test (WCFT):

The Water Consumption Field Test (WCFT) is not carried out for the current monitoring period. As per the frequency determined in the registered VPA DD /05/, the WCFT is to be carried out once in two years. Accordingly, the PP has carried-out WCFT from 23/03/2021 to 27/03/2021, results of which are valid for the current monitoring period. The verification team noted that the WCFT has been carried out by randomly selecting 68 households from the baseline survey, which is in compliance with the minimum sampling requirement of 40 households in the methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption V.1.0' /20/. Verification team has checked the

process of selecting samples as given under section D.4 of the Monitoring report /02/ and found it to be acceptable.

The test was carried out by a trained staff for over four days (1-day for preparation and 3 days for measurement) following a similar method as the Kitchen Performance Test as confirmed during the remote audit. The test was conducted in accordance with the registered VPA DDs /05/ and total litres of water consumed each day was measured, divided by the number of people consuming water in that day – this measurement was repeated over 3 consecutive days and an overall average per household was calculated.

The results showed that on average 24.7 litres of non-boiled clean water used only for drinking, hand washing and food preparation (capped at 7.5 litre) and 0 litres of boiled clean water is consumed per person per day. The total amount of water credited for in this monitoring period is equal to the average amount of clean non-boiled water consumed per person per day (7.5 litre), minus the average amount of boiled clean water consumed per person per day (0). Verification team assessed the WCFT results /014/ with applied methodology /20/ and the registered VPA DDs /05/ and also confirmed the details during the remote audit/18/. It was also confirmed that the WCFT results conducted by CME followed a 90/30 confidence precision level, which has been crosschecked from the WCFT Excel sheet /014/ and found to be conservative.

Quality of the treated water:

The quality of the treated water /016/ has been assessed to ensure that it is fit for human consumption. Though the registered VPA DD requires the tests to be conducted in line with Ugandan National standards – National Water Quality Reference Laboratory – Entebbe (Republic of Uganda), wherein all the parameters were found well within the maximum permissible limit for Natural potable water except for one parameter – Total Iron. The latest sample test reports (Report dated 04/04/2022), separate for each VPA were provided by the PP during the desk review. These were reviewed by assessment team and is confirmed that the thresholds for parameters is equivalent according to the Ugandan standards, hence found ok.

As per registered Validation Report, 1st water quality test have to be conducted within 6 months of rehabilitation and then, yearly frequency has to be followed for water quality tests /016/. KBS verification team verified the submitted WQT excel sheet and sample scan results.

Based on the above documentation verified, KBS team is able to confirm that the water quality tests /016/ have been conducted in line with registered VPA DD..

Usage Survey:

The usage survey establishes the proportion of beneficiaries that use the boreholes. This is a key parameter for the emission reduction calculations. The latest usage surveys in this monitoring period were carried out between the 11/03/2022 and 23/04/2022, as confirmed from the Usage survey results /09/.

The verification team noted that survey data are entered in Kobo mobile monitoring platform by the field team, which are then downloaded (by the project office team), into the final survey forms in the form of excel sheets. The verification team has reviewed the downloaded excel forms (US) and also cross checked these details by reviewing the original data, screenshots of the Kobo mobile monitoring platform /38/ and confirmed that the interview details including submission dates are correctly captured.

The usage survey has been carried out by randomly selecting 154 households from the Water Point Project database /07/, which is in compliance with the minimum sampling requirement of 100 households (as justified above) from the applied methodology /20/.

The results confirmed that 100% of the respondents and their family members use the boreholes that were rehabilitated, as verified from the User survey results /09/. However, to ensure conservativeness

in Emission reductions calculations, PP has capped the usage rate at 95% to account for potential differences in usage across seasons.

Project Survey:

The Project survey has been carried out by randomly selecting 154 households from the Water Point Project database /07/. Sample selection has been justified in above sections of the report. Verification team has reviewed the Project survey results /10/ conducted between 11/03/2022 to 23/04/2022 for current **monitoring** period, which accurately includes the General information (Name, address, telephone number etc), Household socio-demographic information, Water use and purification characteristics, Sources and availability of fuel and SDG Project Indicators.

The verification team noted that survey data are entered in Kobo mobile monitoring platform by the field team, which are then downloaded (by the project office team), into the final survey forms in the form of excel sheets. The verification team has reviewed the downloaded excel forms (PS) and also cross checked these details by reviewing the original data, screenshots of the Kobo mobile monitoring platform /38/ and confirmed that the interview details including submission dates are correctly captured.

Leakage:

The potential sources of leakage has been described in detail with respect to the applied methodology in the corresponding VPA-DD, whichever are relevant to this project and those which have been discounted as well. Individual participants were selected from the borehole user data base using the random sampling process outlined in the monitoring plan. Sample sizes are in line with the Gold Standard requirements, which has already been assessed during the validation, hence not required during this verification period.

Gender Equality:

The project is Gender Equality certified under Gold Standard, which allows project developers and funders to quantify and certify the impacts of climate action on SDG 5 (Gender Equality). As part of this, CO2balance has carried out frequent monitoring activities and training events relating to gender equality.

PD provided the list of participants for the Gender follow up meeting held from 23/02/2022 to 28/03/2022 followed by the photos of the participants and their responses to the assessment team, which were verified. In December 2021, a large-scale refresher Sensitisation Campaign has been carried out. The assessment team verified the attendance sheet for the event /08b/.

Hygiene Campaign:

A hygiene campaign is conducted annually in the form of Water, Sanitation and Hygiene (WASH) training /011/ between 23/02/2022 and 28/03/2022 completed to promote the practice of well-functioning Water Resource Committees at each borehole to ensure good hygienic tendencies are adopted by the communities. WASH practices are also monitored through a series of questions in the annually conducted Project Survey to determine the effectiveness of the trainings and to monitor the health status of the villages with regards to avoiding the spread of water borne diseases.

The verification team assessed the monitoring techniques and each monitoring value in the monitoring report; the monitored parameters of the project are in line with the registered VPA DD /05/ and the applied GS methodology /20/.

Ex-Post Parameters:

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		$f_{NRB,i,y}$
Unit		Fractional non-renewability
Description		Non-renewability status of woody biomass fuel in scenario i during year y
Source of data		fNRB assessment from calculation of the fraction of non-renewable biomass, Uganda Report data CDM Tool 30 EB 108 Annex 11 v3.0 2020.
Verified value		0.89 The verification team noted that Fraction of woody biomass that can be established as non-renewable biomass (fNRB) is updated for the current monitoring period, since the Default fNRB value for the host country, which were used during previous monitoring periods, is no longer valid. The PP has calculated fNRB value, following procedures outlined in Annex 1 section A.1.3 of TPDDTEC v.3.1 /2b/. The PP has presented fNRB calculations in a separate spreadsheet for fNRB calculation /37/. The resulted fNRB is 0.89. The input data relating to the calculations are sourced from Global Forest Resources Assessment Reports for the years 2015 ² and 2020 ³ from FAO. Forest distribution are taken from Global Forest Resource Assessment 2020 while the data relating to Above Ground Biomass Growth are taken from 2006 IPCC Guidelines for National Greenhouse Gas Inventories for "Above ground Biomass growth rates for different ecological Zones". The validation team noted that the data sources for all input values are based on credible sources- official documents from Government of FAO and IPCC. There have been no updation to these sources, since the above publications. Hence, the validation team confirmed that the fNRB calculations are correctly determined and are carried out based on the recent data available at the time of verification in 2022.
Choice of data or Measurement methods and procedures		CDM Tool 30 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v3.0.pdf
Monitoring frequency		Fixed by baseline study for a given crediting period, updated if necessary.
QA/QC procedures		The PD has employed transparent data analysis and reporting while arriving at the value.
Purpose of data/parameter		Calculation of emission reductions

² <http://www.fao.org/forest-resources-assessment/past-assessments/fra-2015/country-reports/en/>

³ <http://www.fao.org/forest-resources-assessment/fra-2020/country-reports/en/>

Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
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Monitoring Requirement	Parameter	Assessment/ Observation by the DOE
Data/Parameter		$N_{p,y}$
Unit		Project Technology Days
Description		Number of persons consuming water supplied by project scenario p through year y
Source of data		Borehole Project Database
Value(s) applied		GS5106: 635,105 GS5186: 887,159 GS5187: 529,179 GS5188: 571,925 GS5189: 328,500 GS5190: 547,500 GS5191: 433,200 GS5192: 624,550 GS5193: 876,000 GS5194: 419,220 GS5196: 704,450 GS5197: 393,105 GS6349: 383,615 GS6350: 644,400 GS6351: 408,185 GS7362: 864,300 GS7363: 854,975 GS7364: 840,865 GS7365: 769,025 GS7366: 684,000 Total: 12,399,258 The verification team has checked the water point project database /07/ and confirms that the values reported are accurate.
Measurement methods and procedures		Sum of the total number of people using each borehole in the project multiplied by the number of days crediting each borehole earns in this monitoring period. If a borehole stops functioning, Water Resource Committee members contact the local office of PP, to arrange for a technician to fix the borehole as soon as possible. A new RCF form is filled in and the total number of days the borehole was down is discounted in the PTDs. This was also confirmed during interview with monitoring personnel of CO2balance working at the field and end users.
Monitoring frequency		Annual
QA/QC procedures		Calculations are double-checked.
Purpose of data/parameter		Emission reduction calculations

