



**Verification and certification report form for
CDM programme of activities
(Version 04.0)**

BASIC INFORMATION

Title and GS ID of the programme	Title: Safe Water Programme In Africa And Asia GS Ref. No. GS10959																	
Version of PoA-DD(s) to which this report applies	05																	
Title and GS ID (s) of the project (s) covered by monitoring report		GS ID	Titles															
		GS 11150	GS10959 VPA07 Safe Water Project In Bangladesh I															
		GS 11151	GS10959 VPA08 Safe Water Project In Bangladesh II															
		GS 11152	GS10959 VPA09 Safe Water Project In Bangladesh III															
		GS 11153	GS10959 VPA10 Safe Water Project In Bangladesh IV															
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	09																	
GS Version applicable	GS4GG																	
Version number of the verification and certification report	1.1																	
Completion date of the verification and certification report	01/02/2024																	
Monitoring period number and duration of this monitoring period	Monitoring Period: 2 nd <table border="1"> <thead> <tr> <th>VPA No.</th> <th>Monitoring Period Start date</th> <th>Monitoring Period End date</th> </tr> </thead> <tbody> <tr> <td>VPA07</td> <td>01/08/2022</td> <td>29/07/2023</td> </tr> <tr> <td>VPA08</td> <td>01/08/2022</td> <td>29/07/2023</td> </tr> <tr> <td>VPA09</td> <td>01/08/2022</td> <td>29/07/2023</td> </tr> <tr> <td>VPA10</td> <td>01/08/2022</td> <td>29/07/2023</td> </tr> </tbody> </table>			VPA No.	Monitoring Period Start date	Monitoring Period End date	VPA07	01/08/2022	29/07/2023	VPA08	01/08/2022	29/07/2023	VPA09	01/08/2022	29/07/2023	VPA10	01/08/2022	29/07/2023
VPA No.	Monitoring Period Start date	Monitoring Period End date																
VPA07	01/08/2022	29/07/2023																
VPA08	01/08/2022	29/07/2023																
VPA09	01/08/2022	29/07/2023																
VPA10	01/08/2022	29/07/2023																
Version number and Completion date of the GS monitoring report to which this report applies	Version 01, dated 16/10/2023																	
Project Representative/CME	Ji BAO /Guangzhou Iceberg Environmental Consulting Services Co., Ltd.																	
Host Parties	Bangladesh																	

Applied methodologies and standardized baselines	Technologies and Practices to Displace Decentralized Thermal Energy Consumption" version 3.1				
Mandatory sectoral scopes	Sector 3/Technical Area 3.1				
Conditional sectoral scopes, if applicable	N/A				
Estimated amount of SDG impact for this monitoring period in the included VPAs covered in this report	13	SDG	GS ID	Values estimated	
			GS 11150	58,056 tCO ₂ e	
			GS 11151	58,056 tCO ₂ e	
			GS 11152	58,056 tCO ₂ e	
		3		GS 11153	58,056 tCO ₂ e
				GS 11150	32.90%
				GS 11151	32.90%
				GS 11152	32.90%
		5		GS 11153	32.90%
				GS 11150	61.83%
				GS 11151	61.83%
				GS 11152	61.83%
		6		GS 11153	61.83%
				GS 11150	33,000 persons
				GS 11151	33,000 persons
				GS 11152	33,000 persons
				GS 11153	33,000 persons
Total amount of certified SDG impact for this monitoring period for the included VPAs covered in this report	13	SDG	GS ID	Certified SDGs	
			GS 11150	25,749 tCO ₂ e	
			GS 11151	23,854 tCO ₂ e	
			GS 11152	26,564 tCO ₂ e	
			GS 11153	25,198 tCO ₂ e	

		3	GS 11150	62.90%	
			GS 11151	62.90%	
			GS 11152	62.90%	
			GS 11153	62.90%	
		5	GS 11150	83.97%	
			GS 11151	83.97%	
			GS 11152	83.97%	
			GS 11153	83.97%	
		6	GS 11150	13,929 persons	
			GS 11151	12,897 persons	
			GS 11152	14,368 persons	
			GS 11153	13,630 persons	
	Name and UNFCCC reference number of the VVB		4K Earth Science Private. Limited UNFCCC Ref No. CDM-E-0069		
	Name, position and signature of the approver of the verification and certification report		 Chandrakala R. Managing Director		

SECTION A. Executive summary

>>4K Earth Science Private Limited (4KES) has performed the 2nd performance review (verification) of the GS-VER VPAs vide the reference numbers GS 11150, GS 11151, GS 11152, GS 11153. The verification includes confirming the implementation of the monitoring plan of the registered/most recent version of GS4GG PoA/VPA-DDS and the application of the applied monitoring methodology “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” version 3.1. A physical assessment was conducted to check the implementation of registered monitoring plan and verify the data submitted in the monitoring report. 4KES confirms the following has been reviewed;

- (a) The registered/most recent version of GS4GG VPA/PoA DD and the monitoring plan and the corresponding validation opinion;
- (b) The validation report;
- (c) The applied monitoring methodology(ies);
- (d) The monitoring report to verify that it is as per the standardized format;
- (e) Monitoring results for the applied monitoring period
- (f) Any other information and references relevant to the project activity’s emission reductions (e.g. IPCC reports, data on electricity generation in the national grid or Laboratory analysis and national regulations);
- (g) VER calculations sheets and all supporting documents.

4K Earth Science Private Limited (4KES). confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

Based on the information seen and evaluated, we confirm that the implementation of the project has resulted in following SDGs.

SDG	GS ID	Certified SDGs
13	GS 11150	25,749 tCO ₂ e
	GS 11151	23,854 tCO ₂ e
	GS 11152	26,564 tCO ₂ e
	GS 11153	25,198 tCO ₂ e
3	GS 11150	62.90%
	GS 11151	62.90%
	GS 11152	62.90%
	GS 11153	62.90%
5	GS 11150	83.97%
	GS 11151	83.97%
	GS 11152	83.97%
	GS 11153	83.97%

6	GS 11150	13,929 persons
	GS 11151	12,897 persons
	GS 11152	14,368 persons
	GS 11153	13,630 persons

Product Vintages Certified for SDG#13

VERs Achieved			
VPA No.	Start Dates	End Dates	VERs (tCO ₂ e)
07	01/08/2022	31/12/2022	10,853
	01/01/2023	29/07/2023	14,896
08	01/08/2022	31/12/2022	10,054
	01/01/2023	29/07/2023	13,800
09	01/08/2022	31/12/2022	11,196
	01/01/2023	29/07/2023	15,368
10	01/08/2022	31/12/2022	10,621
	01/01/2023	29/07/2023	14,577
		Total	101,365

Methodology:

4KES follows a rule-based verification approach, wherein, as a first step, the contract review is undertaken as per latest version of CDM Accreditation Standard/ GS Principles & Requirements.

A desk review of the project documentation is undertaken, which is followed by interviews by the members of verification team in accordance with the latest version of CDM AS/ GS Principles & Requirements. The verification protocol is filled by the verification team that is based on standard auditing practices and GS validation & Verification Standard version 1 in conjunction with version 03.0 of “CDM validation and verification standard for programmes of activities”, to capture the assessment of applicable CDM and GS requirements viz., version 03.0 of “CDM project standard for programme of activities”, applicable GS4GG requirements, registered PoA-DD/14/ and VPA-DD/2/, applied methodology, applied standardized baseline 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.

After successful closure of findings (CARs/CLs), the draft verification report is prepared which went through Independent technical review as per 4KES internal procedures and the TR comments were given for any gaps in audit findings. After closure of the TR comments, final verification report is prepared then followed by final approval for the decision made. The approved verification report is given to PP which shall be submitted for request for issuance.

Following are the major milestones for the verification under consideration.

Verification contract	22/10/2023
Interviews	11/12/2023 & 12/12/2023
Draft Verification Report	27/01/2024
Final Verification Report	01/02/2024

4K Earth Science Private Limited confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	Remote onsite inspection	Interview(s)	Validation findings
1.	Team Leader and Technical expert (TA 3.1)	EI	Kandari	Sanjay	Central Office	✓	✓	✓	✓

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TA 1.1, 3.1)	EI	Alias	Syju	Central office
2.	Approver	IR	R	Chandrakala	Central office

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Error in Data Transfer from Plant Logbook/survey forms to ER Spread sheet. The measurements are conducted with the aid of calibrated equipment's and errors could result from human errors during the information transfer from the source to emission reduction sheet.	High	Possible human error during transfer of data to ER spreadsheets and MR	Verification Team checked all the records from plant log books and compared with ER spread sheet to check for any material error during data transfer.

C.2. Consideration of materiality in conducting the verification

>>

The prescribed thresholds for materiality, as per section 9.6 Application of materiality of 'GS Validation & Verification Standard, Version 1'.

Prescribed range of ERs/annum	500,000+	300,000+ to 500,000	300,000	SSC Pas	MSC PAs
Prescribed Threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The identified/selected materiality threshold for the project activity under current monitoring period is 5% as project activity is small scale project activity.

	MR Version (Draft)	MR Version (Final)
Emission reductions/annum	101,365 t CO ₂ e	101,365 t CO ₂ e
Identified Threshold	2%	2%

SECTION D. Means of verification

D.1. Desk/document review

>> The verification is performed primarily as a desk review of the documents submitted at various stages of assessments. The review is performed by assessment team using verification protocols (checklists). The assessment team cross-checked the information provided in the MR and information from sources other than those used, if available, and conducts independent background investigations. 4KES conducted a desk review, 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, the quality of metering equipment including calibration requirements, 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 'Appendix 3' of this report.

D.2. Remote On-site inspection

Site visit and remote audit requirements and procedures for GS4GG/6/ lays down the following:
The governing para 3 of the cited procedure has following provisions:

3| MINIMUM PHYSICAL SITE VISIT REQUIREMENTS**A. Project Activities****3.1 Frequency of physical site visits**

3.1.1 | At minimum, the VVB shall conduct physical site visit within two years of project start date ;
and 3.1.2 | Once within every three years after the first physical site visit date

- ✓ The project complies with the requirements of section 3.1.1 as the previous site visit has not elapsed 3 years and this is the second verification of the project activity. Moreover, the same team leader has undertaken the onsite assessment during the first verification.

3.2.1 | A physical site visit by VVB is not mandatory at the validation (Design Certification or Design Certification Renewal) of a project

- ✓ Not applicable as the project is verification.

3.2.2 | A physical site visit by VVB is mandatory at the first verification of a project.

- ✓ Not applicable as the project is second verification.

Following alternate were used by the project verification team during the remote assessment:
A complete desk review of the submitted VPA DDs /8//9/ (initial and final versions), as well as all applicable GS4GG requirements and supportive evidences have been checked by the validation team.

- Verification team has performed remote audit (MS Team application) with representatives of PP and users (households) in order to check the implementation, current situation, management system of the project, technology, location, training provided, start date etc.
- Interview questions were posed as per Verification team interview checklist and also video-conferencing was done to check implementation of the project, programme technology, baseline of project etc.
- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in the PDD and supporting documents.

Further the section B of the cited guideline states and applicable to the POAs and VPAs:

B. Program of Activity (PoA) And Voluntary Project Activity (VPA)**3.3 | Frequency of physical site visits**

3.3.1 | Section 3.1 above applies to PoA and VPA as well.

3.4 | Audit events

3.4.1 | For audit events requiring a mandatory physical site visit, please refer to para 6.3.5 to 6.3.12 of Validation and Verification Standard.

- Verification team would like to state that the VPAs covered under this instance of audit doesn't fall any of the criteria set under para 6.3.5 to 6.3.12 of Validation and Verification Standard.
- Moreover, the VERs claimed under this audit instance are well below the threshold of 200,000 as required by the section 4.1 of the governing guidelines for the site visit and remote audit.