Additional comments	Repair confirmation forms /17/ for the above stated borewells have been provided by client and have been verified by verification team for the current monitoring period.
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Monitoring Requirement	Parameter	Assessment/ Observation by the DOE
Data/Parameter		Up,y
Unit		%
Description		Usage rate in project scenario p through year y
Source of data		Annual Usage Survey
Value(s) applied		94% (capped at 95%) The verification team has checked the usage survey /09/ and confirms that the values reported are accurate.
Measurement methods and procedures		Annual usage survey is carried out by staff trained by CO2balance UK Ltd to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd
Monitoring frequency		Annual
QA/QC procedures		Clear guidance is provided to field staff and results are spot-checked against the hard copy of the surveys.
Purpose of data		Emission reduction calculations
Additional comments		Questions are asked in a face-to-face survey and designed to establish whether a household can be considered a regular user of the borehole

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		$Q_{p,y}$
Unit		Litres per person per day
Description		Quantity of safe water supplied in the project scenario pduring the year y using the zero or low emissions clean water supply technology
Source of data		Water Consumption Field Test (WCFT)
Value(s) applied		7.5, as per the methodology requirements, which is conservative. (24.7 - 2021 WCFT result value) The WCFT Test reports /014/ have been checked by the verification team and show that on average 24.7 litres of non-boiled clean water used only for drinking, hand washing and food preparation (capped at 7.5 litre). WCFT Test results have also been cross-checked during the remote audit /018/ and found acceptable.
Measurement methods and procedures		Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. Volume capped at 7.5 litres per person per day as per the methodology. The WCFT will be carried out by staff trained by CO2balance UK Ltd to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
Monitoring frequency		Biennial (Every 2 years) The VVB confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VPA DDs /05/ and as required by the applied methodology /19/
QA/QC procedures		Clear guidance is provided to field staff and results are spot checked against the hard copy of the surveys.
Purpose of data/parameter		Calculation of emission reductions.
Additional comments		Measured water consumption is limited to drinking, cooking and basic personal hygiene. The quantity of safewater under these categories consumed in the project scenario is quantified through measurements and survey.

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		$Q_{p, \text{cleanboil}, y}$
Unit		Litres per person per day
Description		Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology
Source of data		Water Consumption Field Test (WCFT)
Value(s) applied		0 The WCFT Test reports have been checked by the verification team and show that 0 litres of boiled clean water is consumed per person per day. It have also been cross-checked during the remote audit/18/ and found acceptable
Measurement methods and procedures		Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT will be carried out by staff trained by CO2balance UK Ltd to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
Monitoring frequency		Biennial The VVB confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VPA DD'S /05/ and as required by the applied methodology /19/
QA/QC procedures		Clear guidance is provided to field staff and results are spot checked against the hard copy of the surveys.
Purpose of data/parameter		Calculation of emission reductions.
Additional comments		Measured boiled water consumed for drinking, cooking & basic personal hygiene considered safe for human consumption prior to boiling. This is assumed from the stated water source.

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		$Q_{p,rawboil,y}$
Unit		Litres per person per day
Description		The raw or unsafe water that is still boiled after installation of the water treatment technology
Source of data		Water Consumption Field Test (WCFT)
Value(s) applied		0 The WCFT Test reports have been checked by the verification team and show that 0 litres of raw/unsafe water is boiled for consumption per person per day. WCFT Test results have also been cross-checked during the remote audit /18/ and found acceptable.
Measurement methods and procedures		Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT will be carried out by staff trained by CO2balance UK Ltd to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
Monitoring frequency		Biennial The VVB confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VPA DD's /05/ and as required by the applied methodology.
QA/QC procedures		Clear guidance is provided to field staff and results are spot checked against the hard copy of the surveys.
Purpose of data/parameter		Calculation of emission reductions.
Additional comments		Measured boiled water consumed for drinking, cooking and basic personal hygiene considered unsafe for human consumption prior to boiling. This is assumed from the stated water source.

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		Quality of Treated Water
Unit		Parameters as per national standards
Description		Performance of the treatment technology
Source of data		Water Quality Tests As per registered Validation Report, 1st water quality test have to be conducted within 6 months of rehabilitation and then, yearly frequency has to be followed for water quality tests /016/. KBS verification team verified the submitted WQT excel sheet and sample scan results. The latest sample test reports (Report dated 04/04/2022) for the sample collected on 17/03/2022, was provided by the PP during the desk review, for each borehole. Out of 163 active boreholes during this monitoring period, 45 failed the water quality tests, while 118 boreholes passed. The PP has submitted data on non-functional days due to issues with respect to water quality tests for the years 2021 and 2022 along with borehole breakdown data. These are provided in a separate Tab 'BH Failure Data (WQT & Repair)' in the ER spreadsheet /04/. The verification team has reviewed the data and noted that the test results are factored into the ER Calculations. The PD has correctly determined the Project Technology Days (PTD) by considering PTD as 'Zero' for the whole monitoring period for the Borehole cases, where the test results for the water quality have failed. The PD has presented PTD calculations in Column M and P, in the Tab 'Project Technology Days' in the ER spreadsheet. The Verification team has reviewed water quality test certificates /16/ for all the Boreholes. The Verification team checked the dates on the certificates in-order to confirm the number of days mentioned in the 'BH Failure Data (WQT & Repair)' tab in the ER Calculations. Verification team noted that the water quality tests for all boreholes were carried out on 17/03/2022. Based on the above documentation verified, KBS team is able to confirm that the water quality tests /016/ have been conducted in line with registered VPA DD. The PP has considered a value of '0' for Project Technology days for those boreholes which have failed the water quality tests and accordingly considered emission reduction as '0' for the current monitoring period for those boreholes. Hence, verification team noted that the PTD determination is conservative. Example: In the GS5106, 4 boreholes (LAN002, LAN004, LAN005 and LAN010) out of the total 10 boreholes for this VPA has failed. The project technology days are determined as '0' for these boreholes and accordingly considered emission reduction as '0' for the current monitoring period for these boreholes.

Value(s) applied	Pass (72%) / Fail (28%)
Measurement methods and procedures	The water quality is tested in line with national standards in Uganda and WHO guidelines. The water samples are taken at source by the testing body. The tests are conducted in line with Ugandan National standards – National Water Quality Reference Laboratory – Entebbe (Republic of Uganda). The verification team noted from the water quality test reports that all water quality tests during the current monitoring period are carried out in National Water Quality Reference Laboratory – Entebbe (NWQRL), which is a government laboratory under the Ministry of Water and Environment- Uganda. The verification team noted from the Letter Issued from the Laboratory Manager that the accreditation with the Southern African Development Community (SADCAS) is under process. However, the verification team noted from the Letter that the Laboratory has implemented ISO 17025 Quality Management system, which is the international standard for testing and calibration laboratories. The verification team also noted that NWQRL annually participates in the Southern Africa Proficiency Testing scheme, where its performance is excellent. Hence, the verification team was able to conclude that the water quality tests are carried out in a competent laboratory and that the results are reliable.
Monitoring frequency	Verification team confirms that all boreholes are tested at least once per year as confirmed from the Water Quality Tests (WQTs) reports /016/.
QA/QC procedures	The first test is conducted within 6 months of the rehabilitation. At least one test each year conducted by accredited laboratory.
Purpose of data/parameter	Criteria of methodology
Additional comments	Water is tested in accredited Government laboratories. Tested water is collected from source.

3.5.1. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	LE _{p,y}	
Unit	tCO ₂ e per year	
Description	Leakage in project scenario p during year y	
Measured/calculated/default	Measured	
Source of data	Baseline and Monitoring surveys	
Value(s) applied	0 The verification team has checked the Baseline survey /08/ and monitoring survey results /09//010//011//014//015/ and confirms that the value of leakage has been accurately reflected.	
Measurement methods and procedures	Assessed every year using baseline and monitoring surveys	
Monitoring frequency	Annual	
QA/QC procedures	The PP has deployed transparent data analysis based on results of surveys and reporting.	
Purpose of data/parameter	Emission reduction calculations	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.	

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		P _y
Unit		Number of people
Description		Number of persons having access to safe water in the project activity
Source of data		Household lists
Value(s) applied		GS5106: 2,775 GS5186: 2,796 GS5187: 2,500 GS5188: 2,485 GS5189: 1,800 GS5190: 1,500 GS5191: 2,400 GS5192: 3,174 GS5193: 3,000 GS5194: 1,926 GS5196: 2,186 GS5197: 1,857 GS6349: 2,251 GS6350: 2,283 GS6351: 2,329 GS7362: 2,400 GS7363: 2,395 GS7364: 2,303 GS7365: 2,311 GS7366: 2,100 Total: 46,771 The verification team has checked the baseline survey /08/ and confirms that the values reported are accurate.
Measurement methods and procedures		Project Survey, Usage Survey and Household list
Monitoring frequency		Annual (recorded continuously)
QA/QC procedures		The PP has deployed transparent data analysis based on results of surveys and reporting.
Purpose of data/parameter		Calculation of SDG 6
Additional comments		SDG 6: By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		Usage of time saved on water collection
Unit		%
Description		Uses of time saved which was previously spent on water collection
Source of data		Project survey
Value(s) applied		1. (Unpaid) Domestic work (includes cooking and caring for family members): 93% 2. Income generating activities: 52% 3. Religious activities: 40% 4. Social and leisure activities: 47% 5. Voluntary activities: 20% 6. Education and training: 5% 7. Other (Specify): 0% The verification team has checked the project survey /10/ and confirms that the values reported are accurate.
Measurement methods and procedures		Ask users how time saved on water collection in the project scenario as opposed to the baseline scenario is now being used
Monitoring frequency		To quantify how time which was previously spent on water collection is now being used
QA/QC procedures		The PP has deployed transparent data analysis based on results of surveys and reporting.
Purpose of data/parameter		Usage of time saved on water collection.
Additional comments		SDG 5: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		Tp,y
Unit		Minutes
Description		Project time spent collecting water per household perday (hours)
Source of data		Project Survey /10/
Value applied		150.9
Measurement methods and procedures		Assessed every year using Project Survey
Monitoring frequency		Annual
QA/QC procedures		Transparent data analysis and reporting
Purpose of data/parameter		Calculation of SDG 5
Additional comments		SDG 5: Recognize and value unpaid care and domestic work

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		P _{safe}
Unit		Number
Description		Number of additional persons consuming safe water in the project activity compared to the baseline scenario.
Source of data		Household lists and Usage Survey
Value(s) applied		GS5106: 2,469 GS5186: 2,488 GS5187: 2,225 GS5188: 2,211 GS5189: 1,602 GS5190: 1,335 GS5191: 2,136 GS5192: 2,824 GS5193: 2,669 GS5194: 1,714 GS5196: 1,945 GS5197: 1,652 GS6349: 2,003 GS6350: 2,031 GS6351: 2,072 GS7362: 2,136 GS7363: 2,131 GS7364: 2,049 GS7365: 2,056 GS7366: 1,869 Total: 41,618 persons consuming safe water across all VPA's During the interview with the PP, it was informed that all data presented in excel is subject to checking and verification of a sample from the raw data by CO2balance UK Ltd. This was also cross-checked during the remote audit /018/ and was found acceptable to the verification team.
Measurement methods and procedures		Review the number of people using the water point according to the household lists for each VPA and multiply by the usage rate to calculate the number of people now using a safe water source in order to calculate the amount of biomass that would have been burnt to purify the water in the baseline scenario. Deduct from this any individuals that still boil water in the project scenario.
Monitoring frequency		Annual The VVB confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VPA DDs /05/ and as required by the applied methodology /19/
QA/QC procedures		Clear guidance is provided to field staff and results are spot checked against the hard copy of the surveys.
Purpose of data/parameter		Calculation of emission reductions.

Additional comments	Measured water consumption is limited to drinking, cooking and basic personal hygiene. The quantity of safewater under these categories consumed in the project scenario is quantified through measurements and survey.
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Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		TR _y
Unit		Percentage
Description		Total reduction time spent collecting water for project activity in year y (%)
Measured/calculated/default		Measured
Source of data		Project Survey
Value(s) applied		11% (all VPA's) The verification team has checked the Project Survey /09//010//011//014//015/ and confirms that the value has been accurately reflected.
Measurement methods and procedures		Assessed every year using baseline and monitoring surveys
Monitoring frequency		Annual
QA/QC procedures		-
Purpose of data/parameter		Emission reduction calculations
Additional comments		-

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		P _{access}
Unit		Number
Description		Number of additional persons having access to safe water in the project activity compared to the baseline scenario
Measured/calculated/default		Measured
Source of data		Household lists; Usage Survey
Value(s) applied		GS5106: 2,489 GS5186: 2,508 GS5187: 2,243 GS5188: 2,229 GS5189: 1,615 GS5190: 1,346 GS5191: 2,153 GS5192: 2,847 GS5193: 2,691 GS5194: 1,728 GS5196: 1,961 GS5197; 1,666 GS6349: 2,019 GS6350: 2,048 GS6351: 2,089 GS7362: 2,153 GS7363: 2,148 GS7364: 2,066 GS7365: 2,073 GS7366: 1,884 Total: 41,955 additional persons with access to safe water in the project activity across all VPAs. The verification team has checked the updated Household lists /08/ and Usage Surveys /09//010//011//014//015/ and confirms that the value has been accurately reflected.
Measurement methods and procedures		Assessed every year using baseline and monitoringsurveys
Monitoring frequency		Annual
QA/QC procedures		The PP has deployed transparent data analysis based on results of surveys and reporting.
Purpose of data/parameter		Emission reduction calculations
Additional comments		SDG 6: By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		Breakdown Days _y
Unit		Number
Description		The total number of days boreholes included in the project are non-functional during the monitoring period
Source of data		Borehole visits, communications from WRC
Value(s) of monitored parameter		16,883 days (72% operationality)
Measurement methods and procedures		Repair Confirmation Forms /17/ The Repair confirmation forms are provided by the PP during the desk review for each borehole that has broken down. There were a total of 834 failure days for this monitoring period. The details are provided in the tab 'Summary of Repair Logs' in the ER Spreadsheet /04/. Verification team checked the dates on the Repair confirmation forms in-order to confirm the number of days mentioned in the Column I of 'Summary of Repair Logs' tab in the ER Calculations. Verification team noted that the total amount of downtime is determined correctly and these are accounted correctly for the determination of project technology days. Based on the above documentation verified, KBS team is able to confirm that the Breakdown days /016/ have been recorded in line with registered VPA DD. Accordingly, the PP has determined Project Technology days for those boreholes which have broken down and considered emission reduction for the current monitoring period for those boreholes. Example: In the GS5106, 2 boreholes (LAN003 and LAN007) had broken down for 26 days (in 2021) and 19 days (in 2022) respectively. From the repair confirmation form for the Borehole LAN003, the verification team noted that the malfunctioning was reported on 12/11/2021 and the issue was fixed on 08/12/2021. This results in 26 days of breakdown period. This is correctly considered in Column M of 'Project Technology Days' in ER calculation spreadsheet /04/. Similarly, the verification team verified all the Repair confirmation forms to confirm the amount of downtime/breakdown period. It noted that the breakdown period is correctly determined.
Monitoring frequency		Ongoing
QA/QC procedures		Transparent data analysis and reporting
Purpose of data/parameter		Monitoring failure days of boreholes. Calculation of Project Technology Days for calculating emissions reductions.
Additional comments		In the situation of a closed borehole, households return to baseline behaviour to source water.

The ER calculations have been checked by the Verification team and it was verified that all the above ex-post parameters were accurately used in the ER calculations.

Findings:

CAR - 01, CL 01, CL 03, CL 04, CL 06, and CL 07 were raised and successfully closed. Please refer Section 7 for details.

Opinion:

In summary, the verification team confirms that all the ex-post parameters are monitored in accordance with the registered monitoring plan /05/ and applied methodology /20/.

3.6 Compliance with the calibration frequency requirements for measuring instruments

As per the registered VPA DD's, neither the registered monitoring plan nor applied GS monitoring methodology for this particular project technology, describes the requirement of calibration of monitoring equipments.

Verification team confirms that the monitoring tasks, such as Usage Surveys /09/, Project survey /10/, Water Consumption Field Tests /14/, Water Quality Tests /016/, Annual hygiene campaign results /11/ and assessment of leakage usage surveys are carried out by Project team. They were trained in household energy studies and surveying. This has been confirmed during the remote audit /18/. Hence, verification team confirms the creditability/competency of the project team. This also confirms the credibility and authenticity/accuracy of test/survey done by the project team.

3.7 Data not monitored (ex-ante or external parameters)

3.7.1. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	Cj	
Unit	%	
Description	Portion of users of project safe water supply who were already in baseline using a non-boiling safe water supply.	
Source of data	Baseline study	
Value(s) applied)	4.56%	The verification team has checked Baseline survey /08/ and confirms that the value applied is appropriate. This has also been re-confirmed during the remote audit interaction with the households. The value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.
Choice of data or measurement methods and procedure	Deemed valid by Methodology.	
Purpose of data/parameter	Calculation of emission reductions	

Additional comments	Addresses SDG 3, 5, 6 and 13.
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3.7.2. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	EF _{b,CO2}	
Unit	tCO ₂ /TJ	
Description	CO ₂ emission factor arising from use of fuels in baseline scenario	
Source of data	IPCC default value. Volume 2: 2006 IPCC Guidance for National Greenhouse Gas Inventories, Chapter 2, Table 2.5: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf	
Value(s) applied	112 Verification team has confirmed the IPCC default value /22/ which was found to be in line with the applied methodology /19/. Also, the Value is as per the registered VPA DD's /05/ and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.	
Choice of data or measurement methods and procedures	Deemed valid by Methodology	
Purpose of data/parameter	Calculation of baseline emissions.	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.	

3.7.3. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		EF _{b,non CO2}
Unit		tCO ₂ e/TJ
Description		Non-CO ₂ (CH ₄ and N ₂ O) emission factor arising from use of wood fuel in baseline scenario
Source of data		IPCC Default emissions factor: Non-CO₂ Emissions from Stationary Combustion. Annex 1, Table 2 and Table 3. https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf Global Warming Potential: https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
Value(s) applied		9.46 Verification team has confirmed the IPCC default emission factor values for CH₄ and N₂O from Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories /35/. From Table 2 of the document /35/, the emission factor for CH₄ for residential sector due to wood is correctly considered. Similarly, From Table 3 of the document /35/, the emission factor for N₂O for residential sector due to wood is correctly considered. Following the new rule update regarding the applicability of global warming potential for GS for the Global Goals Projects, IPCC Fifth Assessment Report, 2014 (AR5) has been applied to 2021 and 2022 ERs, which was cross checked by the verification team from the document /34/ and found to be consistent. The same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.

Choice of data or measurement methods and procedures	Deemed valid by Methodology				
	Gas	Default Emissions factor (kg_gas/TJ _{NCV})	GWP of gas	Default Emissions factor (kg_CO2e/TJ _{NCV})	Default Emissions factor (t_CO2e/TJ _{NCV})
	CH ₄	300	28	8,400	8.4
	N ₂ O	4	265	1,060	1.06
				Total	9.46
Purpose of data/parameter	Calculation of emission reductions				
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities. Following the new rule update regarding the applicability of global warming potential for GS for the Global Goals Projects, AR5 has been applied to 2021 ERs and AR4 to 2020 ERs.				