Duration of remote inspection: 11/12/2023 to 12/12/2023				
No.	Activity performed	Site location	Date	Team member
1.	- General aspects of the project - Changes since validation / previous verification - Remaining issues from validation/ previous verification - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - Procedural aspects of the Monitoring - Maintenance - Data analysis - Data Analysis - Issues in the MR - ER calculation	Various Locations under Cox's Bazar District	11/12/2023 to 12/12/2023	Sanjay Kandari

D.3. Interviews

S. No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Bao	Ji	Guangzhou Iceberg Environmental Consulting Services Co., Ltd. (CME)	11/12/2023 & 12/12/2023	- General aspects of the project - Changes since validation / previous verification - Remaining issues from validation/ previous verification - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - Procedural aspects of the Monitoring - Maintenance - Data analysis - Data Analysis	Sanjay Kandari

					- Issues in the MR ER calculation	
2.	-	Ayman	Guangzhou Iceberg Environmental Consulting Services Co., Ltd. (CME)	11/12/2023 & 12/12/2023	Survey Methodology and Sampling	Sanjay Kandari
3.	Asif	Mohamad	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
4.	Amin	Nural	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit SD parameters verification	Sanjay Kandari
5.	Nur Kobi	Mohamad	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
6.	-	Josimuiddin	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
7.	Sukkar	Abdus	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
8.	Kabir	Ahmad	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit	Sanjay Kandari

CDM-PoA-VCR-FORM

					- SD parameters verification	
9.	-	Nijamuddin		11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
10.	Khatoon	Abia	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
11.	Roni	Mohamad	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
12.	Mohamad	Faraq	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
13.	-	Dilamia	Borehole User	11/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
14.	Ali	Mohamad	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
15.	Islam	Shaiful	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of	Sanjay Kandari

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					borehole unit - SD parameters verification	
16.	Rana	Sohail	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
17.	Rubal	Mohamad	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
18.	Hasan	Mohamad	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
19.	MD	Salim	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
20.	Jashimuddin	Mohamad	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
21.	Hussain	Aktar	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
22.	Shabuddin	Mohamad	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working	Sanjay Kandari

					condition of borehole unit - SD parameters verification	
23.	Zia	Mohamad	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
24.	Abedin	Joimal	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
25.	Begum	Arefa	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
26.	Alom	Samsul	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari
27.	-	Samaruk	Borehole User	12/12/2023	- Awareness about ownership of VEs - Working condition of borehole unit - SD parameters verification	Sanjay Kandari

D.4. Sampling approach

>> During the remote on-site verification, a random sampling approach has been used by the verification team to verify the reported values of the monitored parameters as listed in the MR which are determined through sampling by VPA Implementer.

Sampling approach during verification audit is conducted in accordance with “Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 04.0” and the “Standard for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 09.0”/6/.

The verification team followed the “Standard for Sampling and Surveys for CDM Project Activities and Programme Activities” version 09, para 29 and 33, esp. for taking samples out of the VPA Implementer’s sample. Verification has adopted the acceptance sampling approach in order to verify the sampling result of the CME/VPA Implementer for the applied verification period.

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

1. Acceptable quality level (AQL) - 0.5%
2. Unacceptable Quality Level (UQL) – 15%
3. Producer risk- 5%
4. Consumer risk- 10%

Verification team has determined acceptance sample size based on the “Table. 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. From the above assumed factors, the verification team determined the minimum sample size (n) as 25 minimum samples for end user places under the project and acceptance number (c) as One. The verification team shared the samples with the VPA Implementer during remote on-site visit.

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

Parameters	Total Population	VPA Implementer’s sample size	Acceptance sample size (n)	Acceptance Number (z)	Sampling method used
Monitoring parameters as per the MR	344,707	120 for Monitoring Survey	25	1	Acceptance sampling using Random sample

During site visit, Verification team visited sample households applying the random selection technique to cross check the data reported by VPA Implementer. Verification team has checked the VPA Implementer samples result with the remote onsite interview, monitoring survey results /12/, End-user agreements /16/ and households data base as per the ER sheet /03/ and found consistent. The result of the survey is given below:

Parameters	VVB Sample size (n)	No of VPA Implementer’s record beyond unacceptable level (C)	Accepted Samples By VVB	Accepted/ Rejected
Monitoring parameters as per the MR	25	0	25	Accepted

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

Hence, verification team confirms that VPA Implementer 's survey/sampling records to be acceptable in-line with the requirements of the Sampling Standard and Guidance /6/.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form	-	CAR#01	-
Remaining forward action requests from validation and/or previous verifications	-	-	FAR#01
CPAs considered for verification and covered in this report	-	-	-
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	-	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
• Corrections	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents ¹	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Component project activities	-	-	-
Compliance of the CPA implementation with the included CPA design document	-	-	-
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
• Corrections	-	-	-
• Changes to the start date-of the crediting period	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	-	-	-
• Changes to the project design	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	-	-	-
• Data and parameters monitored			
• Implementation of sampling plan	CL#02, CL#03		
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions	-	-	-

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

or net removals			
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	CL#01	-	-
• Calculation of project GHG emissions or actual net GHG removals by sinks	-	-	-
• Calculation of leakage GHG emissions	-	-	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	-	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	-	-	-
• Remarks on difference from estimated value in included CPA	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	03	01	01

SECTION E. Verification findings

E.1. General

E.1.1. Compliance of the monitoring report with the monitoring report form

Means of verification	PP used GS monitoring report template, version 1.1. Verification team checked the GS monitoring report /02/ with latest version of "GS Template" /6/ and found OK. All the sections of the form were filled as per the GS4GG guidelines and provide all the relevant details.
Findings	CAR-01 was raised in this regard and successfully closed. Refer Appendix 4 of this report for more details.
Conclusion	Verification team confirms that final monitoring report /01/ is completed using the latest valid version of the applicable monitoring report form /4/, hence the monitoring report is complying with the monitoring report form.

E.1.2. Remaining forward action requests from validation and/or previous verifications

>> FAR#01 was raised by the GS during the first performance review, and addressed by CME. The adequate corrections are applied as per the FAR during the verification. Please refer the FAR in the Appendix 4 of the verification team wherein the assessment of the same has been demonstrated in detail. The FAR is closed.

E.1.3. CPAs considered for verification and covered in this report

Title and GS reference number of the VPA included in the PoA as of the end of this monitoring period	Is the VPA considered for this verification? (yes/no)	The date when the VPA was included (Date of Design Certification)	Version of the PoA-DD	Confirmation that a request for issuance including the VPA has been published for the previous monitoring period (Y/N)
GS10959 VPA01 Safe Water Project in Rwanda I (GS 11098)	No	19/08/2021	05	Y
GS10959 VPA02 Safe Water Project in Rwanda II (GS 11133)	No	19/08/2021	05	Y

GS10959 VPA03 Safe Water Project in Rwanda III (GS 11134)	No	19/08/2021	05	Y
GS10959 VPA04 Safe Water Project in Rwanda IV (GS 11135)	No	19/08/2021	05	Y
GS10959 VPA05 Safe Water Project in Rwanda V (GS 11136)	No	19/08/2021	05	Y
GS10959 VPA06 Safe Water Project in Rwanda VI (GS 11137)	No	19/08/2021	05	Y
GS10959 VPA07 Safe Water Project in Bangladesh I (GS 11150)	Yes	19/08/2021	05	Y
GS10959 VPA08 Safe Water Project in Bangladesh II (GS 11151)	Yes	19/08/2021	05	Y
GS10959 VPA09 Safe Water Project in Bangladesh III (GS 11152)	Yes	19/08/2021	05	Y
GS10959 VPA10 Safe Water Project in Bangladesh IV (GS 11153)	Yes	19/08/2021	05	Y

E.2. Programme of activities

E.2.1. Compliance of the programme implementation with the registered programme design document

Means of verification	CME:	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.
	Project Parties:	NA being a voluntary project
	Title of voluntary project activity:	- GS10959 VPA07 Safe Water Project in Bangladesh I - GS10959 VPA08 Safe Water Project in Bangladesh II - GS10959 VPA09 Safe Water Project in Bangladesh III - GS10959 VPA10 Safe Water Project in Bangladesh IV
	GS registration No:	GS 11150, GS 11151, GS 11152 & GS 11153
	Baseline and monitoring methodology:	Gold Standard Voluntary Methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" version 3.1/6/
	Project Type:	Access to safe drinking water.
	Location of the project activity:	Bangladesh
	Project's crediting period:	GS 11150: 30/07/2021-29/07/2026 GS 11151: 08/08/2021-07/08/2026 GS 11152: 11/09/2021-10/09/2026 GS 11153: 27/02/2022-26/02/2027

		The VPA DDs mentioned the expected dates of the crediting periods as all the VPAs were not implemented at the time of VPA inclusions therefore expected date as per Paragraph 4.1.40 of Principles & Requirements (Version 1.2) was mentioned. During the verification the start date is mentioned actual date of rehabilitation of first borehole. The date is verified in compliance with the above cited para of the 'Principles & Requirements (Version 1.2). The dates were verified with the certificates of rehabilitation of first borehole in each VPA.		
	Total Duration of the project:	5 years (renewal)		
	Period verified in this verification:			
		VPA No.	Start date	End date
		VPA07	01/08/2022	29/07/2023
	VPA08	01/08/2022	29/07/2023	
	VPA09	01/08/2022	29/07/2023	
	VPA10	01/08/2022	29/07/2023	
	(including both dates)			
	As part of the remote onsite assessment, the verification team was able to confirm that the project implementation is in accordance with the project description contained in the registered GS4GG POA/VPA-DDs /14//2/.			
	The voluntary project activities GS 11150, GS 11151, GS 11152, GS 11153 aims to reduce greenhouse gas emissions, curb deforestation, and improve air quality by providing the access to safe & clean drinking water. The use of non-renewable biomass such as wood in baseline scenario for water boiling, leads to the emission of greenhouses gases, deforestation, and poor indoor climate. The VPA involves installation of infrastructure, thus improving the access to safe water for communities in the District of Cox's Bazar (Bangladesh) (currently but later the project will expand) in the Bangladesh & Rwanda (Currently), under the PoA, to significantly reduce the consumption of non-renewable biomass and other greenhouse gas emitting fuels for water treatment.			
	The project activity is implemented in line with the registered/recent version of VPA-DDs.			
Findings	Nil			
Conclusion	The project activity was implemented, and the details of beneficiaries described in the recent version of GS4GG VPA-DDs. Based on physical site visit, interview and the reviewed project documentation along with documentary evidence, it can be confirmed that the project implementation is in accordance with realized technology. The project has been implemented and operated as described in the recent version of VPA-DDs.			

E.2.2. Implementation and operation of the management system

Means of verification	The verification team determined the implementation and operation management system through the audit and interview with the CME representative. The verification team checked whether the actual management system implemented in accordance with the management system described in the PoA-DD /14/. During audit, verification team checked the procedures implemented for inclusion of VPA, roles and responsibilities, quality check etc.
Findings	No CAR/CL raised in this regard.
Conclusion	The verification team confirms that the implementation and operation of the PoA management system, including the record-keeping system, complies with the PoA-DD /14/.

E.2.3. Post-registration changes**E.2.3.1. Corrections**

>> Not applicable.

E.2.3.2. Inclusion of a monitoring plan

>> Not applicable.

E.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>

Not applicable.

E.2.3.4. Changes to the programme design

>>

E.2.3.5. Addition of VPA inclusion template

>> Not applicable.

E.2.3.6. Change of coordination/managing entity

>> Not applicable.

E.2.3.7. Changes specific to afforestation and reforestation activities

>> Not applicable.

E.3. Component project activities**E.3.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	The voluntary project activities GS 11150, GS 11151, GS 11152, GS 11153 aims to reduce greenhouse gas emissions, curb deforestation and improve air quality by providing the access to safe & clean drinking water. The use of non-renewable biomass such as wood in baseline scenario for water boiling, leads to the emission of greenhouse gases, deforestation and poor indoor climate. The VPA involves installation of infrastructure, thus improving the access to safe water for communities in the District of Cox's Bazar (Bangladesh) (currently but later the project will expand) in the Bangladesh & Rwanda (Currently), under the PoA, to significantly reduce the consumption of non-renewable biomass and other greenhouse gas emitting fuels for water treatment. The project activity is implemented in line with the registered/recent version of VPA-DDs. There are 139 boreholes/9/ repaired in the project and verified with the database
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along with physically verified during site visit based on accepting sampling. In the monitoring period, the boreholes were maintained by the CME and VPA implementer, functioning well to provide enough clean water to over 50,000 local people.

The GHG offset during this monitoring period are 101,365 tCO₂e covering all the 4 VPAs in this current batch of verification/performance review. The list of beneficiaries by the VPA was submitted to VVB and based on the review of list, their agreement with CME, water quality test reports and other evidence inter alia, VVB concluded that the VPAs were implemented in line with the registered VPA-DDs and in line with the framework of registered PoA.

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

The timeline of the project's implementation is as follow:

Milestone of the project activity	Timeline	Assessment by the verification team
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Crediting period:

- 1) GS 11150: 30/07/2021-29/07/2026
- 2) GS 11151: 08/08/2021-07/08/2026
- 3) GS 11152: 11/09/2021-10/09/2026
- 4) GS 11153: 27/02/2022-26/02/2027

The VPA DDs mentioned the expected dates of the crediting periods as all the VPAs were not implemented at the time of VPA inclusions therefore expected date as per Paragraph 4.1.40 of Principles & Requirements (Version 1.2) was mentioned. During the verification the start date is mentioned actual date of rehabilitation of first borehole. The date is verified in compliance with the above cited para of the 'Principles & Requirements (Version 1.2). The dates were verified with the certificates of rehabilitation of first borehole in each VPA.

1 st monitoring period (Issued)	VPA No.	Start date	End date	Verification team has verified the same from the first performance review documents available on the GS registry. Also, the monitoring period is within the first crediting period of respective VPAs. The crediting periods dates also verified from the GS review forms.
	VPA07	30/07/2021	31/07/2022	
	VPA08	08/08/2021	31/07/2022	
	VPA09	11/09/2021	31/07/2022	
	VPA10	27/02/2022	31/07/2022	

Findings

Nil

Conclusion

The VPA were implemented, and the details of beneficiaries described in the recent version of GS4GG VPA-DDs. Based on remote site visit, interview and the reviewed project documentation along with documentary evidence, it can be confirmed that the project implementation is in accordance with realized technology. The project has been implemented and operated as described in the recent version of VPA-DDs. The monitoring and sustainable development indicators parameters are also monitored as per the recent version of VPA-DDs and GS4GG guideline and found to be appropriate.

E.3.2. Post-registration changes**E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents**

>> Not applicable.

E.3.2.2. Corrections

>>

Not applicable.

E.3.2.3. Changes to the start-date of the crediting period

>>

Not applicable.

E.3.2.4. Inclusion of a monitoring plan

>> Not applicable.

E.3.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>

Not applicable.

E.3.2.6. Changes to the project design

>>

Not applicable.

E.3.2.7. Changes specific to afforestation and reforestation activities

>>

Not applicable.

E.3.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	The VVB verification team was able to confirm that the monitoring plan contained in the recent version of GS4GG POA/VPA-DDS//14/, /2/ is in accordance with the approved methodology applied by the project activity “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” version 3.1/6/. The monitoring plan along with sampling & survey for baseline as well as the project case is described in the recent version of GS4GG POA/VPA-DDS. During the verification all relevant monitoring parameters (as listed in the POA/VPA-DDS /14/, /2/) have been verified about 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	N/A
Conclusion	The monitoring plan mentioned in the registered/recent version of GS4GG

	POA/VPA-DDS is in line with the applied methodology i.e. "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" version 3.1/6/. The monitoring mechanism is in line with the methodology and is effective and reliable.
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E.3.4. Compliance of monitoring activities with the registered monitoring plan

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

Means of verification	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e SDG 6 / Indicator 6.1.1
	Data/parameter	C _j
	Unit	Percentage
	Description	Percentage of users of project technology who were already in baseline using a non-boiling safe water supply
	Source of data	Baseline surveys The data was obtained through baseline survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)". The Baseline Survey was conducted by representative and random sampling during from 08/05/2021 to 22/05/2021. The result is 0 and validated by the validating VVB and approved by Sustaincert.
	Value(s) applied	0
	Choice of data or Measurement methods and procedures	Deemed valid by the methodology
	Purpose of data	Calculation of baseline and project emissions (SDG 13) as well as number of persons consuming safe water supplied by the Project (SDG 6)
	Additional comment	
	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
	Data/parameter	W _{b,y}
	Unit	Tons/litre
	Description	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of baseline scenario b during year y
	Source of data	Default value
	Value(s) applied	0.0004 (Default)
	Choice of data or Measurement methods and procedures	The default value of W _{b,y} for firewood as per "Application of TPDDTEC Methodology to Safe Water Supply Projects"
	Purpose of data	Calculation of baseline emissions

Additional comment	-
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Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	Wp,y
Unit	Tons/litre
Description	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of project scenario p during year y
Source of data	Default value
Value(s) applied	0.0004 (Default)
Choice of data or Measurement methods and procedures	According to the baseline and project survey, the same water boiling technology is applied in the baseline and project scenarios. So Wb,y and Wp,y are equal
Purpose of data	Calculation of project emissions
Additional comment	-

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	f _{NRB,b,y}
Unit	Percentage
Description	Fraction of biomass used that can be established as non – renewable biomass in the baseline scenario b during year y
Source of data	As per the “TOOL30: Calculation of the fraction of non-renewable biomass, version 3.0”. Please refer to registered PDD.
Value(s) applied	95.76% (Validated by the validating VVB and approved by the Sustaincert)
Choice of data or Measurement methods and procedures	As per the “TOOL30: Calculation of the fraction of non-renewable biomass, version 3.0”.
Purpose of data	Calculation of baseline emissions
Additional comment	

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	NCV _{b,fuel}
Unit	TJ/ton
Description	Net calorific value of firewood
Source of data	IPCC 2006 default for firewood
Value(s) applied	0.0156
Choice of data or Measurement methods and procedures	Deemed valid by the methodology
Purpose of data	Estimation of CO ₂ e emissions reductions
Additional comment	-

	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO₂e
	Data/parameter	EF _{b,fuel,co2}
	Unit	tCO ₂ /TJ
	Description	CO ₂ emission factor of fuels used in the baseline scenario
	Source of data	IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories Chapter 2: Stationary Combustion Page 2.23 Table 2.5
	Value(s) applied	112
	Choice of data or Measurement methods and procedures	According to the baseline survey, wood is the only fuel used in the baseline scenario.
	Purpose of data	Calculation of baseline emissions
	Additional comment	-
	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO₂e
	Data/parameter	X _{boil(i)}
	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 survey in registered VPA DD/2/
	Value(s) applied	0
	Choice of data or Measurement methods and procedures	The data is obtained through baseline survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)" / 6/. The Baseline Survey was conducted by representative and random sampling during from 08/05/2021 to 22/05/2021. The result is 0.
	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO₂e
	Data/parameter	GWP _{CH4}
	Unit	-
	Description	Global warming potential for CH ₄
	Source of data	IPCC Fifth Assessment Report: Climate Change 2014
	Value(s) applied	28

	Choice of data or Measurement methods and procedures	As per "IPCC Fifth Assessment Report: Climate Change 2014", the value is 28.
	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO₂e
	Data/parameter	GWP _{N₂O}
	Unit	-
	Description	Global warming potential for N ₂ O
	Source of data	IPCC Fifth Assessment Report: Climate Change 2014
	Value(s) applied	265
	Choice of data or Measurement methods and procedures	As per "IPCC Fifth Assessment Report: Climate Change 2014", the value is 265.
	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO₂e
	Data/parameter	EF _{b,fuel,non co2}
	Unit	tCO ₂ /TJ
	Description	Non-CO ₂ emission factor of fuels used in the baseline scenario
	Source of data	IPCC default value for Wood: IPCC 2006 Guidelines for National Greenhouse gas Inventories Chapter 2: Stationary Combustion Page 2.23 Table 2.5 IPCC Fifth Assessment Report: Climate Change 2014
	Value(s) applied	9.46
	Choice of data or Measurement methods and procedures	According to the baseline survey, wood is the only fuel used in the baseline scenario. As per "IPCC 2006 Guidelines for National Greenhouse gas Inventories", the default emission factor of CH ₄ and N ₂ O for stationary combustion is 0.3t/TJ and 0.004t/TJ, respectively. As per "IPCC Fifth Assessment Report: Climate Change 2014", the global warming potential for CH ₄ and N ₂ O is 28 and 265, respectively. So $EF_{b,non\ co2} = 0.3 \times 28 + 0.004 \times 265 = 9.46$.
	Relevant SDG Indicator	SDG 5 / Gender Equality
	Data/parameter	T _b
	Unit	Hour
	Description	Time spent to fetch and purify water by women and girls per household per day in the baseline scenario
	Source of data	Baseline survey in the registered PDD
	Value(s) applied	2.62

	Choice of data or Measurement methods and procedures	The data is obtained through baseline survey as per the applied methodology as well as “Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)” and “Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)”. The Baseline Survey was conducted by representative and random sampling during from 08/05/2021 to 22/05/2021. The result is 2.62.		
	Purpose of data	Calculation of percentage reduction of time spent to fetch and purify water by women and girls		
	Additional comment	-		
	Relevant SDG Indicator	SDG 3 / Good Health and Well-Being		
	Data/parameter	I _b		
	Unit	Percentage		
	Description	Waterborne illness incidence in the baseline scenario		
	Source of data	Baseline survey in the registered PDD		
	Value(s) applied	62.90%		
	Choice of data or Measurement methods and procedures	The data is obtained through baseline survey as per the applied methodology as well as “Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)” and “Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)”. The Baseline Survey was conducted by representative and random sampling during from 08/05/2021 to 22/05/2021. The result is 62.90%.		
	Purpose of data	Calculation of reduction of waterborne illness incidence		
	Additional comment	-		
Findings	Nil			
Conclusion	The default values applied were found to be consistent with the recent version of GS4GG POA/VPA-DDS/2/,/14/, applied methodology and other relevant sources of data. The values fixed at the time of validation were from IPCC report and few were conservative values.			

E.3.4.2. Data and parameters monitored

Means verification of	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO₂e	
	Data/parameter	Q _{p,y}	
	Unit	Litres/person. Day	
	Description	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day	
	Source of data	Water consumption field test Means of Verification by VVB: Database was verified by the VVB and confirmed that the capped value is used in the calculation of emission reductions. VVB undertaken the acceptance sampling to verify the appropriateness of CME's sampling during onsite inspection and concluded that the per person water consumption was higher than the capped value.	

		calculation of emission reductions. VVB undertaken the acceptance sampling to verify the appropriateness of CME's sampling during onsite inspection and concluded that the using of raw water boiling is no more in use after the rehabilitation of project boreholes.
	Value(s) applied	0
	Measurement methods and procedures	Water Consumption Field Test Means of Verification by VVB: The data obtained by WCFT through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)". The WCFT was conducted by CME and SOCIAL AID from 08/08/2022-01/09/2022. CME considered the 120 samples to monitor the value by taking 20 samples from each of 6 boreholes. The sampling/survey was undertaken by the trained staff of CME, the HH's selected for survey were distributed 20 Liters jerrycans for water collection and then the CME's staff monitored the water consumption during WCFT. Database was verified by the VVB and confirmed that the capped value is used in the calculation of emission reductions. VVB undertaken the acceptance sampling to verify the appropriateness of CME's sampling during onsite inspection and concluded that the using of raw water boiling is no more in use after the rehabilitation of project boreholes. VVB also verified the water consumption during onsite audit and found no significant variation in both. Moreover, the capped value of water consumption is used thus it also confirms the meeting of sampling reliability.
	Monitoring frequency	At least biennially; the above value is valid from 30/07/2021 to no later than 29/07/2023 as per the applied methodology.
	QA/QC procedures	Means of Verification by VVB: The trained staff of CME was deployed for the surveys and VVB interviewed the staff and found them knowledgeable and competent.
	Purpose of data	Calculation of CO ₂ e emissions reductions
	Additional comment	Nil
	Relevant SDG Indicator	SDG 13 (Climate Action), SDG 6 (Safe Water and Sanitation)
	Data/parameter	Q _{p, cleanboil, y}

	Unit	Litres per person per day
	Description	Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology.
	Source of data	Water consumption field test <u>Means of Verification by VVB:</u> Database was verified by the VVB and confirmed that the capped value is used in the calculation of emission reductions. VVB undertaken the acceptance sampling to verify the appropriateness of CME's sampling during onsite inspection and concluded that the using of raw water boiling is no more in use after the rehabilitation of project boreholes.
	Value(s) applied	0
	Measurement methods and procedures	Water Consumption Field Test <u>Means of Verification by VVB:</u> The data obtained by WCFT through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)". The WCFT was conducted by CME and SOCIAL AID from 08/08/2022-01/09/2022. CME considered the 120 samples to monitor the value by taking 20 samples from each of 6 boreholes. The sampling/survey was undertaken by the trained staff of CME, the HH's selected for survey were distributed 20 litres jerrycans for water collection and then the CME's staff monitored the water consumption during the survey. Database was verified by the VVB and confirmed that the capped value is used in the calculation of emission reductions. VVB undertaken the acceptance sampling to verify the appropriateness of CME's sampling during onsite inspection and concluded that the using of raw water boiling is no more in use after the rehabilitation of project boreholes. VVB also verified the water consumption during onsite audit and found no significant variation in both. Moreover, the capped value of water consumption is used thus it also confirms the meeting of sampling reliability.
Monitoring frequency	At least biennially; the above value is valid from 30/07/2021 to no later than 29/07/2023 as per the applied methodology.	