3.7.4. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	NCV _b	
Unit	TJ/ton	
Description	Net calorific value of the wood fuel used in the baseline	
Source of data	IPCC Default emissions factor (referenced in TPDDTEC v1)	
Value(s) applied	0.0156 Verification team has confirmed the IPCC default value /23/ which was found to be in line with the applied methodology /20/. Also, the Value is as per the registered VPA DD'S /05/ and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team	
Choice of data or measurement methods and procedures	Deemed valid by Methodology.	
Purpose of data/parameter	Calculation of emission reductions	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.	

3.7.5. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	NCV _p	
Unit	TJ/ton	
Description	Net calorific value of the wood fuel used in the project	
Source of data	IPCC Default emissions factor (referenced in TPDDTEC v1)	
Value(s) applied	0.0156 Verification team has confirmed the IPCC default value /23/ which was found to be in line with the applied methodology /20/. Also, the Value is as per the registered VPA DD'S /05/ and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team	
Choice of data or measurement methods and procedures	Deemed valid by Methodology.	
Purpose of data/parameter	Calculation of emission reductions.	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.	

3.7.6. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	EF _{p,CO2}	
Unit	tCO ₂ /TJ	
Description	CO ₂ emission factor arising from use of fuels in project scenario	
Source of data	IPCC default value; Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5; https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf	
Value(s) applied	112 Verification team has confirmed the IPCC default value /22a/ which was found to be in line with the applied methodology /20/. The same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.	
Choice of data or measurement methods and procedures	Deemed valid by Methodology	
Purpose of data/parameter	Calculation of emission reductions.	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	

3.7.7. Data/Parameter

Monitoring Parameter Requirement	Assessment/Observation by the DOE																								
Data/Parameter	EF _{p,non CO2}																								
Unit	tCO ₂ e/TJ																								
Description	Non-CO ₂ (CH ₄ and N ₂ O) emission factor arising from use of wood fuel in project scenario																								
Source of data	IPCC Default emissions factor: Non-CO₂ Emissions from Stationary Combustion. Annex 1, Table 2 and Table 3. https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf Global Warming Potential: https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf																								
Value(s) applied	9.46 <table><tr><th>Gas</th><th>Default Emissions factor (kg_gas/TJNCV)</th><th>GWP of gas</th><th>Default Emissions factor (kg_CO2e/TJNCV)</th><th>Default Emissions factor (t_CO2e/TJNCV)</th></tr><tr><td>CH4</td><td>300</td><td>28</td><td>8,400</td><td>8.4</td></tr><tr><td>N2O</td><td>4</td><td>265</td><td>1,060</td><td>1.06</td></tr><tr><td></td><td></td><td></td><td>Total</td><td>9.46</td></tr></table> Verification team has confirmed the IPCC default emission factor values for CH₄ and N₂O from Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories /35/. From Table 2 of the document /35/, the emission factor for CH₄ for residential sector due to wood is correctly considered. Similarly, From Table 3 of the document /35/, the emission factor for N₂O for residential sector due to wood is correctly considered. Following the new rule update regarding the applicability of global warming potential for GS for the Global Goals Projects, IPCC Fifth Assessment Report, 2014 (AR5) has been applied to 2021 and 2022 ERs, which was cross checked by the verification team from the document /34/ and found to be consistent. The same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.					Gas	Default Emissions factor (kg_gas/TJNCV)	GWP of gas	Default Emissions factor (kg_CO2e/TJNCV)	Default Emissions factor (t_CO2e/TJNCV)	CH4	300	28	8,400	8.4	N2O	4	265	1,060	1.06				Total	9.46
Gas	Default Emissions factor (kg_gas/TJNCV)	GWP of gas	Default Emissions factor (kg_CO2e/TJNCV)	Default Emissions factor (t_CO2e/TJNCV)																					
CH4	300	28	8,400	8.4																					
N2O	4	265	1,060	1.06																					
			Total	9.46																					
Choice of data or measurement methods and procedures	Deemed valid by Methodology																								
Purpose of data/parameter	Calculation of emission reductions																								
Additional comments	-																								

3.7.8. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	$W_{b,y}$	
Unit	T/litre	
Description	Quantity of wood fuel that is used to treat 1 litre of water in the baseline scenario b during year y	
Source of data	Baseline Water Boiling Test	
Value(s) applied	0.0006789 (Default value used of 0.0004), which is conservative. The verification team has checked applicable methodology and confirms that the values applied is appropriate. The same value is applied in the ER calculation sheet /04/ and hence, acceptable to the verification team.	
Choice of data or measurement methods and procedures	Capped default value set by the Gold Standard for safe water supply projects.	
Purpose of data/parameter	Calculation of emission reductions.	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	

3.7.9. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter		$W_{p,y}$
Unit		T/litre
Description		Quantity of wood fuel that is used to treat 1 litre of water in the project scenario p during year y
Source of data		Baseline Water Boiling Test
Value(s) applied		0.0006789 Default value used of 0.0004, which is conservative. The verification team has checked applicable methodology and confirms that the values applied is appropriate. The same value is applied in the ER calculation sheet /04/ and hence, acceptable to the verification team.
Choice of data or measurement methods and procedures		Capped default value set by the Gold Standard for safe water supply projects.
Purpose of data/parameter		Calculation of emission reductions.
Additional comments		SDG 3: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

3.7.10. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	X_{boil}	
Unit	Percentage	
Description	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary.	
Source of data	Baseline study, Credible literature, studies, survey, reports, relevant to the project target area.	
Value(s) applied	8.91% The verification team has checked Baseline Survey /08/, Project Survey /010/ and confirms that the values applied are appropriate. The Value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.	
Choice of data or measurement methods and procedures	Suppressed demand is determined through a set of questions in the project survey that establish the method households use to purify their water, if any, and how they would choose to purify if they were not subject to monetary and access barriers. This is in line with the Gold Standard principles of suppressed demand outlined in annex 2. A fixed suppressed demand baseline has been opted for, however, in the event the project surveys show a substantial change in fuel use characteristics, a new baseline shall be conducted.	
Purpose of data/parameter	Calculation of emission reductions	
Additional comments	SDG 13: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.	

3.7.11. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	P _{b,boil}	
Unit	Percentage	
Description	Percentage of persons boiling water for purification in the baseline scenario	
Source of data	Baseline survey /08/	
Value(s) applied	0.8 The verification team has checked Baseline Survey /08/ and confirms that the value applied is appropriate. The Value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.	
Choice of data or measurement methods and procedures	The percentage of people stating that they used to boil their water for purification in the baseline scenario, evaluated through the baseline survey.	
Purpose of data/parameter	Calculation of SDG 3	
Additional comments	SDG 3: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. 3.9.1: Mortality rate attributed to household and ambient air pollution. 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services SDG 3	

3.7.12. Data/Parameter

Monitoring Requirement	Parameter	Assessment/Observation by the DOE
Data/Parameter	T _{b,y}	
Unit	Minutes	
Description	Time spent collecting water per household per day prior to project	
Source of data	Gender Baseline survey	
Value(s) applied	169.5 The verification team has checked Baseline Survey/08/ and confirms that the values applied is appropriate. The Value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.	
Choice of data or measurement methods and procedures	Measured by question on time spent collecting water in the baseline survey.	
Purpose of data/parameter	Calculation of SDG 5	
Additional comments	SDG 5 (Gender Equality) 5.4: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. 5.4.1: Proportion of time spent on unpaid domestic and care work, by sex, age and location	

Findings:

CL 02 is raised and closed successfully. Refer to Section 7 for further details.

Opinion:

The default values applied were found to be consistent with the registered VPA DDs /05/, applied methodology and other relevant sources of data. All the values fixed at the time of validation were from IPCC report and IPCC Default values /23/.

3.8 Assessment of Data & calculation of GHG Emission Reductions

Discussion:

The project proponent submitted all the relevant data and parameters required to be monitored to the verification team along with the monitoring report. All the parameters required to be monitored as per the latest versions of registered VPA DDs have been monitored and reported in the monitoring report. Verification team has reviewed the emission reduction calculation worksheet /04/ for the calculation for the monitoring period. Verification team confirms that the formulas, conversions, aggregations and factors are consistent with the monitoring plan in the VPA DD's. The reported data was checked as follows:

- All the necessary data and all the parameters required to be monitored in the registered VPA DDs /05/ were reviewed to ensure accuracy;
- The water point project database kept electronically /07/ was reviewed along with an interview with the person responsible for data entry and data review, to confirm the number of boreholes rehabilitated by the end of this monitoring period. Repair Confirmation Forms /17/ were also assessed for further check.