	QA/QC procedures	Means of Verification by VVB: The trained staff of CME was deployed for the surveys and VVB interviewed the staff and found them knowledgeable and competent.
	Purpose of data	Calculation of CO2e emissions reductions
	Additional comment	Nil
	Relevant SDG Indicator	SDG 6 (Clean Water and Sanitation) Indicator 6.1.1 – Proportion of population using safely managed drinking water services
	Data/parameter	Quality of the treated water
	Unit	As appropriate in alignment with QA/QC procedures
	Description	Performance of the treatment technology – less than 1 CFU of E.Coli / 100 ml of safe water
	Source of data	Water Quality Tests Reports/18/ issued by the third-party labs
	Value(s) applied	Acceptable
	Measurement methods and procedures	Water Quality Test
Monitoring frequency	Quarterly lab tests undertaken by the third-party lab Means of Verification by VVB: The water test results were furnished to VVB and based on the submitted evidence. CME confirmed that they had also undertaken the tests during the current verification in the accredited labs as per the methodology to compare the results of current lab. Moreover, the methodology has the following monitoring requirements as the applied version 3.1 of TPDDTEC under monitoring parameter. verification approach of water quality was undertaken by the two-step approach: I. Review of all water quality reports issued by the third-party lab; II. Confirmation of the water quality sample collection through the interviews of village heads/users to confirm that the representative of third party collected the samples and villages head (primarily the custodian of boreholes) was informed or not. Therefore, the verification of water quality test results through the review of 'Water Quality Reports' does not fall under the acceptance sample as 100% records were verified.	

	at the end of the monitoring period, since it's second MP and all the devices were found working, no drop-off registered, hence $U_{p,y}$ is set to 1. Means of Verification by VVB: The survey results furnished to VVB and it was witnessed that no drop-off cases found. VVB also undertaken the acceptance sampling and found the similar trend during the onsite inspection.																																		
	<table border="1"> <tr> <th>Relevant SDG Indicator</th><th>SDG 13 / Climate Change Mitigation measured as reduced tCO₂e and SDG 6 / Indicator 6.1.1</th></tr> <tr> <td>Data/parameter</td><td>$N_{p,y}$</td></tr> <tr> <td>Unit</td><td>Persons.days</td></tr> <tr> <td>Description</td><td>Number of person.days consuming water supplied by project scenario p through year y</td></tr> <tr> <td>Source of data</td><td>D14-18 of sheet SDG13 of Excel spreadsheet "1-SDG Outcomes Calculation Form-MP2nd"</td></tr> <tr> <td>Value(s) applied</td><td> <table border="1"> <tr> <th>VPA No.</th><th>Persons.days</th></tr> <tr> <td>VPA07</td><td>5,050,875</td></tr> <tr> <td>VPA08</td><td>4,679,208</td></tr> <tr> <td>VPA09</td><td>5,210,784</td></tr> <tr> <td>VPA10</td><td>4,942,950</td></tr> <tr> <td>Total</td><td>19,883,817</td></tr> </table> </td></tr> <tr> <td>Measurement methods and procedures</td><td>Calculated value based on the database records</td></tr> <tr> <td>Monitoring frequency</td><td>At least biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the maintenance log.</td></tr> <tr> <td>QA/QC procedures</td><td>Transparent data analysis and reporting</td></tr> <tr> <td>Purpose of data</td><td>Calculation of CO₂e Emissions</td></tr> <tr> <td>Additional comment</td><td> Means of Verification by VVB: The data sources have been made available to the VVB. $N_{p,y}$ determined by multiplying the number of households serviced by average number of people per household in the spreadsheet submitted as ER sheet to the verification team. </td></tr> </table>	Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e and SDG 6 / Indicator 6.1.1	Data/parameter	$N_{p,y}$	Unit	Persons.days	Description	Number of person.days consuming water supplied by project scenario p through year y	Source of data	D14-18 of sheet SDG13 of Excel spreadsheet "1-SDG Outcomes Calculation Form-MP2nd"	Value(s) applied	<table border="1"> <tr> <th>VPA No.</th><th>Persons.days</th></tr> <tr> <td>VPA07</td><td>5,050,875</td></tr> <tr> <td>VPA08</td><td>4,679,208</td></tr> <tr> <td>VPA09</td><td>5,210,784</td></tr> <tr> <td>VPA10</td><td>4,942,950</td></tr> <tr> <td>Total</td><td>19,883,817</td></tr> </table>	VPA No.	Persons.days	VPA07	5,050,875	VPA08	4,679,208	VPA09	5,210,784	VPA10	4,942,950	Total	19,883,817	Measurement methods and procedures	Calculated value based on the database records	Monitoring frequency	At least biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the maintenance log.	QA/QC procedures	Transparent data analysis and reporting	Purpose of data	Calculation of CO ₂ e Emissions	Additional comment	Means of Verification by VVB: The data sources have been made available to the VVB. $N_{p,y}$ determined by multiplying the number of households serviced by average number of people per household in the spreadsheet submitted as ER sheet to the verification team.
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Total	19,883,817																																		
Measurement methods and procedures	Calculated value based on the database records																																		
Monitoring frequency	At least biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the maintenance log.																																		
QA/QC procedures	Transparent data analysis and reporting																																		
Purpose of data	Calculation of CO ₂ e Emissions																																		
Additional comment	Means of Verification by VVB: The data sources have been made available to the VVB. $N_{p,y}$ determined by multiplying the number of households serviced by average number of people per household in the spreadsheet submitted as ER sheet to the verification team.																																		
	<table border="1"> <tr> <th>Relevant SDG Indicator</th><th>SDG 13/ Climate Change Mitigation measured as reduced tCO₂e</th></tr> <tr> <td>Data/parameter</td><td>$LE_{p,y}$</td></tr> <tr> <td>Unit</td><td>tCO₂e per year</td></tr> <tr> <td>Description</td><td>Leakage in project scenario p during year y</td></tr> <tr> <td>Source of data</td><td>Baseline and monitoring surveys</td></tr> <tr> <td>Value(s) applied</td><td>0</td></tr> <tr> <td>Measurement methods and procedures</td><td> Means of Verification: The potential sources of leakage listed in the methodology have been investigated, and addressed below: </td></tr> </table>	Relevant SDG Indicator	SDG 13/ Climate Change Mitigation measured as reduced tCO ₂ e	Data/parameter	$LE_{p,y}$	Unit	tCO ₂ e per year	Description	Leakage in project scenario p during year y	Source of data	Baseline and monitoring surveys	Value(s) applied	0	Measurement methods and procedures	Means of Verification: The potential sources of leakage listed in the methodology have been investigated, and addressed below:																				
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Value(s) applied	0																																		
Measurement methods and procedures	Means of Verification: The potential sources of leakage listed in the methodology have been investigated, and addressed below:																																		

		a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project. The displaced baseline technology is three stones. It will not be reused outside the project boundary because it will still be used for cooking after the implementation of the Project. This leakage source can therefore be discounted. b) Non-project users who previously used lower emitting energy sources with NRB or fossil fuels saved under the project activity. The costs of low emitting water purification technologies, such as filtration and chlorination, are much higher than boiling with wood fuel. Users of these technologies are not price sensitive. Therefore, the implementation of the Project will not lead these users to boil water with wood fuel, even if the price of wood fuel becomes cheaper because of the reduction of demand caused by the Project. This leakage source can therefore be discounted. c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario. Considering that the project only saves 55,675 tons ($B_{b,y}$) of biomass annually while the total amount of above-ground biomass of Bangladesh is 177 million tons², the Project will not affect NRB fraction. d) The VPA population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology. The space heating effect of boiling water is negligible. Therefore, it is highly unlikely that some other form of heating will be adopted for compensating the space heating effect of boiling water. e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline. The project will not promote any new technology with high efficiency. It will not stimulate people to boil water. Therefore, a value of 0 is applied for leakage during this monitoring period. 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.
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² Table 18, Global Forest Resources Assessment 2015

	VVB confirms based on the above-mentioned justification and also verified by VVB during the site visit that no HHs are transferring to other methods of water treatment, so argument for not accounting the leakage is reasonable.
Monitoring frequency	Biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the monitoring report.
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of leakage
Additional comment	No leakage

Relevant SDG Indicator	SDG 6 indicator 6.1.1
Data/parameter	Hygiene campaigns
Unit	Not Applicable
Description	Hygiene campaigns carried out among project technology users
Source of data	CME held multiple hygiene campaigns in four villages from four VPA respectively during this monitoring period. "The first one was held in Jafor Pollan Para village, Ukhiya cell on 27/07/2023, the second one was held in Maronglua village, Ramu cell on 28/07/2023, the third one was held in Pal Para village, Cox's Bazar Sadar cell on 29/07/2023, the last one was held in Porbu Piaziakhata village, Chakaria cell on 29/07/2023. Each hygiene campaign was held with many habitants of villages."
Value(s) applied	Completed Means of Verification: Through the review of videos and the interviews with the user during the onsite by asking the questions whether such campaign was undertaken or not. Moreover, the methodology of survey was also confirmed by the verification team during the onsite assessment. It was confirmed by the HHs that Hygiene campaign included the sanitation amenities, equipment, and infrastructure, as well as to the behaviour in respect to regular and correct use of such amenities. It also included the behaviour aspects that prevents infections from water-related diseases. Which confirms the laid down requirements of methodology for 'Hygiene Campaign'. During the assessment the verification team was also informed that the users did not suffer from any water borne illness after the use of borehole. This demonstrates the effectiveness of the campaign carried out by the CME.
Measurement methods and procedures	Questionnaires and interviews are used in hygiene campaigns to assess hygienic

	handling of clean water.
Monitoring frequency	Annually
QA/QC procedures	
Purpose of data	Assessment of achievement of SDG 6
Additional comment	-

Relevant SDG Indicator	SDG 6 (Clean Water and Sanitation) Indicator 6.1.1 – Proportion of population using safely managed drinking water services												
Data/parameter	P _{p,y}												
Unit	Number												
Description	Number of persons consuming water within the project area during year y												
Source of data	Project survey												
Value(s) applied	<table border="1"> <thead> <tr> <th>VPA No.</th><th>Py</th></tr> </thead> <tbody> <tr> <td>VPA07</td><td>13,929</td></tr> <tr> <td>VPA08</td><td>12,897</td></tr> <tr> <td>VPA09</td><td>14,368</td></tr> <tr> <td>VPA10</td><td>13,630</td></tr> <tr> <td>Total</td><td>54,824</td></tr> </tbody> </table>	VPA No.	Py	VPA07	13,929	VPA08	12,897	VPA09	14,368	VPA10	13,630	Total	54,824
VPA No.	Py												
VPA07	13,929												
VPA08	12,897												
VPA09	14,368												
VPA10	13,630												
Total	54,824												
Measurement methods and procedures	The data is obtained from WMC of each borehole as per Document “Sworn Statement” Means of Verification: The records verified by the VVB and also verified with the users during the onsite assessment, the sample ‘Sworn Statement’ also verified as part of acceptance sampling.												
Monitoring frequency	Survey undertaken 07/08/2022-31/08/2022. At least biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the project survey.												
QA/QC procedures	-												
Purpose of data	Calculations of CO ₂ e emission reductions												
Additional comment	-												

Relevant SDG Indicator	SDG 5
Data/parameter	T _{p,y}
Unit	Hour
Description	Time spent to fetch and purify water by women and girls per household per day in the project scenario during year y
Source of data	B128 of Excel table “2-Data Recording Form for Project Survey” Monitoring Survey
Value(s) applied	0.42
Measurement methods and procedures	The data is obtained by project survey through sampling survey as per the applied methodology as well as “Standard: Sampling and surveys for

	CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)". The project survey was conducted by the CME and SOCIAL AID from 07/08/2022-31/08/2022 and the result is 0.42. Means of Verification: The records verified by the VVB and concluded that figure is correct. Based on the sectoral expertise VVB confirms that the figure is reasonable.
Monitoring frequency	At least biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the project survey.
QA/QC procedures	N/A
Purpose of data	Calculation of SDGs
Additional comment	-

Relevant SDG Indicator	SDG 3
Data/parameter	I _{P,y}
Unit	Percentage
Description	Waterborne illness incidence in the project scenario during year y
Source of data	B127 of Excel table "2-Data Recording Form for Project Survey"
Value(s) applied	0
Measurement methods and procedures	The data is obtained by project survey through sampling survey as per the applied methodology as well as "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)". The project survey was conducted by the CME and SOCIAL AID from 07/08/2022-31/08/2022 and the result is 0. Means of Verification: The records verified by the VVB and concluded that figure is correct. The VVB also verified from the remote onsite inspection from the sampled HHs and it was concluded that no such cases identified. Moreover, all the water quality tests undertaken by the third part also substantiates it.
Monitoring frequency	At least biennially; the above value is valid from 01/08/2022 to 29/07/2023 as per the project survey.
QA/QC procedures	N/A
Purpose of data	Calculation of SDGs
Additional comment	-

Findings	CL#02 & CL#03 were raised and closed.
Conclusion	The adequacy and compliance of the monitoring plan in the Monitoring report was found as per the requirements laid by the monitoring methodology and the recent version of GS4GG POA/VPA-DDS. The information flow (from data generation,

	aggregation, to recording, calculation and reporting) is already included under respective parameter above. The verification team has verified all the data and collected evidence as per the required monitoring frequency and found to be correct and appropriate meeting the requirements of the applied methodology and recent version of GS4GG POA/VPA-DDs.
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E.3.4.3. Implementation of sampling plan

Means of verification	<u>Description of staff conducting monitoring activities</u>
	All surveys are administered by trained staffs of CME, 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. It was explained to the respondents that the answers to the survey are analysed as a group and that no individual names are used in this analysis; the reason to take peoples' names and addresses is so that they can be found again to conduct further monitoring tasks. The staff conducting the monitoring activities were interviewed at the time of physical assessment and found that staff is well versed and has proper knowledge of conducting the monitoring activities.
	<u>Maintenance of total water Beneficiaries</u>
	Accurate records were kept and stored both electronically and in paper format. The agreement signed with the end users were verified by the verification team and also the users were interviewed during the physical assessment by the VVB.
	The data base in the following template as reproduced in MR was verified by the VVB during physical assessment. The users IDs were further verified through interviewing the HHs during the physical assessment undertaken.
	The following details are recorded in the project database, refer the template below:

Number of households

Number of persons

Filed Tests

Complying the VPA-DDS requirements, the following field studies were performed:

- a. Water Consumption Field Test (Surveyed by CME and verified by the VVB)
- b. Water quality tests by the third-party labs.

These surveys and studies have been made available to the VVB and are the verification is summarized below.

Water Quality Tests (WQTs)

The quality of the treated water is assessed to ensure that it fits human consumption. The standard used to assess the water quality meets requirements of the applied methodology. It is conducted quarterly, with the first test conducted within 6 months of the project start date. At least once every two years, the water quality test will be performed in accredited laboratories. The samples were selected by Simple Random Sampling. We used equation (1) of "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)" to calculate the sample size. The result is 17.76. Furthermore, according to paragraph 14 of "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)", a minimum sample size of 30 shall be chosen. CME chose 35 samples out of 139 boreholes to ensure the precision. The water quality test has been made in the Water Quality Testing Laboratory of the NGO Forum during this monitoring period on 15/10/2022, 25/01/2023, 18/04/2023 and 29/07/2023/18/. The detailed results of each test have been submitted to VVB and VVB found that the tests met the water quality in terms of *E.coli* and other parameters i.e. (Arsenic Arsenic and Fluorides). The third party was appointed by the CME to undertake the test, the samples were also drawn by the third party and carried out the tests as per the WHO standard. The labs test reports furnished by CME to VVB and VVB based on the local expertise concluded that the tests were adequately undertaken by the third party including the accredited lab for the current verification. VVB observed that the samples were taken higher than the desired samples and the sampling results met the desired confidence/precision as reported in the previous section. Since none of the sample tested for the WCFT failed for *E.coli* and other parameters therefore the required precision was sufficiently met.

Verification approach of water quality was undertaken by the two-step approach:

- I. Review of all water quality reports issued by the third-party lab;
- II. Confirmation of the water quality sample collection through the interviews of village heads/users to confirm that the representative of third party collected the samples and villages head (primarily the custodian of boreholes) was informed or not.

Therefore, the verification of water quality test results through the review of 'Water Quality Reports' doesn't fall under the acceptance sample as 100% records were verified.

Usage Survey - The Usage Survey is included in the Project Survey, there is no individual questionnaire for Usage Survey. The Project Survey was carried out between 27/08/2023 to 31/08/2023. The result from the usage survey is 100% used to calculate emission reduction. VVB undertaken the acceptance sampling test to verify the appropriateness of CME's survey and based on the VVB's sampling it can be concluded that the survey undertaken by the CME were adequate as no variation found between the VVB's survey and CME's survey. The user survey was

considered by taking a total of 120 samples and multi stage sampling approach as per the CDM sampling guidelines, since the usage was found 100% therefore VVB concluded that the desired confidence/precision was adequately met.

Water Consumption Filed Tests (WCFT)

The WCFT was carried out between 08/08/2022 to 01/09/2022 as per the binnial frequency. The result from the survey are averaged and the capped value of 7 liter/person is applied and the same has been verified in the subsequent section under monitoring parameters. VVB undertaken the acceptance sampling test to verify the appropriateness of CME's survey and based on the VVB's sampling it can be concluded that the survey undertaken by the CME were adequate as no variation found between the VVB's survey and CME's survey. The WCFT survey was considered by taking a total of 120 samples and multi stage sampling approach as per the CDM sampling guidelines, since the capped value is applied therefore VVB concluded that the desired confidence/precision was adequately met.

Project Survey - Sampling according to "Standard: Sampling and surveys for CDM project activities and programmes of activities (Version 09.0)" and "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)" to conduct Project Survey. CME calculated that 2 was the minimum number of boreholes should be sampled to satisfy the 95/10 rule of applied methodology being a mean parameter. Hence, CME randomly chose 6 boreholes covering the all 4 VPA to maintain the representativeness. CME also randomly chose 20 user households from each borehole, i.e. 120 user households in 6 boreholes. Data collected during the project surveys explores the following characteristics:

General information - Name, address, telephone number etc.

Household socio-demographic information.

Water use characteristics.

During this monitoring period the Project Survey has been conducted between 07/08/2022 to 31/08/2022. A more detailed description of the results is made in a separate document "2-Data Recording Form for Project Survey", and furnished to the VVB. The project survey frequency is binnial therefore the results are applied for the current verification deems acceptable to the verification team.

The project survey was considered by taking a total of 120 samples and multi stage sampling approach as per the CDM sampling guidelines, since the usage was found 100% therefore VVB concluded that the desired confidence/precision was adequately met.

Hygiene campaign – CME held multiple hygiene campaigns in four villages from four VPA respectively during this monitoring period. The first one was held in Jafor Pollan Para village, Ukhiya cell on 27/07/2023, the second one was held in Maronglua village, Ramu cell on 28/07/2023, the third one was held in Pal Para village, Cox's Bazar Sadar cell on 29/07/2023, the last one was held in Porbu Piaziakhata village, Chakaria cell on 29/07/2023. Each hygiene campaign was held with many habitants of villages. The agenda of campaign was:

- a) The campaign was started with greeting from village's leader.
- b) Self-introduction of village administration committee leaders and local boreholes rehabilitation project staff.
- c) Presentation of prepared module related to Hygiene and Sanitation campaign done by an expert from the borehole's rehabilitation project.
- d) Questions, wishes and recommendations proposed by habitants.
- e) Community work of cleaning on boreholes.

The detailed description of the hygiene campaigns during this monitoring period has been provided in a separate document. The details were verified previous onsite and the remote onsite for current verification by interviewing the users by using the acceptance sampling method.

The videos of the hygiene campaigns were furnished to the VVB and based on the review of videos, reconfirmation by HHs during the onsite inspection, it has been

	concluded that that the CME adhered the requirements of hygiene campaign.
Findings	CL#02 & CL#03 were raised and closed.
Conclusion	Verification team confirms that survey/sampling records to be acceptable in line with the requirements of the Sampling Standard and Guidance.

E.3.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	N/A as water quality tests were undertaken in third party labs. No other parameter parameter requires the instrumental monitoring.
Findings	N/A
Conclusion	N/A

E.3.6. Assessment of data and calculation of emission reductions or net removals

E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Emissions reductions were calculated using the results of the, Usage Surveys and baseline survey, water quality test inter alia, taking into consideration values for NRB and leakage. The monitoring has been carried out in accordance with the monitoring plan contained in the recent version of GS4GG POA/VPA-DDs/2/. The verification team assessed the monitoring techniques and each monitoring value in the monitoring report; and provide a short summary on the verification of every parameter listed in the monitoring plan and used for calculation of emission reductions. The monitored parameters of the project are in line with the recent version of GS4GG POA/VPA-DDs and the applied GS4GG methodology /6/. Brief descriptions of the monitored parameters are listed below: The CME 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 recent version of GS4GG VPA DDs/PoA DD have been monitored and reported in the monitoring report. Verification team has reviewed the calculation worksheet /3/ for the emission reduction calculation for the monitoring period as indicated at the cover page (including both the days). Verification team confirms that the formulas, conversions, aggregations and factors are consistent with the monitoring plan in the POA/VPA DDs. The reported data was checked as follows: - All the necessary data and all the parameters required to be monitored in the recent version of GS4GG VPA-DDS //14/, /2// were reviewed to ensure accuracy. $B_{b,y} = (1 - X_{boil}) * (1 - C_j) * N_{p,y} * W_{b,y} * (Q_{p,y} + Q_{p,rawboil,y})$ <table border="1" data-bbox="617 1538 1187 1731"> <thead> <tr> <th>VPA No.</th><th>B_{b,y}</th></tr> </thead> <tbody> <tr> <td>VPA07</td><td>14,142.45</td></tr> <tr> <td>VPA08</td><td>13,101.78</td></tr> <tr> <td>VPA09</td><td>14,590.20</td></tr> <tr> <td>VPA10</td><td>13,840.26</td></tr> <tr> <td>Total</td><td>55,674.69</td></tr> </tbody> </table>	VPA No.	B _{b,y}	VPA07	14,142.45	VPA08	13,101.78	VPA09	14,590.20	VPA10	13,840.26	Total	55,674.69
VPA No.	B _{b,y}												
VPA07	14,142.45												
VPA08	13,101.78												
VPA09	14,590.20												
VPA10	13,840.26												
Total	55,674.69												

Parameter	Description	Unit	Value	Verification Remarks

	B _{b,i,y}	Quantity of fuel consumed in baseline scenario b during the year in tons	ton	<table border="1"> <tr> <th>VPA No.</th> <th>B_{b,y}</th> </tr> <tr> <td>VPA07</td> <td>14,142.45</td> </tr> <tr> <td>VPA08</td> <td>13,101.78</td> </tr> <tr> <td>VPA09</td> <td>14,590.20</td> </tr> <tr> <td>VPA10</td> <td>13,840.26</td> </tr> <tr> <td>Total</td> <td>55,674.69</td> </tr> </table>	VPA No.	B _{b,y}	VPA07	14,142.45	VPA08	13,101.78	VPA09	14,590.20	VPA10	13,840.26	Total	55,674.69	Formula in line with TPDDTEC, V3.1 Calculated value presented in ER spreadsheet, VVB confirms that the calculation complies with the methodology as well as the approach registered in VPA-DDs.
	VPA No.	B _{b,y}															
	VPA07	14,142.45															
	VPA08	13,101.78															
	VPA09	14,590.20															
	VPA10	13,840.26															
Total	55,674.69																
f _{NRB,b,y}	Fraction of biomass used that can be established as non – renewable biomass in the baseline scenario b during year y	fraction	0.9576	f _{NRB} determined by complying the tool 30 of CDM, refer the assessment above regarding appropriateness of value.													
NCV _{b,fuel}	Net calorific value of fuels used in the baseline scenario	TJ/ton	0.0156	- IPCC 2006 default for firewood - The Value is in line with PoA DD/VPA-DDS													
EF _{p,fuel,co2}	CO2 emission factor of fuels used in the project scenario	tCO ₂ /TJ	112.00	- IPCC 2006 default for firewood - The Value is in line with PoA DD/VPA-DDS													
EF _{b,fuel,non co2}	Non-CO2 emission factor of fuels used in the baseline scenario	tCO ₂ /TJ	9.46	- IPCC 2006 default for firewood - The Value is in line with PoA DD/VPA-DDS													
Baseline Emission Reductions: $BE_{b,y} = B_{b,y} * ((f_{NRB,b,y} * EF_{b,fuel,CO2}) + EF_{b,fuel,non-CO2}) * NCV_{b,fuel} \quad (2)$ Where: BE_{b,y} Baseline emissions during year y B_{b,y} Quantity of fuel consumed in baseline scenario b during the year in tons; the applied value as per calculation in this section above; f_{NRB,b,y} Fraction of biomass used that can be established as non-renewable biomass in baseline scenario b during year y; the applied value is 0.9576 as per section D.1. EF_{b,fuel,CO2} CO₂ emission factor of fuels used in the baseline scenario; the applied value is 112 as per section D.1. EF_{b,fuel,non-CO2} Non-CO₂ emission factor of fuels used in the baseline scenario; the applied value is 9.46 as per section D.1.																	