The overall GHG reductions achieved by the project activity in year y are calculated using the equation below:

Sample Calculation of Emissions Reductions for 1 VPA is provided below (GS5106):

Emission reductions (ERs) resulting from the VPA have been calculated as below:

ERs = Baseline emissions – project emissions – Leakage

Baseline emissions (BE):

$$BE = BE_{b,y} = B_{b,y} * ((fNRB_y * EF_{b,fuel,co2}) + EF_{b,fuel,nonco2}) * NCV_{b,fuel}$$

Where:

$$B_{b,y} = (1 - C_j) * N_{j,y} * W_{i,y} * (Q_{j,y} + Q_{j,rawboil,y})$$

Where:

Parameter	Description	Value applied (for GS 5106)	KBS verification team assessment (for 1 sample VPA – GS 5106)
N _{j,y}	Number of person. Days consuming water supplied by project scenario p through year y	635,105	Total number of people using each borehole in the project (with a Cap of 300 users per borehole) multiplied by the number of days crediting each borehole earns in this monitoring period. Based on these values verified by verification team, N, y for 2021 is verified to be 480,875 and for year 2022 is verified to be 154,230.
C _j	Express	4.56 %	The verification team has checked Baseline survey /08/

	d as a percentage, the portion of users of the project technology who in the baseline were already consuming safe water without boiling it		and confirms that the value applied is appropriate. This has also been re-confirmed during the remote audit /018/ interaction with the households. The value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.
Bb,y	Quantity of fuel consumed in baseline scenario b during the year y in tons	1,818.43	Calculated using formula: $Bb,y = (1 - Cj) * Nj,y * Wb,y * (Qb,y + Qb,rawboil,y)$
Qp,y	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day	7.5	Monitored based on water consumption field tests. Biennial survey is carried out as per frequency set out in registered VPA DD. For this monitoring period, last WCFT survey carried out in March 2021 still applies. 2021 WCFT result value is verified to be 24.7. However, as per methodology, this consumption has been capped at 7.5 l/day for conservative estimates. This value is also mentioned in the VPA-DD. This is deemed acceptable in verification team's opinion.
Qp,rawboil,y	Quantity of raw water boiled in the project scenario p per	0	Monitored based on water consumption field test. WCFT survey results conducted from 23/03/2021 to 27/03/2021 shows the value as "zero".

	person per day		
Wb,y	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b during the project year y, as per Baseline Water Boiling Test	0.0004 T/Litre	As per baseline water boiling tests /015/, verification team confirmed the value to be 0.0006789 T/Litre. However, for this monitoring period, CME has used 0.0004 T/litre default value as per GS4GG rule update ⁴ . The use of this value results in conservative ERs as verified by verification team.
<i>fNRBy</i>	Non-renewability status of woody biomass fuel in scenario i during year y	0.89	Calculated based on https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-30-v3.0.pdf , verified value as 0.89. The verification team noted from previous verification report As per the TPDDTEC v1, Section III.4, 'over the course of the project activity the project proponent may at any time choose to re-examine renewability by conducting a new NRB assessment.' As the CDM value has expired, PP has updated it in line with CDM tool 30.
<i>EF_{b,fuel,co2}</i>	CO ₂ emission factor arising from use of wood fuel in baseline scenario	112 tCO ₂ /TJ	Deemed valid by Methodology: Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5; https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
<i>EF_{b,fuel,nonco2}</i>	Non-CO ₂ emission factor arising from use of fuels in	9.46 tCO ₂ /TJ	IPCC Default emissions factor: Non-CO ₂ Emissions from Stationary Combustion. Annex 1, Table 2 and Table 3. https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf Global Warming Potential:

⁴ <https://www.goldstandard.org/project-developers/standard-documents>

	project scenario		https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
$NCV_{b,fuel}$	Net calorific value of the fuels used in the project	0.0156 TJ/T	IPCC default value: (referenced in TPDDTEC v1)

Based on the above parameters verified by KBS verification team, baseline emissions for current monitoring period are verified to be:

Year	Baseline emissions (t CO ₂ e) for G5106
2021 (01/04/2021-31/12/2021)	2,203
2022 (01/01/2022 – 31/03/2022)	707
Total	2,910

Project emissions (PE):

As no fuel is used in the project scenario, hence, project emissions have been calculated as “zero”.

Leakage (PE):

Further, in line with the registered VPA-DD as well as applied methodology, leakage has also been considered “zero”

Hence, the emission reductions resulting from the project during the current monitoring period are verified to be as follows:

Emission reductions (ERs) = Baseline emissions – Project emissions - Leakage

= 2,910 tCO₂e.

CME has also considered suppressed demand of 91.09 % (8.91% non-suppressed demand based on baseline study) to account for any cases that would, in the absence of the project activity, have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary.

Emission reductions corrected for suppressed demand = $2,910 - (2,910 \times (1 - 0.9109)) = 2,649 \text{ t CO}_2\text{e}$

Emission reduction calculations as provided in ER excel sheet have been verified by KBS verification team and are deemed correct, conservative, reproducible and acceptable.

Calculation of SDGs (for a sample VPA (VPA 71 – GS5106) :

a) SDG 3 (Good Health and Wellbeing):

As per registered VPA DD, P_{safe}, "Number of additional persons consuming safe water in the project activity compared to the baseline scenario" is considered as an indicator of SDG 3 achievement. The same is calculated using the below equation:

$$P_{safe} = 2,469 = 2,775 * (1 - 0.0456) * (1 - 0.008) * 0.94$$

$$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil}) * U_{p,y}$$

Where:

Parameter	Description	Value applied	KBS verification team assessment
P _y	Number of persons having access to safe water in the project activity;	2,775	The verification team noted that this value is calculated based on Household lists for each borehole in the VPA. There are a total of 10 Boreholes. As per the methodology requirements, the value for this parameter is capped at 300 for each borehole. For example, for the Borehole, LAN001, while the actual users are 323 from the household lists, the PP has capped the user at 300.
C _j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it	4.56 %	The verification team has checked Baseline survey /08/ and confirms that the value applied is appropriate. This has also been re-confirmed during the remote audit /018/ interaction with the households. The value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.
P _{b,boil}	Percentage of persons boiling water for purification in the baseline scenario	0.8%	This is a Fixed ex-ante parameter based on baseline study. The verification team confirmed the same from the VPA DD.

Up,y	Usage rate in project scenario p during year y;	94 % (95 % cap)	This is a monitored parameter based on usage survey. The verification team confirmed the correctness of the value from the usage survey /09/. The verification team noted that the usage survey has been carried out by staff trained by CO2balance to meet the specific requirements of the methodology. All data presented in Excel is subject to checking and cross referencing of a sample of the raw data by the project developers. Hence the value is deemed appropriate.
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b) SDG 5 (Gender Equality):

As per registered VPA DD, TRy , “Total reduction in time spent collecting water for project activity in year y” has been considered as an indicator for achievement of this SDG. The same is calculated as below:

$$TRy = Tb,y - Tp,y$$

Where;

Parameter	Description	Value applied	KBS verification team assessment
Tb,y =	Time spent collecting water per household per day prior to project survey.	169.5 minutes	This is a Fixed ex-ante parameter based on Gender baseline survey /08a/. The verification team confirmed the same from the VPA DD.
Tp,y =	Time spent collecting water per household per day in project	150.9 minutes	This is a monitored parameter based on project survey. The verification team confirmed the correctness of the value from the project survey /10/.

Hence, the total reduction in time spent collecting water for project activity is calculated as **18.6 minutes, which is 11 % reduction**. Calculations and source information (baseline and project survey) have been verified by the verification team.

c) SDG 6 (Clean Water and Sanitation for all):

As per registered VPA DD, “people having access to safe water” has been considered as an indicator for achievement of this SDG. The same is calculated as below:

$$P_{\text{access}} = Py * (1 - Cj) * Up,y$$

where;

Parameter	Description	Value applied (for a sample VPA (VPA 71 – GS5106))	KBS verification team assessment (for a sample VPA (VPA 71 – GS5106))
Py	Persons having access to safe water in the project activity	2,775	The verification team noted that this value is calculated based on Household lists for each borehole in the VPA. There are a total of 10 Boreholes. As per the methodology requirements, the value for this parameter is capped at 300 for each borehole. For example, for the Borehole, LAN001, while the actual users are 323 from the household lists, the PP has capped the user at 300.
Cj	Portion of users of the project technology j who in the baseline were consuming safe water without boiling it	4.56 %	The verification team has checked Baseline survey /08/ and confirms that the value applied is appropriate. This has also been re-confirmed during the remote audit /018/ interaction with the households. The value is as per the registered VPA DD's 0 and the same value is applied in the ER calculation sheet /04/. Hence, acceptable to the verification team.
Up,y	Usage rate in project scenario p during year y	93.99 %	This is a monitored parameter based on usage survey. The verification team confirmed the correctness of the value from the usage survey /09/. The verification team noted that the usage survey has been carried out by staff trained by CO2balance to meet the specific requirements of the methodology. All data presented in Excel is subject to checking and cross referencing of a sample of the raw data by the project developers. Hence the value is deemed appropriate

KBS verification team observed that for total of 57 household (as per User list for VPA 71), there are total 323 users registered for this borehole. However, to remain conservative and in line with methodology, PP has capped the users at 300 per borehole for current monitoring period. Based on this, the number of people having access to safe water is calculated as 2,469 as against 3,713 estimated in baseline survey.

d) SDG 13 (Climate Action):

As per registered VPA DD, “GHG emission reductions” are considered as an indicator for achievement of this SDG. The calculation of the same is as presented above in section 3.8 of this report. Total emission reductions during current monitoring period are verified to be 2,649 tCO₂e.

The equation used to calculate emission reductions does not provide a value for baseline or project emissions, rather it uses a value for fuel savings that is then multiplied by relevant emission factors to give emission reductions.

The above consolidated equation used for estimation of emission reduction is in line with methodology /19/ and VPA DD's /05/.

Similarly, the PP has presented separate calculations for other VPAs, the summary of which is provided below.