	NCV_{b,fuel} Net calorific value of fuels used in the baseline scenario; the applied value is 0.0156 as per section D.1. As a result, BE_{b,y} is shown as follows: <table border="1" data-bbox="363 309 935 504"> <tr> <th>VPA No.</th><th>BE_{b,y}</th></tr> <tr> <td>VPA07</td><td>25,749</td></tr> <tr> <td>VPA08</td><td>23,854</td></tr> <tr> <td>VPA09</td><td>26,564</td></tr> <tr> <td>VPA10</td><td>25,198</td></tr> <tr> <td>Total</td><td>101,365</td></tr> </table> <u>SDG 3: Good health and well-being</u> The outcome of SDG 3 is quantified as the reduction of waterborne illness incidence compared to baseline scenario. The waterborne illness incidence in the baseline scenario is 62.90% according to Baseline Survey and this has been validated by the validating VVB. <u>SDG 5: Gender equality</u> The outcome of SDG 5 is quantified as percentage reduction of time spent to fetch and purify water by women and girls. The time spent to fetch and purify water by women and girls per household in the baseline scenario is 2.62 hour according to Baseline Survey and this has been validated by the validating VVB. <u>SDG 6: Clean Water and Sanitation</u> The outcome of SDG 6 is quantified as number of persons consuming safe water supplied by the project, the direct outcome is calculated, section E.2 of MR and also verified by the VVB in previous sections.	VPA No.	BE _{b,y}	VPA07	25,749	VPA08	23,854	VPA09	26,564	VPA10	25,198	Total	101,365
VPA No.	BE _{b,y}												
VPA07	25,749												
VPA08	23,854												
VPA09	26,564												
VPA10	25,198												
Total	101,365												
Findings	Nil												
Conclusion	The verification team confirms the following: • The calculations of baseline SDG impact have been carried out in accordance with the equations and methods described in the registered monitoring plan and applied methodology. • Any assumptions used in emission or removal calculations have been justified. • Appropriate emission factor and other reference values have been correctly applied. It can be confirmed that the baseline calculation is overall correct. • The ER calculation sheet provided is clear, transparent and the calculations provided in the sheet are reproducible. Hence, the baseline emission in the monitoring report for the monitoring period(i.e., 101,365 tCO₂e) is verified to be correct.												

E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	Project Scenario SDG 13: Climate Action Project Scenario Fuel Consumption Calculation $B_{p,y} = (1 - C_j) * N_{p,y} * W_{p,y} * (Q_{p,rawboil,y} + Q_{p,cleannoil,y}) \quad (3)$ Where: B_{p,y} Quantity of fuel f consumed in project scenario p during the year y in tons C_j Percentage of users of project technology who were already in baseline scenario using a non-boiling safe water supply; the applied value is 0 as per section D.1. N_{p,y} Number of person.days consuming water supplied by project scenario p through year y; the applied value as per Section D.2. W_{p,y} Quantity of fuel in tons required to treat 1 litre of water using
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	technologies representative of baseline scenario b in year y as per baseline water boiling Test; the applied value is 0.0004 as per Section D.1. $Q_{p,rawboil,y}$ Quantity of raw water boiled in the project scenario p per person per day; the applied value is 0 as per Section D.2. $Q_{p,cleannoil,y}$ Quantity of safe water boiled in the project scenario p per person per day in year y; the applied value is 0 as per Section D.2. As a result, $B_{p,y} = 0$ t Project Emission Reductions: $PE_{p,y} = B_{p,y} * ((f_{NRB,p,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,non-CO2}) * NCV_{p,fuel}$ (4) Where: $BE_{b,y}$ Baseline emissions during year y $PE_{p,y}$ Project emissions during year y $B_{p,y}$ Quantity of fuel consumed in project scenario p during the year y in tons; the applied value is 0 as per calculation in this section above; $f_{NRB,p,y}$ Fraction of biomass used that can be established as non-renewable biomass in project scenario p during year y; the applied value is 0.9576 as per section D.1. $EF_{b,fuel,non-CO2}$ Non-CO₂ emission factor of fuels used in the baseline scenario; the applied value is 9.46 as per section D.1. $EF_{p,fuel,CO2}$ CO₂ emission factor of fuels used in the project scenario; the applied value is 112 as per section D.1. $EF_{p,fuel,non-CO2}$ Non-CO₂ emission factor of fuels used in the project scenario; the applied value is 9.46 as per section D.1. $NCV_{p,fuel}$ Net calorific value of fuels used in the project scenario; the applied value is 0.0156 as per section D.1. ER_y Overall emission reductions achieved by the project activity during year y $U_{p,y}$ Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate; the applied value is 100% as per section D.2. $LE_{p,y}$ Leakage from project scenario p during year y; the applied value 0 as per section D.2. As a result, $PE_{p,y} = 0$ tCO₂e SDG 3: Good health and well-being The outcome of SDG 3 is quantified as the reduction of waterborne illness incidence compared to baseline scenario, which is calculated as follows: $I_{r,y} = I_b - I_{p,y} \quad (5)$ Where: $I_{r,y}$ Reduction of waterborne illness incidence in year y I_b Waterborne illness incidence in the baseline scenario; the applied value is 62.90% as per section D.1. $I_{p,y}$ Waterborne illness incidence in the project scenario during year y; the applied value is 0 as per section D.2.
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As a result, $I_{r,y} = 62.90\%$

SDG 5: Gender equality

The outcome of SDG 5 is quantified as percentage reduction of time spent to fetch and purify water by women and girls, which is calculated as follows:

$$T_{r,y} = (T_b - T_{p,y})/T_b \quad (6)$$

Where:

$T_{r,y}$ Percentage reduction of time spent to fetch and purify water by women and girls in year y

T_b Time spent to fetch and purify water by women and girls per household in the baseline scenario; the applied value is 2.62 as per section D.1.

$T_{p,y}$ Time spent to fetch and purify water by women and girls per household in the project scenario during year y; the applied value is 0.42 as per section D.2.

As a result, $T_{r,y} = 83.97\%$

SDG 6: Clean Water and Sanitation

The outcome of SDG 6 is quantified as number of persons consuming safe water supplied by the Project, which is calculated as follows:

$$P_y = P_{p,y} * (1 - C_j) * U_{p,y} \quad (7)$$

Where

P_y Number of additional persons consuming safe water supplied by the Project compared to the baseline scenario during year y

$P_{p,y}$ Number of persons consuming water within the project area during year y; the applied value as per section D.2.

C_j Percentage of users of project technology who were already in baseline scenario using a non-boiling safe water supply; the applied value is 0 as per section D.1.

$U_{p,y}$ Cumulative usage rate for technologies in project scenario p during year y; the applied value is 100% as per section D.2.

As a result, P_y is shown as follows:

VPA No.	P_y
VPA07	13,929
VPA08	12,897
VPA09	14,368
VPA10	13,630
Total	54,824

Findings	CL#01 was raised and closed.
Conclusion	The verification team confirms that: - The complete data set for the monitoring parameters was available as mentioned in the monitoring plan in the PoA/VPA-DDs for the duration of monitoring period. - 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 PoA/VPA-DDs. - Appropriate methods and formulae for calculating baseline emission, project emissions and leakage have been followed; - The claimed emission reductions are free from material errors, omissions or misstatements, with a reasonable level of assurance.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	The VPA DDs has described what sources of leakage were relevant to the VPA
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	and what have been discounted. The potential sources of leakage listed in the methodology have been investigated, and addressed below: a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project. The displaced baseline technology is three stones. It will not be reused outside the project boundary because it is reused outside the project boundary because it is still used for cooking after the implementation of the Project” and therefore, the implementation of the Project does not lead these users to boil water with wood fuel. b) Non-project users who previously used lower emitting energy sources with NRB or fossil fuels saved under the project activity. The costs of low emitting water purification technologies, such as filtration and chlorination, are much higher than boiling with wood fuel. Users of these technologies are not price sensitive. Therefore, the implementation of the Project will not lead these users to boil water with wood fuel, even if the price of wood fuel becomes cheaper because of the reduction of demand caused by the Project. This leakage source can therefore be discounted. c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario. Considering that the project only saves 55,675 tons ($B_{b,y}$) of biomass annually while the total amount of above-ground biomass of Bangladesh is 177 million tons³, the Project has not affected NRB fraction. d) The VPA population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology. The space heating effect of boiling water is negligible. Therefore, it is highly unlikely that some other form of heating will be adopted for compensating the space heating effect of boiling water. e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline. The project did not promote any new technology with high efficiency. It did not stimulate people to boil water. Therefore, a value of 0 is applied for leakage during this monitoring period. 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. VVB confirms based on the above-mentioned justification and also verified by VVB during the site visit that no HHs are transferring to other methods of water treatment, so argument for not accounting the leakage is reasonable.
Findings	Nil
Conclusion	Verification team concludes that there is no leakage for this monitoring period.

E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	Emissions reductions were calculated using the results of the, Usage Surveys and baseline survey, water quality test inter alia, taking into consideration values for NRB and leakage. The monitoring has been carried out in accordance with the monitoring plan contained in the recent version of GS4GG POA/VPA-DDs/2/. The verification team assessed the monitoring techniques and each monitoring value in the monitoring report; and provide a short summary on the verification of every parameter listed in the monitoring plan and used for calculation of emission reductions.
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³ Table 18, Global Forest Resources Assessment 2015

SDG	SDG Impact	GS ID	Baseline estimate	Project estimate	Net benefit
	13	GS 11150	25,749	0	25,749
		GS 11151	23,854	0	23,854
		GS 11152	26,564	0	26,564
		GS 11153	25,198	0	25,198
		Total	101,365	0	101,365
	3	Reduce the incidence of waterborne illness within the project area	62.90%	0	62.90%
	5	Reduce the time spent to fetch and purify water by women and girls	2.62 hour	0.42 hour	83.97%
	6	GS 11150	0	13,929	13,929
		GS 11151	0	12,897	12,897
		GS 11152	0	14,368	14,368
		GS 11153	0	13,630	13,630
		Total	0	54,824	54,824
Findings	Nil				
Conclusion	The verification team confirms the following: • The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction spreadsheet /04/. • Each SDG impact is calculated as per the VPA-DD /06/ and the selected methodology /39/.				

E.3.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	The verification team has checked whether the MR includes a comparison of actual values of SDG Impacts of the monitoring period with the estimations in the VPA-DD /06/. Section E.5 of the MR includes a comparison of the calculated SDG Impacts with the ex-ante calculated values in the VPA-DD /06/.
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	SDG	GS ID	Values estimated in ex ante calculation of approved VPA DD for this monitoring period	Actual values ⁴ achieved
	13	GS 11150	58,056 tCO ₂ e	25,749 tCO ₂ e
		GS 11151	58,056 tCO ₂ e	23,854 tCO ₂ e
		GS 11152	58,056 tCO ₂ e	26,564 tCO ₂ e
		GS 11153	58,056 tCO ₂ e	25,198 tCO ₂ e
	3	GS 11150	32.90%	62.90%
		GS 11151	32.90%	62.90%
		GS 11152	32.90%	62.90%
		GS 11153	32.90%	62.90%
	5	GS 11150	61.83%	83.97%
		GS 11151	61.83%	83.97%
		GS 11152	61.83%	83.97%
		GS 11153	61.83%	83.97%
	6	GS 11150	33,000 persons	13,929 persons
		GS 11151	33,000 persons	12,897 persons

⁴ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

	GS 11152	33,000 persons	14,368 persons
	GS 11153	33,000 persons	13,630 persons
Findings	No CAR/CL is raised in this section.		
Conclusion	The estimated SDG Impact and the actual SDG Impact achieved for the monitoring period are correctly reported in the section E.5 of MR /02/.		

E.3.6.6. Remarks on difference from estimated value in included CPA

Means of verification	The actual values of each VPA of SDG 13 are lower than estimated value because the actual number of users is less than half of that we estimated before the project started. The fact that the actual value of SDG 3 is higher than estimated value is due to several reasons as explained by CME: a) clean water supplied by the project has a good quality, which has been proved by the water quality tests; b) local people have developed a better healthy habit by the convenience of getting clean water and hygiene campaigns. The actual value of SDG 5 is higher than estimated value because estimated value ex-ante was a conservative estimate, whereas monitored data is an accurate representation by sampling.
Findings	No CAR/CL is raised in this section.
Conclusion	The verification team has determined the SDG Impacts achieved during this monitoring period with the estimated value and there was no increase observed in SDG#13.