GS ID	SDG 13 ERs Total	SDG3 P_{safe}	SDG5 TR_y	SDG6 P_{access}	P_y	PTD Total
GS5106	2,649	2,469	11.0%	2,489	2,775	635,105
GS5186	3,702	2,488	11.0%	2,508	2,796	887,159
GS5187	2,208	2,225	11.0%	2,243	2,500	529,179
GS5188	2,386	2,211	11.0%	2,229	2,485	571,925
GS5189	1,370	1,602	11.0%	1,615	1,800	328,500
GS5190	2,284	1,335	11.0%	1,346	1,500	547,500
GS5191	1,807	2,136	11.0%	2,153	2,400	433,200
GS5192	2,606	2,824	11.0%	2,847	3,174	624,550
GS5193	3,655	2,669	11.0%	2,691	3,000	876,000
GS5194	1,749	1,714	11.0%	1,728	1,926	419,220
GS5196	2,939	1,945	11.0%	1,961	2,186	704,450
GS5197	1,640	1,652	11.0%	1,666	1,857	393,105
GS6349	1,600	2,003	11.0%	2,019	2,251	383,615
GS6350	2,688	2,031	11.0%	2,048	2,283	644,400
GS6351	1,702	2,072	11.0%	2,089	2,329	408,185
GS7362	3,606	2,136	11.0%	2,153	2,400	864,300
GS7363	3,568	2,131	11.0%	2,148	2,395	854,975
GS7364	3,509	2,049	11.0%	2,066	2,303	840,865
GS7365	3,209	2,056	11.0%	2,073	2,311	769,025
GS7366	2,853	1,869	11.0%	1,884	2,100	684,000
Total	51,730	41,618	11.0%	41,955	46,771	12,399,258

Findings:

No findings were raised.

Opinion:

The verification team confirms that

- a) The complete data set for the monitoring parameters was available as mentioned in the monitoring plan in the registered VPA DD's for the monitoring period duration.
- b) The cross checks were undertaken for all the parameters indicated in the respective sections and were found complying with the requirements of the monitoring plan of the registered VPA DD's
- c) Appropriate methods and formulae for calculating baseline emission, project emissions and leakage have been followed;
- d) The claimed emission reductions are free from material errors, omissions or misstatements, with a reasonable level of assurance.

3.9 Quality of Evidence to Determine Emission Reductions

The evidence (documents/interview/remote audit) referred for verification of individual monitoring parameter and fixed parameters are defined section 3.5 and section 3.7 respectively. It can be confirmed by the assessment team that the reported emission reductions have been conservatively calculated. A list of referred documents for verification is also included in Section 6 of this report.

3.10 Management System and Quality Assurance

Verification team evaluated the management systems in place to implement the monitoring of the project activity. This included the organizational structure, roles and responsibilities, data collection, transfer and aggregation procedures, training of personnel, data storage and archiving and emergency procedures for the monitoring system. On the basis of remote interview, with the employees of CO2balance, involved in the project monitoring and data collection, inspection of data storage and document review. All surveys are administered by trained staff or casuals, local to the area and conversant in the local dialects to ensure that responses were consistent and not biased by any regional language barriers. Field staffs were provided with an English version of the questionnaire to provide for the greatest possible standardisation of responses. Verification team can confirm that the responsibilities and authorities for monitoring and reporting are appropriate and effective for the project type and hence in accordance with monitoring plan of the registered VPA DD's /05/ and applied monitoring methodology /20/.

3.11 Status of implementation of continuous input / Grievance mechanism & feedback received

There is a continuous input/grievance mechanism in place for beneficiaries to be able to give feedback on the project. In this regard Grievance Expression Process Book /28/ has been placed in local offices to facilitate such activities.

During the remote audit/18/, the location of the placement of Grievance Expression Process Book /28/ was found to be appropriate as it is central to the project areas and easily accessible.

Field staffs have not received any feedback during this monitoring period from the borehole users on damage or breaking of boreholes therefore it can be assumed that the project is running as planned. It was confirmed that no feedback was received during the monitoring period.

4. RECOMMEDATIONS / FORWARD ACTION REQUEST

Findings:

1 Forward Action Request is raised during current monitoring period. FAR 02 raised during the last verification period will be addressed in the next monitoring period, since no WCFT is carried out for this monitoring period. This is raised as FAR 02 in Table 4 of this report. Refer to Section 7 for further details.

5. VERIFICATION & CERTIFICATION STATEMENT

KBS Certification Services Pvt. Ltd. has been contracted by “CO2balance” to undertake independent verification and certification for the greenhouse gas (GHG) emission reductions reported from the GS registered. The current verification period (01/04/2021 to 31/03/2022) covers 20 VPAs with 3rd verification period for GS7362, GS7363, GS7364, GS7365, GS7366; 4th verification period for GS5196, GS5197, GS6349, GS6350, GS6351; 5th verification period for GS5189-94 and 6th verification period for GS5106 & GS5186-8.

The verification is based on the registered VPA DD version 5.0 0 and initial and final Monitoring reports /01//02/ for this project. Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the Gold Standard Board.

The management of the CO2balance is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Reports Version 07 dated 09/05/2023 /02/. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the CO2balance. The development and maintenance of records and reporting procedures are in accordance with the Final Monitoring Report /02/.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the current monitoring period based on the reported emission reductions in the Final Monitoring Reports for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, KBS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

KBS confirms the following;

Reporting period: 01/04/2021 to 31/03/2022 (including both the days), covering following VPAs.

GS7362, GS7363, GS7364, GS7365, GS7366, GS5196, GS5197, GS6349, GS6350, GS6351, GS5189, GS5190, GS5191, GS5192, GS5193, GS5194, GS5106, GS5186, GS5187 and GS5188.

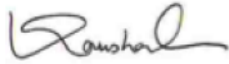
Verified and certified emission in the above reporting period:

Gold Standard Voluntary Emission Reductions (GS VERs): 51,730 tCO_{2e}

Year	Gold Standard Voluntary Emission Reductions (GS VERs) tCO _{2e}
2021	39,024
2022	12,706
Total for Monitoring period	51,730

Location: Faridabad

Date: 08/06/2023

A handwritten signature in black ink, appearing to read 'Kaushal', with a stylized flourish at the end.

Kaushal Goyal

Managing Director

KBS Certification Services Pvt. Ltd.

REFERENCES

Ref no.	Reference Document
/01/	Initial Monitoring Report, version 01, dated 05/05/2022
/02/	Final Monitoring Report, version 07, dated 09/05/2023
/03/	Emission reduction calculation sheet corresponding to initial monitoring report
/04/	Emission reduction calculation sheet corresponding to final monitoring report
/05/	GS Performance review report
/05a/	VPA DD - version 05
/06/	Technical description of the project technology along with installation and maintenance Manual
/07/	Water Point Project database
/07b/	Updated Household list/ User List- along with distance from the borehole.
/08/	Baseline Survey
/08a/	Gender Baseline survey
/08b/	Gender follow-up meeting and sensitization campaign
/09/	Annual Usage survey for current monitoring period, carried out from 11/03/2021 to 23/04/2022
/010/	Project Survey for current monitoring period
/011/	Annual hygiene campaign results (Wash Training Report)
/012/	Transfer of carbon rights from borehole owners to CO2balance
/013/	List of hand pumps repaired under project activity during current monitoring period – 01/04/2021 to 31/03/2022
/014/	Water Consumption Field Test WCFT (Excel sheet) carried out from 23/03/2021 to 27/03/2021 in the last monitoring period.
/015/	Baseline Water Boiling Test reports
/016/	Laboratory Test reports for Quality of Treated Water
/16a/	Evidence for Competence of the testing laboratory.
/017/	Repair Confirmation Form
/018/	Remote audit records
/18a/	List of households selected for remote audit
/019/	Applied baseline and monitoring Gold Standard Voluntary Methodology, “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” Version 1.0
/020/	Gold Standard specific rule/guidelines/standard for GS v2.2
/021/	1. CDM validation and verification standard for project activities, version 03.0 2. CDM project standard for project activities, version 03.0 3. CDM project cycle procedure for project activities, version 03.0 4. CDM Validation and Verification Stanadard for Programme of activities, version 03.0
/21a/	Tool 30: Calculation of the fraction of non-renewable biomass version 03
/022/	2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html CDM Default values: https://cdm.unfccc.int/Panels/ssc_wg/meetings/035/ssc_035_an20.pdf
/022a/	https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

/023/	Standard: Sampling and surveys for CDM project activities and programmes of activities, version 09.0
/23a/	Guideline: Sampling and surveys for CDM project activities and programmes of activities, version 04.0
/024/	National standard on water quality testing
/025/	Maintenance record of boreholes during the monitoring period
/026/	Organization structure for the project activity
/027/	Supportive documents for the sustainable parameters
/028/	Supportive document for grievance mechanism
/029/	Ugandan National Government standards for potable water
/030/	Audit Checklist
/031/	COVID 19 Interim Measures by GS4GG
/032/	Verification team interview checklist
/32a/	Screenshots of Interview from verification team
/033/	Questionnaire for stakeholder consultations
/034/	Global Warming Potential Values https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
/035/	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories: IPCC Default emissions factor: Non-CO2 Emissions from Stationary Combustion. Annex 1, Table 2 and Table 3. https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf
/036/	Email from CO2balance requesting remote assessment of site visit.
/037/	fNRB calculation spreadsheet
/038/	screenshots of the Kobo mobile monitoring platform

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Summary of findings	CL	CAR	FAR
	07	02	01

Table 1. Remaining FAR from validation and/or previous verifications (Applicable for verification)

FAR ID	FAR 01.	Section no.	3.1 of this report	Date: 06/09/2022
Description of FAR				
Forward Action Request raised during previous verification for the monitoring period (01/04/2020 to 31/03/2021) are as follows. PP to provide response. The PD shall submit the updated Users List.				
Project participant response				Date: : 07/09/2022
FARs have been addressed in the Monitoring Reports under section B.1.1. To clarify: User Lists is submitted.				
Documentation provided by project participant				
<i>User list</i>				
DOE assessment				Date: : 15/10/2022
The PP has submitted the updated household list /07b/ during this verification. The Verification team cross checked the value for number of households for each borehole provided in the user list to those values, used in the ER calculations. The verification team noted from the user list that the number of households are more than cap value of 300 for all the boreholes using Hand pumps. Hence the PP has correctly considered the cap value of 300 in the ER calculation sheet. Hence this FAR 01 is closed for this verification period. Hence FAR 01 is closed.				

FAR ID	FAR 02.	Section no.	3.1 of this report	Date: 06/09/2022
Description of FAR				
Forward Action Request raised during previous verification for the monitoring period (01/04/2020 to 31/03/2021) are as follows. PP to provide response. The PD shall take into account the seasonal variations, while conducting the WCFT during the next monitoring period.				
Project participant response				Date: : 07/09/2022
FARs have been addressed in the Monitoring Reports under section B.1.1. To clarify: The WCFT was not completed this monitoring period as it's completed biennially. This FAR will be addressed in the next monitoring period and therefore is not of concern for this review.				
Documentation provided by project participant				
<i>Nil</i>				
DOE assessment				Date: : 15/10/2022
The verification team noted that the PP has conducted WCFT during the last monitoring period. The WCFT was not completed this monitoring period as it's completed biennially. This FAR will be addressed in the next monitoring period and therefore is not of concern for this review. FAR 02 is closed for this verification period. This will be verified in the next verification period. Hence included in Table 4 of this report.				

Table 2. CL from this validation/verification

CL ID	CL 01.	Section no.	3.5 of the report	Date: 06/09/2022
Description of CL				
In Excel sheet “Lango Water Project Survey, March 2022” Excel sheet, in the spreadsheet “analysis”, for the question “28. Trips per week collecting fuel on average?” there are few outliers. Example “21” in two cases – Row 58 and 122, whereas the average for the parameter is 4.2. Please clarify about the process followed to consider such abnormal values for further analysis.				
Project participant response		Date: 07/09/2022		
PP reviewed these figures once received to confirm mistakes were not made by the field staff member. All data was believed to be correct, therefore, we have not excluded these outliers.				
Documentation provided by project participant				
Nil				
DOE assessment			Date: 15/09/2022	
The PP informed that the central project team will review the survey figures submitted by the field team and that any gross variances are re-confirmed. This process is followed for all survey parameters. This was confirmed from interview with the project team. Hence this CL 01 is closed.				

CL ID	CL 02.	Section no.	Section 3.7 of the report	Date: 06/09/2022																								
Description of CL																												
a. Refer Excel Sheet, Baseline Survey AOD resultsv3”, Spreadsheet,” Report”, C_j is calculated as 4.36%, whereas in ER sheet, in the spreadsheet, “SDG Impacts”, it is mentioned as 4.56%. Please clarify. b. Refer the Excel Sheet, “Baseline survey-AOD Results_v3”, Spreadsheet “Report”; for the question “How often did you use these technologies per day to boil water (for drinking, cooking and washing) during the dry season?” the results are determined as “1.25 % (Wood fuel Stove) +1.25 % (Charcoal Stove) = 2.5 %”, whereas in ER sheet, in the spreadsheet, “SDG Impacts”, for the parameter, P_{b, boil} “Percentage of persons boiling water for purification in the baseline scenario” is mentioned as 0.8 %. It is not clear how the value for this parameter, P_{b, boil}, is determined.																												
Project participant response		Date: 07/09/2022																										
a. PP can confirm the C_j value of 4.56% is correct. Calculations were clarified in a document called “Lango_Baseline Report_v.1”. From this document, there is a summary tab of how this is calculated: <table><tr><th>Districts</th><th>Safe Water Source</th><th>Purification with zero emission technology</th><th>C_j Result Survey</th><th>Sample Number</th><th>Weighted Average</th></tr><tr><td>Alebtong, Otuoke, Dokolo</td><td>4.36%</td><td>0%</td><td>4.36%</td><td>321</td><td>3.34%</td></tr><tr><td>Kole</td><td>0%</td><td>5.21%</td><td>5.21%</td><td>98</td><td>1.22%</td></tr><tr><td>Total C_j</td><td></td><td></td><td></td><td></td><td>4.56%</td></tr></table> Parameter C_j C_j = 4.56%					Districts	Safe Water Source	Purification with zero emission technology	C _j Result Survey	Sample Number	Weighted Average	Alebtong, Otuoke, Dokolo	4.36%	0%	4.36%	321	3.34%	Kole	0%	5.21%	5.21%	98	1.22%	Total C _j					4.56%
Districts	Safe Water Source	Purification with zero emission technology	C _j Result Survey	Sample Number	Weighted Average																							
Alebtong, Otuoke, Dokolo	4.36%	0%	4.36%	321	3.34%																							
Kole	0%	5.21%	5.21%	98	1.22%																							
Total C _j					4.56%																							
b. PP has shared a VPA-DD for one VPA, to demonstrate how P_{b,boil} is calculated. It's combines the results from both baseline surveys (AOD and Kole), applying a weighting to determine the average. See page 18-19 in VPA-DD. This was approved during validation therefore it is a verified figure. The explanation for the origin of the figures P_{b,boil} used in this calculation can be found in the document ‘Internal_Validation_GS4GG_VPA_82,83,139,140,141@Final_round@26122018’, submitted in this round of CARs. To summarise, it's (43*8)/100 = 3.44%																												

Documentation provided by project participant	
"GS7362_VPA-DD v2 CLEAN" "Internal_Validation_GS4GG_VPA_82,83,139,140,141@Final_round@26122018" "Lango_Baseline Report_v.1"	
DOE assessment	Date: 15/09/2022
a. The PP has submitted "Lango_Baseline Report_v.1", in which the details of Water Project Survey (WPS) are provided which included the description on how the parameter "Cj, Portion of users of the project technology j who in the baseline were consuming safe water without boiling it" is determined. Here, the value of 4.36 is determined for following districts- Alebtong, Otuke, Dokolo, (WPS involving 321 randomly selected households across the three districts of Alebtong, Dokolo and Otuke). And a value of 5.21 % is determined for Kole district (WPS involving 98 randomly selected households in Kole district). The Cj results of each survey were multiplied by the number of respective samples and then divided by the total number of samples (419), which results in a value of 4.56 %. This value is correctly used in the ER and SDG Impact calculations. Hence this CL 02 (a) is closed. b. PP has shared a VPA-DD for one VPA (VPA 183), to demonstrate how $P_{b,boil}$ is calculated. It combines the results from both baseline surveys (AOD and Kole), applying a weighting to determine the average. The verification team noted that this value was approved during validation and the explanation for the origin of the figures $P_{b,boil}$ used in this calculation is found in the document 'Internal_Validation_GS4GG_VPA_82,83,139,140,141@Final_round@26122018'. The verification team noted that in "Baseline_Survey – AOD Results_v.3" cell E43 on the "Report" tab shows that 100% of respondents do not purify their water and in "Baseline_Survey - Kole_v.3" on tab "Baseline Report" cell D32 shows that 8% purify their water, 43% of which boil (cell D41). This equates to 3.44% of respondents from Kole. When a weighted average is taken from AOD (321 respondents) and Kole (98 respondents), the percentage of persons boiling water for purification in the baseline scenario comes to 0.8%. This value is correctly used in the ER and SDG Impact calculations. Hence this CL 02 (b) is closed.	
Hence CL 02 is closed.	

CL ID	CL 03.	Section no.	3.5 of the report	Date: 06/09/2022
Description of CL				
In ER calculations MP 6 excel sheet, spreadsheet “SDG impacts”, source for the following parameter - $T_{b,y}$, Time spent collecting water per household per day prior to project (Q14 Gender Baseline Survey) – is not submitted to the verification team.				
Project participant response		Date: 07/09/2022		
$T_{b,y}$ can be found in the “Gender Baseline Survey Results” spreadsheet, shared with this submission. See ‘Report’ tab, cell F39.				
Documentation provided by project participant				
“Gender Baseline Survey Results”				
DOE assessment			Date: 15/09/2022	
The PP has submitted the document, “Gender Baseline Survey Results. The value for the parameter, $T_{b,y}$ can be found in the “Gender Baseline Survey Results” spreadsheet, ‘Report’ tab, cell F39. This value is correctly used in the SDG Impact calculations. Hence this CL 03 is closed.				

CL ID	CL 04.	Section no.	3.5 of the report	Date: 06/09/2022
Description of CL				

In the Document “ Equality Annex 2022 “campaign workshops on Group Dynamics and Gender Based Violence took place in four districts in Northern Uganda, Kole, Dokolo on dates 26 th - 29 th November 2018”. It is not clear how these dates are relevant for the current monitoring period and representative.	
Project participant response	Date: 07/09/2022
These dates are relevant to the original main campaign workshop that took place in a previous monitoring period. This event started off the campaign. Following this workshop, smaller follow up visits took place to ensure gender monitoring continued in the project. However, in this monitoring period, a large-scale event also took place to boost the amount of gender training conducted, similar to a refresher training session.	
Therefore, these dates of the original training event remain relevant.	
Documentation provided by project participant	
“Lango Project_MR_MP6 V3 CLEAN”	
“Lango Project_MR_MP6 V3 TRACKED”	
DOE assessment	Date: 15/09/2022
The PP has mentioned that the original main campaign workshop – A Gender Sensitisation campaign - took place between 26 th to 29 th November 2018 in Kole, Dokolo districts and between 10 th -13 th December 2018 in Otuke and Alebtong districts. This workshop was followed with many smaller follow up visits in the districts covered in the project boundary. These took place to ensure gender monitoring continued in the project.	
Members from Water Resource Committee from each village attended such trainings. For the current monitoring period, such training was conducted between 20/02/2022 and 28/03/2022 covering large number of villages in the districts covered in the project boundary. The verification team could verify the attendance list of this training. This is now mentioned in the MR. Hence this CL 04 is closed.	