E.3.7. Assessment of reported Safeguarding Principles

Means of verification	According to Section B.7 of Design Certified PDD, safety of water disinfectants used in the VPA should be monitored. But during this monitoring period, the water quality meets the relevant requirements, so we have not used water disinfectants. Hence no parameter needs to be monitored in this section.
Findings	N/A
Conclusion	N/A

E.3.8. Stakeholder Inputs & Grievance Mechanism

Means of verification	Stakeholder consultation report (SCR) verified by the VVB which was approved by GS during project design review, stakeholders of Category A-G of "Stakeholder Consultation and Engagement Requirements". It was concluded that the relevant stakeholders have been identified and invited and validated by the validating VVB during the design certification. According to Section B.1.1 and B.1.3 of the SCR available on the GS registry along with the validation reports of the VPAs, various inviting methods were applied for the stakeholder consultation meeting. For the convenience of villagers, an invitation letter in both English and Bengali was sent to them through broadcast in villages. For some local people, invitation letters were sent to them as formal invitation. Other invitees were invited by email. The following was validated by the verification team during the review of validated 'Stakeholder Consultation Report' and the interview with CME: a. The first way is to use the phone and they could report problems
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	concerning the project by phone. The following phone numbers were provided to participants: a. Engr. Md. Babul Aktar: +88-01712080178 b. Md Maruf: 01887670849 c. Md Rashel: 01889528429 d. Md Rashed: 01827-041033 e. Nuri Akter: 01839566480 f. Md Kamal Uddin: 01818138805 b. The second way is to put books The offices of all the villages where the VPA has been implemented. The representatives of Social Aid will monthly check the books to see the problems reported and find solutions with users: c. The third way is to visit physically the boreholes locations and discuss with water management committees and users onsite. According to Section E of the SCR, a linkage (http://www.icebergchina.com/contents/86/237.html) has been created for providing feedback. An email was sent to stakeholders to invite them to provide feedback. According to B.1.5 of the SCR, other means and methods to provide feedback for those who are not able to join the consultation meeting are as follows: The following email addresses are provided for those who are not able to join the consultation meeting to provide feedback: Iceberg: Mr. Ji BAO baoji@icebergchina.com Social Aid: Engr. Md. Babul Aktar: ed@socialaid.org.bd If stakeholders have no access to internet and emails, there are several ways that have been adopted to keep contact between the users of boreholes and the Iceberg and Social Aid. There is a continuous input/grievance mechanism in place for beneficiaries to be able to give feedback on the project. No grievance received during the monitoring period as confirmed by the CME during the physical assessment and also the same has been confirmed by the end users during the physical assessment.
Findings	No CAR/CL is raised in this section.
Conclusion	In Section G.1 of MR, CME listed all input and grievance mechanism and verified by the VVB during the onsite assessment. Various ways to ensure representation from all the categories under each of the 4 VPAs for inputs and grievances and approved by the GS as all the 4 VPAs were design certified and included through the VVB validation. The Continuous Input Grievance Expression Process Books have been put in all the villages where the VPA has been implemented. In addition, phone No. and emails address have been left for timely connection. Section G.1 of the MR has been revised accordingly. A photo of a Continuous Input Grievance Expression Process Book has been submitted to VVB, VVB found that households are aware of the feedback mechanism and no grievance raised during the current verification.

SECTION F. Internal quality control

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The draft verification report prepared by team leader is reviewed by an independent technical reviewer before requesting for issuance for this verification period to confirm the internal procedures established by 4KES are duly followed and the verification report/opinion is reached in an objective manner and complies with the applicable GS requirements. The technical review is conducted by the technical reviewer qualified as per the 4KES procedures

established for the qualification of CDM/GS personnel as per EB guidelines and GS guidelines.

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 GS. The final decision is taken by the Head of the VVB. The technical reviewer approves the final version of the report.

The final approval is authorized by the Managing Director, 4KES once the report is approved by the Head of DOE/DOE Manager.

SECTION G. Verification opinion

>> The verification team confirms that the evidence is of sufficient quantity, appropriate quality and reliable. The reported values, notation, units and sources in the monitoring report for the monitoring parameter have been cross checked with the emission reduction sheet and monitoring report. During the course of verification and interviews, the data submitted by CME was cross verified with the values mentioned in the emission reduction sheet /04/ and monitoring report /02/. The procedure for data monitoring, recording, transfer and compilation were also verified and found in compliance with the monitoring plan as mentioned in the PoA-DD /05/ and VPA-DD /06/.

Evidences (Documents/interviews) referred for verification of individual monitoring parameter and fixed parameters are defined in section D.3.4 above. It is confirmed by the assessment team that the reported SDG Impacts have been conservatively calculated. A list of referred documents for verification is also included in Appendix 3 of this report.

Based on the information seen and evaluated we confirm that the implementation of the PoA/VPA has resulted in 101,365 tCO₂e emission reductions during monitoring period 01/08/2022 to 29/07/2023 (first and last days are included).

Sustainable Development Goals Targeted	SDG Impact	VPA No.	Amount Achieved	Units/ Products
SDG 13 Climate Action	Reduce emission from water boiling by non-renewable biomass	VPA07	25,749	VERs
		VPA08	23,854	
		VPA09	26,564	
		VPA10	25,198	
		Total	101,365	
SDG 3 – Good Health and Well-Being	Reduce the incidence of waterborne illness within the project area		62.90%	Percentage
SDG 5 – Gender Equality	Reduce the time spent to fetch and purify water by women and girls		83.97%	Percentage
SDG 6 – Clean Water and Sanitation	Provide safe water to local residents	VPA07	13,929	Number of persons
		VPA08	12,897	
		VPA09	14,368	

		VPA10	13,630	
		Total	54,824	

SECTION H. Certification statement

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4K Earth Science Pvt. Ltd. has been contracted by 'Guangzhou Iceberg Environmental Consulting Services Co., Ltd.' to undertake independent verification and certification for the SDGs reported from the Guangzhou Iceberg Environmental Consulting Services Co., Ltd., GS 11150, GS 11151, GS 11152, GS 11153 for the monitoring period in the Monitoring Report Version 01 (first version):

VPA No.	Start date	End date
VPA07	01/08/2022	29/07/2023
VPA08	01/08/2022	29/07/2023
VPA09	01/08/2022	29/07/2023
VPA10	01/08/2022	29/07/2023

The verification is based on the PoA-DD /14/ & VPA-DD /02/ and the monitoring report for this PoA

/02/. Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive Board.

The management of the 'Guangzhou Iceberg Environmental Consulting Services Co., Ltd.' is the coordinating/Managing Entity and it is responsible for inclusion of VPAs under this PoA. The calculation and determination of SDGs from the PoA is the responsibility of the management of the 'Guangzhou Iceberg Environmental Consulting Services Co., Ltd.'. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 1 dated 16/10/2023.

It is our responsibility to express an independent verification opinion on the calculation of SDGs from the PoA for the monitoring period 01/08/2022 to 29/07/2023 (including both dates) based on the reported SDGs in the Final Monitoring Report Version 1 dated 26/10/2024 for the same period.

In our opinion the GHG emissions reductions reported for the VPA are fairly stated in the Monitoring Report (final) Version 1 dated 16/10/2023. 4KES based on outcome of verification activities, certifies in writing that, during the monitoring period 01/08/2022 to 29/07/2023 (including both days), the registered GS VPA achieved the verified amount of 101,365 tCO₂e reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the VPA.

The Verified and certified SDGs impacts during the monitoring period 01/08/2022 to 29/07/2023 (Including both dates) is stated below:

Reporting period: 01/08/2022 to 29/07/2023 (including both dates)

Sustainable Development Goals Targeted	SDG Impact	VPA No.	Amount Achieved	Units/ Products
SDG 13 Climate Action	Reduce emission from water boiling by non-renewable biomass	VPA07	25,749	VERs
		VPA08	23,854	

		VPA09	26,564	
		VPA10	25,198	
		Total	101,365	
SDG 3 – Good Health and Well-Being	Reduce the incidence of waterborne illness within the project area		62.90%	Percentage
SDG 5 – Gender Equality	Reduce the time spent to fetch and purify water by women and girls		83.97%	Percentage
SDG 6 – Clean Water and Sanitation	Provide safe water to local residents	VPA07	13,929	Number of persons
		VPA08	12,897	
		VPA09	14,368	
		VPA10	13,630	
		Total	54,824	

Product Vintages for SDG#13

VPA No.	Start Dates	End Dates	VERs
07	01/08/2022	31/12/2022	10,853
	01/01/2023	29/07/2023	14,896
08	01/08/2022	31/12/2022	10,054
	01/01/2023	29/07/2023	13,800
09	01/08/2022	31/12/2022	11,196
	01/01/2023	29/07/2023	15,368
10	01/08/2022	31/12/2022	10,621
	01/01/2023	29/07/2023	14,577
		Total	101,365

Appendix 1. Abbreviations

CAR	Corrective Action Request
CME	Coordinating & Managing Entity
CL	Clarification Request
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
CRF	Carbon Rights Form
EB	Executive Board
ER	Emission Reduction
FT	Fuel Test
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GPS	Global Positioning System
GS	Gold Standard
HH	Household
IPCC	Intergovernmental Panel on Climate Change
KPT	Kitchen Performance Test
MKS	Monitoring Kitchen Survey
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-governmental Organization
NRB	Non-renewable biomass
OSV	On-site visit
POA DD	Programme of Activity Design Document
PP	Project proponent
PTD	Project Technology Days
QA/QC	Quality Assurance/Quality Control
SC	Sustain Cert
SD	Sustainable Development
SDG	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary Project Activity
VVB	Validation and Verification Body
VER	Voluntary Emission Reduction
VVS	Validation and Verification Standard for project activities

Appendix 2. Competence of team members and technical reviewers

<u>Certificate of Competence</u>						
Name	☒ Mr. ☐ Ms.	Sanjay Kandari				
Qualification Procedure	Fulfil the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.					
Appointed to work as:						
	CDM Validator/Verifier	Team Leader	Team Member	Technical Expert	Technical Reviewer	Financial Expert
<i>Appointed</i>	Yes	Yes	Yes	Yes	Yes	No
<i>Appointed Date</i>	25-03-2023					
Authorized to work as Technical Expert for:						
<i>Authorized Technical Area</i>	Sectoral Scope		TA Code	Technical Area within the scope		
	Energy industries (renewable - / non-renewable sources)		1.1	Thermal energy generation		
	Energy industries (renewable - / non-renewable sources)		1.2	Renewables		
	Energy distribution		2.1	Energy distribution		
	Energy demand		3.1	Energy demand		
	Waste handling and disposal		13.1	Solid waste and wastewater		
	Waste handling and disposal		13.2	Manure		
Authorized to work as Local Expert for:						
<i>Country/Countries</i>	India					
Compliance check by: Anand S. R.						

<u>Certificate of Competence</u>						
Name	☒ Mr. ☐ Ms.	Ma Paa Puratchikkanal				
Qualification Procedure	Fulfil the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.					
Appointed to work as:						
	CDM Validator/Verifier	Team Leader	Team Member	Technical Expert	Technical Reviewer	Financial Expert
<i>Appointed</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Appointed Date</i>	15-07-2023					

Authorized to work as Technical Expert for:			
Authorized Technical Area	Sectoral Scope	TA Code	Technical Area within the scope
	Energy industries (renewable - / non-renewable sources)	1.1	Thermal energy generation
	Energy industries (renewable - / non-renewable sources)	1.2	Renewables
	Energy demand	3.1	Energy demand
	Construction	6.1	Construction
	Waste handling and disposal	13.1	Solid waste and wastewater
	Waste handling and disposal	13.2	Manure
	Agriculture	15.1	Agriculture
Authorized to work as Local Expert for:			
Country/Countries	India		
Compliance check by: Anand S. R.			

Appendix 3. Documents reviewed or referenced

S. No.	Name of document
/1/	/1.1/ Monitoring Report, 01 dated 16/10/2023
/2/	- VPA Final VPA-DDs Version 09 dated 14/03/2022 - Stakeholder Consultation Reports for the VPAs
/3/	ER/SDG spreadsheets corresponding to MR
/4/	• GS4GG Principles & Requirements, Version 1.2 dated October 2019 https://globalgoals.goldstandard.org/100-principles-and-requirements/ • GS4GG-Stakeholder Consultation and engagement Requirements Guidelines, v1.2 https://globalgoals.goldstandard.org/102-par-stakeholder-consultation-requirements/ • GS4GG 'Community Services Activity-Requirements', v1.2 https://globalgoals.goldstandard.org/standards/201_V1.2_AR_Community-Services-Activity-Requirements.pdf • Safeguarding Principles & Requirements, v1.2 https://globalgoals.goldstandard.org/103-par-safeguarding-principles-requirements/ • COVID 19 Interim measures • Gold Standard for Global Goals - Programme of Activity Requirements, Version 1.2. https://www.goldstandard.org/project-developers/standard-documents • GS Monitoring report form Version 1.1 https://www.goldstandard.org/project-developers/standard-documents
/5/	WHO criteria for Water Quality (Rules & regulations)
/6/	1) Gold Standard Methodology: "Technologies and Practices to displace decentralized thermal energy consumption" Version 03.1 https://globalgoals.goldstandard.org/407-ee-ics-technologies-and-practices-to-displace-decentralized-thermal-energy-tpddtec-consumption/ 2) "Tool for the demonstration and assessment of additionality (Version 7)" 3) GS Validation & Verification Standard, Version 1 4) SITE VISIT AND REMOTE AUDIT REQUIREMENTS AND PROCEDURES, dated 30/05/2023 5) https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf 6) Updated [2018] Environment Impact Assessment and Regulations, 2005 [G.N. No 349/2005] 7) "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" version 09 8) "Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities, Version 04.0 9) CDM Validation & Verification Standard, version 03 for POAs
/7/	Declaration confirming that there is no double counting

/8/	Technical specification manual of boreholes
/9/	Project database Bangladesh: VPA
/10/	Baseline surveys as part of VPA validation
/11/	Sworn Agreements signed between CME and user
/12/	Project Survey Reports/forms
/13/	Water Testing Procedures (Confirmed through Onsite Assessment)
/14/	Final PoA-DD, Version 5.0 dated 15/09/2021
/15/	Sampling and sample size sheet includes screen shot of randomizers etc
/16/	2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 1 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
/17/	WASH related documents
/18/	Water Quality Test (WQT) Reports issued by, 'Water Quality Testing Laboratory' Lab Code CD-91-20/35, Dhaka
/19/	http://onlinelibrary.wiley.com/doi/10.1002/2014WR016770/pdf 5 https://washdata.org/data
/20/	Reports of Hygiene campaign undertaken
/21/	Maintenance Log of Boreholes
/22/	Video evidence of project surveys by the surveyors

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

Table 1. Remaining FARs from validation and/or previous verification

FAR ID	01	Section no.	E.1.2	Date: 28/12/2023
Description of FAR				
CME shall respond to following FARs raised during the previous verification and how the corrective actions undertaken by them addresses the issue in this verification.				
<i>The PD shall ensure that the next usage survey covers the question of whether the household has obtained access to an alternative water purification technology, such as household water filters, or access to other boreholes, since the start of the project. If such exist, the PD shall clarify if access to such technology is granted under another carbon credit project. If this is the case, the PD shall clarify how double claiming is avoided. The VVB shall verify this claim.</i>				
CME response				Date: 03/01/2024
In Usage Survey, the PD has set Question 5 to clarify whether the household has obtained access to an alternative water purification technology. The Question 5 is "Has the household obtained access to an alternative water purification technology, such as household water filters, or access to other boreholes, since the start of the project?", and the answers of the surveyed households were "No". Please refer to submitted documents "4-Data Recording Form for Usage Survey 20231020" and "6-Usage Survey Form" for details. Hence, there is no double claiming during this monitoring period. The related content is also in Section B.1.1 of the MR.				
Documentation provided by the CME				
Usage Survey Forms				
VVB assessment				Date: 16/01/2024
The usage survey forms submitted by the CME demonstrates the usage survey covers the question of whether the household has obtained access to an alternative water purification technology, such as household water filters, or access to other boreholes, since the start of the project. The question 5 explicit covers this requirement, VVB also asked this question during the remote onsite assessment and confirmed that the project boreholes are the only source of water to them. FAR is closed.				

Table 2. CLs from this verification

CL ID	01	Section no.	E.3.6.2	Date: 28/12/2023
Description of CL				
Under the table 1 the total SDG#13 motioned for the VPA#01 as 25,7549 VERs, which are greater than the total ERs achieved across all for VPAs in the same table. CME shall clarify?				
CME response				Date: 03/01/2024
Sorry, it was a typo. The VERs of VPA#01 should be “25,749” not “25,7549”, and the MR has been modified.				
Documentation provided by the CME				
Revised MR				
VVB assessment				Date: 16/01/2024
CME clarified that this was a typo are corrected the error. Revised MR was found addressing the issue and therefore the finding is closed.				

CL ID	02	Section no.	E.3.4.3	Date: 28/12/2023
Description of CL				
CME shall clarify how the representativeness among all VPAs were ensured during the selection of boreholes and the beneficiaries surveys in 6 boreholes.				
CME response				Date: 03/01/2024
The clarification has been added in Section C of the revised MR:” Since VPA07-10 of PoA GS 10959 are in the same district, using same technologies and sharing same baseline scenario, representative and random cross VPA sampling has been applied in these VPAs. Multi-stage sampling combines the cluster and simple random sampling approaches in a two-stage sampling scheme which enables us to randomly select 6 boreholes and then randomly sample 20 households of each borehole’s users. As with simple random sampling and cluster sampling, we are assuming homogeneity across boreholes in the usage of boreholes. And according to Equation 33 of Guideline for Sampling and surveys for CDM project activities and programme of activities (Version 04.0), we concluded that 1 was the minimum number of boreholes should be sampled to satisfy the 95/10 rule of applied methodology. As we chose 6 boreholes, so the confidence precision has been met.”				
Documentation provided by the CME				
Revised MR				
VVB assessment				Date: 16/01/2024
The detailed clarification has been reviewed and found addressing the clarification raised on the representativeness. Moreover, this was also confirmed during the remote onsite assessment that the usage pattern is very similar in all VPAs. The team leader has the past experience of physical onsite assessment during the first verification therefore finding is closed based on the revisions made to clarify the representativeness in sampling. Finding is closed.				

CL ID	03	Section no.	E.3.4.3	Date: 28/12/2023
Description of CL				
The Usage Survey was carried out from 27/08/2023 to 31/08/2023 as indicated in the section C of MR, the dates of previous survey are not mentioned therefore this is not clear how the CME has achieved the annual monitoring frequency, clarify?				
CME response				Date: 03/01/2024
The Usage Survey was carried out from 27/08/2023 to 31/08/2023 surveyed the implementation conditions from 01/08/2022 to 29/07/2023 for the second monitoring period, which has achieved the annual monitoring frequency.				
Documentation provided by the CME				
Revised MR				
VVB assessment				Date: 16/01/2024
The detailed clarification has been reviewed and found addressing the clarification raised on annual frequency. The project survey complies the annual frequency. Finding is closed.				

Table 3. CARs from this verification

CAR ID	01	Section no.	E.1.1	Date: 28/12/2023
Description of CAR				
CME shall use the thousand separators in international format, 3 digits from left, kindly ensure the consistent formatting throughout the MR.				
CME response				Date: 03/01/2024
The typo has been revised, hence the thousand separators in international format has been applied throughout the MR.				
Documentation provided by the CME				
Revised MR				
VVB assessment				Date: 16/01/2024
CME has used thousand separators in international format, 3 digits from left. Consistent formatting throughout the MR has been applied. Finding is closed.				

Table 4. FARs from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
CME response				Date: DD/MM/YYYY
Documentation provided by the CME				
DOE assessment				Date: DD/MM/YYYY

Annexure: Water Quality Protocol

Water Quality Testing Protocol

Prepared by Water Quality Testing Laboratory of the NGO Forum

1. Introduction

WQTL developed a comprehensive Water Quality Testing Protocol for water quality. The Protocol contained a detailed section on operational guideline for monitoring staff and was prepared based on the new information collected from local context and international experience.

2. Sampling

Collect water samples from different sources such as tube wells, hand pumps, and surface water sources. The samples should be collected in clean containers that are free of contaminants.

The required steps are described below:

- a) Wear proper protective equipment such as gloves, eye protection, and waterproof boots.
- b) Select a clean container that is appropriate for the type of analysis required. The container should be free from contaminants and have a tight-fitting lid.
- c) Approach the sampling site and ensure the surrounding area is free from any potential hazards.
- d) Rinse the container three times with the water to be sampled, and discard the rinse water each time.
- e) Submerge the container completely under the surface of the water for several seconds and then tilt it upwards to avoid capturing surface water only.
- f) Fill the container slowly, avoiding any bubbles or splashing.
- g) Once the container is full, carefully remove it from the water and immediately secure the lid.
- h) Label the container with the sampling location and time, and any other relevant information.
- i) Store the sample in a cooler with ice or in a refrigerator, depending on the analysis required.

Analyze the sample as soon as possible, or within the time frame recommended by the laboratory or sampling protocol.

3. Preservation

Preservative tablets should be added to the samples to ensure the water quality remains unchanged during transportation to the laboratory.

The required steps are described below:

- a) Choose appropriate sample container: The container used for preserving water samples should be made of a material that does not react with the water or alter the water quality. Typically, glass bottles or plastic containers made of polyethylene (PE) or polypropylene (PP) are recommended.
- b) Clean the container: Clean the container thoroughly before using it to prevent contamination. A good way to clean is to rinse the container with distilled or deionized water and let it dry.
- c) Add preservatives: Some water samples may require the addition of preservatives to prevent bacterial or chemical changes that can occur during transport and storage. The type and amount of preservative needed depend on the type of water being tested. Common preservatives include sodium thiosulfate, nitric acid, and sulfuric acid.

- d) Label the container: Label the container clearly with the date, time, location, and any other important information related to the sample.
- e) Transport and store the sample: After collecting the sample, it should be stored in an insulated container to prevent temperature changes. The sample should be transported to the lab as soon as possible, and ideally, should be analyzed within 24 hours of collection.
- f) Use appropriate containers: Make sure you have the right containers for your sample type. Glass, plastic, or metal containers with airtight seals can protect against spills or contamination.
- g) Label your sample: Label your sample with any relevant information, such as the type of sample or the date and time of collection.
- h) Transport safely: For samples that require refrigeration, use cool bags or ice packs to keep the sample at the appropriate temperature during transportation. For fragile samples, use protective packaging to prevent damage during transport.
- i) Store correctly: Follow any specific storage requirements for your sample type. Store samples in a cool, dry place away from direct sunlight or any other conditions that can cause degradation or spoilage.
- j) Monitor regularly: Check the integrity and quality of the sample regularly to ensure it has not degraded during storage.

4. Laboratory Analysis

The collected samples should be analyzed in a laboratory with the necessary equipment and expertise to perform the tests.

The required steps are described below:

- a) Gather the materials needed for the analysis, including the equipment, reagents, and samples.
- b) Follow the procedures and protocols of the lab for the specific analysis you are performing.
- c) Record all relevant data, such as the sample types, quantities, and measurements, as well as any observations made during the analysis.
- d) Monitor the equipment and reagents used in the analysis to ensure their accuracy and optimal functioning.
- e) Analyze the data obtained from the analysis and draw conclusions based on the results obtained.
- f) Report and communicate the results obtained to the appropriate stakeholders, such as fellow analysts, researchers, or clients.
- g) Dispose of any hazardous or contaminated materials used during the analysis in accordance with the laboratory's protocols and regulations.
- h) Maintain a clean, organized, and safe work environment throughout the analysis process.
- i) Results Interpretation: The results should be compared against the permissible limits and guidelines

5. Reporting

A report should be generated with the results obtained from the analysis, and the interpretation of these results.

The required steps are described below:

- a) Define the Purpose of the Report: The first step in reporting is to define the purpose of the

report. This can involve identifying the audience, gathering data, and creating a clear outline of what the report should accomplish.

- b) Gather Data: Data is a critical component of any report, so it is essential to gather and analyze relevant data. This can involve conducting research, conducting surveys, and collecting data from multiple sources.
- c) Analyze Data: Once you have gathered the data, you need to analyze it to draw meaningful insights that will help you tell the report's story. This can involve creating visual aids, such as charts or graphs, and using statistical analysis tools.
- d) Develop and Organize the Report: Once you have gathered and analyzed the data, the next step will be to develop and organize the report. This may involve writing an executive summary, creating headings and subheadings, and creating an outline.
- e) Review and Edit: Once you've created a draft of the report, you should review it carefully and edit it to ensure it is clear, concise, and free of errors. Make sure that your report fits the audience you are trying to reach.
- f) Share the Report: The final step in the reporting process is to share the report with your intended audience. You may need to present your findings in a verbal presentation, written report, or a combination of both. Be sure to explain your findings and recommendations clearly and answer any questions your audience has.

6. Information Database

It is important to note that all forms contain water quality test data and the sanitary inspection reports should be preserved as hard copy as well as soft copy. It will help to validate data and also act as a backup system.

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); • Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		