CL ID	CL 05.	Section no.	3.3 of the report	Date: 06/09/2022
Description of CL				
In the sub-section ‘Borehole database’ of the section C “DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT”, it has been mentioned that ‘ <i>further studies were conducted to screen and determine the exact number of people using the rehabilitated boreholes</i> ’, PP to clarify what sort of studies were conducted during the monitoring period for the same.				
Project participant response		Date: 07/09/2022		
Further studies simply refers to the process of the Project Officers reviewing the user lists internally, highlighting any errors or inconsistencies, and liaising with communities to ensure every member has entered their information. New user lists are collected frequently throughout the crediting period to ensure the data remains as accurate as possible.				
Documentation provided by project participant				
Nil				
DOE assessment			Date: 15/09/2022	
The PP has explained that the term “further study” denotes the process wherein the Project team review the user lists, supplied by the community groups and district officers, internally. If any errors or inconsistencies are identified, the project team liaise with communities to ensure every member has entered their information. This process is carried out frequently throughout the crediting period to ensure the user data remains as accurate as possible. The verification team confirmed that this process is followed in the current monitoring period during interview with the project team. Hence this CL 05 is closed.				

CL ID	CL 06	Section no.	3.5 of the report	Date: 06/09/2022
Description of CL				
In last monitoring period for the duration 01/04/2020 to 31/03/2021, a cap of 90 % for usage rate was considered. However, for this monitoring period between 01/04/2021 to 31/03/2022, a cap of 95 % is considered for the same parameter. Provide reason/justification for the increase in cap.				
Project participant response		Date: 07/09/2022		
PP has provided a screenshot of an email exchange (see “Additional evidence – 03.08.2022” document) between SustainCERT and CO2balance from 1st June 2021. This is now used as valid evidence when SC are reviewing any CO2balance projects. As the analysis in the usage survey is of a higher level (more thorough) than previous usage survey versions used in the last monitoring period, a cap of 95% is allowed to be applied. It's a cap decided by CO2balance, rather than in the methodology.				
Documentation provided by project participant				
“Additional evidence – 03.08.2022”				
DOE assessment			Date: 15/09/2022	
PP has provided a screenshot of an email exchange (Reference “Additional evidence – 03.08.2022” document) between SustainCERT and CO2balance from 1st June 2021, relating to the usage rate cap of 95 %. The verification team noted that the analysis in the usage survey is of a higher level than previous usage survey versions used in the last monitoring period, a cap of 95% is allowed to be applied. The verification team noted that this cap is self-imposed by the PP, rather than in the methodology. The verification team noted that that the usage survey had been conducted as per the requirements of the sampling plan determined in the registered DD. The frequency of use of borehole from the survey is found to be 99.57 % in dry as well as rainy season, which is close to 100 %. Hence the self-imposed cap of 95 % is found reasonable for the current monitoring period. Hence this CL 06 is closed.				

CL ID	CL 07	Section no.	3.5 of the report	Date: 06/09/2022
Description of CL				
For the borehole, LAN067, AminaKesch, during the interview with Mr. Atine Patricia on 30/08/2022, it was informed that the Borehole had never brokendown since inception. However, from the excel sheet, “Lango Safe Water Project_ERs_MP6 (SWS caps applied)”, in the spreadsheet, “Project Technology days”, Non-functional days for the monitoring period is considered as “365”. Please clarify.				
Project participant response		Date: 07/09/2022		
In the “Lango Safe Water Project_ERs_MP6 (SWS cap applied) V2” spreadsheet, see the “BH Failure Data (WQT & Repair)” tab for reasons behind the 365 figure. Column’s G and I show the failure days based on the failure of a Water Quality Test (WQT), whereas columns H and J show if there has been a failure due to a breakdown (i.e. broken pump etc.). Therefore, for LAN067, you can see that the 365 is due to a failed WQT spread over the monitoring period, rather than a breakdown. This explains why the respondent rightly said that there hasn’t been a breakdown, because there are no reports of the pump breaking. They would not be aware of the failed WQT and this would not be referred to as a breakdown.				
Documentation provided by project participant				
“Lango Safe Water Project_ERs_MP6 (SWS cap applied) V3”				
“Lango HH Lists MP6”				

DOE assessment	Date: 15/09/2022
The verification team noted from “Lango Safe Water Project_ERs_MP6 (SWS cap applied) V2” spreadsheet, “BH Failure Data (WQT & Repair)” tab, for the Borehole LAN067, the reasons behind the 365 figure (275 in 2021 and 90 in 2022) is the failure of a Water Quality Test (WQT). The verification team also noted from columns H and J that there has been no failure due to a breakdown (i.e. broken pump etc.). Hence the respondent was right in saying that there hasn’t been a breakdown. The verification team noted the failed WQT is not known to the users and they continue to use the borehole as their primary source of water. The water sourced from Borehole is considered safe compared to other sources available to the community. Hence for the borehole LAN067, Persons having access to safe water in the project activity is taken as 300 (capped user number), whereas the project technology days is taken as 0. Hence this CL 07 is closed.	

Table 3. CAR from this validation/verification

CAR ID	CAR 01	Section no.	3.5 of the report	Date: 06/09/2022
Description of CAR				
Both the actual usage rate and capped usage rate shall be reported along-with the weighted usage rate in the monitoring parameter box (Up,y) of the MR.				
Project participant response		Date: 07/09/2022		
PP has provided the capped usage rate. Reviewer can see how the usage rate is determined by seeing the analysis in rows 164 and below in the 'Analysis' tab of the usage survey. No further analysis or weighting should be required, as per the methodology.				
Documentation provided by project participant				
ER calculation spreadsheet				
DOE assessment				Date: 15/09/2022
PP has provided the capped usage rate. The verification team noted that the usage rate is determined and presented in the "analysis" tab of the usage survey. No further analysis or weighting should be required, as per the methodology. This value is correctly used in the ER and SDG calculations. Hence CAR 01 is closed.				

CAR ID	CAR 02	Section no.	3.2 of this report	Date: 06/09/2022
Description of CAR				
In section B.1 of the MR provided for MP6 ‘Description of implemented project’, the technical specification noted from the referral link are different from specifications mentioned in Table 2. Borehole technology specifications for the India Mark II Pump.				
Project participant response		Date: 07/09/2022		
PP has amended this error under B.1 in Table 2.				
Documentation provided by project participant				
“Lango Project_MR_MP6 V2 TRACKED”				
DOE assessment				Date: 15/09/2022
The PP has now submitted revised MR for MP6, wherein it is noted in section B.1, the technical specification referred in the link is consistent with the specifications mentioned in Table 2. Borehole technology specifications for the India Mark II Pump. Hence this CAR 02 is closed.				

Table 4. FAR from this verification

FAR ID	FAR 02.	Section no.	3.5 of this report	Date: 15/10/2022
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Description of FAR	
The PD shall take into account the seasonal variations, while conducting the WCFT during the next monitoring period.	
Project participant response	Date: : DD/MM/YYYY
Documentation provided by project participant	
DOE assessment	Date: : DD/MM/YYYY

CERTIFICATE OF COMPETENCE

Personnel Name:		Srinivasan Selvaraj	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☐	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
SS 01: Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
SS 05: Chemical industry		TA 5.1 Chemical industry	
SS 12: Solvents use		TA 12.1 Chemical industry	
SS 13: Waste handling and disposal		TA 13.1 Waste Handling and Disposal	
		TA 13.2 Manure	
Approved by (Manager C& T)		Shikha Sharma	
Approval date:		16/03/2022	

Personnel Name:		Tushar Chaudhari	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☒
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy Industries (renewable/non-renewable sources)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
Energy demand		TA 3.1. Energy Demand	
Waste Handling and Disposal		TA 13.1 Waste Handling and Disposal	
Approved by		Manager Competency & Training	
Approval date:		02/09/2020	

Personnel Name:		Shruti Shrivastava	
Qualified to work as:			
Team Leader	☐	Technical Expert	☐
Validator/Verifier (trainee)	☒	Financial Expert	☐
Technical Reviewer	☐	Local Expert	☐
Area(s) of Technical Expertise			

Sectoral Scope	Technical Area
-	-
Approved by	Manager C & T
Approval date:	18/11/2021

Personnel Name:		Shikha Sharma	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☒
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
SS 01: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
SS 3: Energy demand	TA 3.1. Energy Demand		
SS 13: Waste handling and disposal	TA 13.1 Waste Handling and Disposal		
	TA 13.2 Manure		
Approved by	Manager Quality		
Approval date:	09/06/2022		

Personnel Name:		S.Ranganathan	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
SS 01: Energy industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
	TA 1.2: Energy generation from renewable energy sources		
SS 2: Energy distribution	TA 2.1. Energy distribution		

SS 3: Energy demand	TA 3.1. Energy Demand
SS 5: Chemical industry	TA 5.1 Chemical industry
SS 12: Solvents use	TA 12.1 Chemical industry
SS 13: Waste handling and disposal	TA 13.1 Waste Handling and Disposal
	TA 13.2 Manure
Approved by (Manager C& T)	Shikha Sharma
Approval date:	05/05/2022

History of the document

Version	Date	Nature of revision	Reviewed by	Approved by
4.0	14/12/2013	Guidance included/improved	Manager CDM Quality 23/12/2013	Managing Director 23/12/2013
3.1	29/10/2012	Updated for EB69 Annex6	Manager CDM Quality 29/10/2012	Managing Director 29/10/2012
3.0	31/08/2012	Revised for VVS Track	Manager CDM Quality 08/09/2012	Managing Director 10/09/2012
2.0	21/12/2011	Comprehensively revised	Manager CDM Quality 21/12/2011	Managing Director 21/12/2011