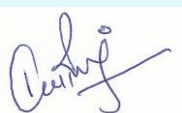
 <b>Verification report form for GS4GG Programme of Activity</b> <b>(Gold Standard for the Global Goals)</b>	
BASIC INFORMATION	
<b>Title of the GS4GG Programme of Activity (PoA)</b>	Improved Cookstove and Safe Water Programme
<b>Reference number of the Programmes of Activity (PoA)</b>	GS 11189
<b>Version number of the verification and certification report</b>	1.2
<b>Completion date of the verification and certification report</b>	17/10/2022
<b>GS ID (s) of VPAs under PoA</b>	VPA ID: GS11259, GS11260, GS11261, GS11262, GS11263, GS11264, GS11265, GS11266, GS11267, GS11268, GS11269, GS11270, GS11271, GS11272, GS11273, GS11274, GS11275, GS11276, GS11277, GS11278, GS11279, GS11280, GS11281, GS11282, GS11283, GS11284, GS11285, GS11286, GS11287, GS11288
<b>Version number of the monitoring report to which this report applies</b>	5.0
<b>Completion date of the monitoring report to which this report applies</b>	06/10/2022
<b>Monitoring period no. and duration</b>	1 <sup>st</sup> 01/01/2021 – 31/12/2021
<b>Date of project design certification</b>	02/02/2022
<b>Crediting period of the PoA corresponding to this monitoring period</b>	01/01/2021 – 31/12/2025
<b>Project Representative</b>	Impact Carbon LLC Impact Water LLC
<b>Host Party</b>	Nigeria
<b>Applied methodologies and standardized baselines</b>	"Emission reductions from Safe Drinking Water Supply" Version 1.0 – 03/05/2021.
<b>Activity requirements applied</b>	<input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
<b>Product Requirements applied</b>	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label

		<input type="checkbox"/> N/A	
<b>Estimated amount of annual average GHG emission reductions</b>		1,558,670 tCO <sub>2</sub> e	
<b>Sustainable Development Goals Targeted</b>	<b>SDG Impact</b>	<b>Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period (01/01/2021 – 31/12/2021)</b>	<b>Units/Products</b>
<b>SDG 13: Climate Action</b>	13.2.1 Amount of CO <sub>2</sub> e emissions reduced by the project per year	1,558,670	tCO <sub>2</sub> e
<b>SDG 1: No Poverty</b>	1.4.1 Proportion of population living in households with access to basic services  Indicator: Indicator: Total number of premises (Schools / institutions) with at least one WPS distributed / installed under the project	18,694	Number
<b>SDG 3: Good Health and Well Being</b>	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services  Indicator: % sampled Schools / institutions reporting reduction in incidence of diarrhoea and water borne diseases etc. after shifting to the project WPS	94.44%	Percentage
<b>SDG 6: Clean Water and Sanitation</b>	6.1.1 Proportion of population using safely managed drinking water services  Indicator: % of WPS distributed/installed providing safe drinking water quality	89.73%	Percentage
<b>SDG 7: Affordable and Clean Energy</b>	7.1.2 Proportion of population with primary reliance on clean fuels and technology  Indicator: % Schools / institutions reporting an operational WPS in project	93.20%	Percentage
<b>SDG 8: Decent Work and Economic Growth</b>	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities  Indicator: Number of male / females employment created by project	19	Number
<b>Name and UNFCCC reference number of the VVB</b>	Earthood Services Private Limited; E-0066		
<b>Name, position and signature of the approver of the verification report</b>			

	Managing Director Dr. Kaviraj Singh
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## SECTION A. Executive summary

The programme of activity “Improved Cookstove and Safe Water Programme” involves distribution of low GHG Water Purification technologies (WPS) to schools in Nigeria. The PoA is using carbon finance to support local partners engaged in different activities like production, distribution, and maintenance of various product technologies particularly WPS. This programme includes technologies, designed to reduce GHG emission and supply safe water to institutions, which are efficient and meet the technology and measure requirements of the applied methodology: Emission reduction from Safe Drinking Water Supply, version 1.0. The distribution of WPS has provided institutions with safe and clean drinking water and no incidences of water borne diseases. This has also reduced the consumption of non-renewable biomass resources or fossil fuel for cooking purposes as well as eliminate the use of non-renewable resources or fossil fuel for water boiling. The PoA will also improve the indoor air quality and health of women and children as a co-benefit.

The VPAs under current verification are: GS11259, GS11260, GS11261, GS11262, GS11263, GS11264, GS11265, GS11266, GS11267, GS11268, GS11269, GS11270, GS11271, GS11272, GS11273, GS11274, GS11275, GS11276, GS11277, GS11278, GS11279, GS11280, GS11281, GS11282, GS11283, GS11284, GS11285, GS11286, GS11287, GS11288.

Total annual average emission reductions for this crediting period are 1,558,670 tCO<sub>2</sub>e.

The PoA has been registered under GS4GG (GSID 11189) and the CME is Impact Carbon LLC and VPA Implementer Impact Carbon LLC.

### Scope of Verification

The scope of the services provided by the Earthood Services Private Limited is to perform verification of the PoA. The scope of verification is to assess the claims and assumptions made in monitoring report /5/ against the GS4GG criteria, UNFCCC criteria, including but not limited to the Gold Standard Principles & Requirements/1/, Gold Standard Programme of Activities Requirements/11/, Gold Standard Community Services Activity Requirements/12/, CDM PS for PoA/3/, CDM VVS for PoA/4/ and other relevant rules and requirements established for Gold Standard.

The scope of the services provided by Earthood Services Private Limited for the project is to perform verification of GS4GG programme of activity. The scope of verification is to assess the claims and assumptions made in the monitoring report /5/ against the GS4GG principles and requirements /1/ criteria and GS4GG VVB requirements /2/, including but not limited to, CDM PS for PoA /3/, CDM VVS for PoA/4/, applied methodology /8/ and other relevant rules and requirements established for GS4GG PoA.

### Verification Process

This verification is an independent and objective review for determination of the monitored reductions in GHG emissions. The verification includes the implementation and operation of the PoA as reported in the registered PoA-DD, VPA-DD and monitoring report. The verification process is undertaken by verification team that involves the following:

- The desk review of documents and evidence submitted by the project participant in context of the GS4GG criteria along with reference CDM rules and guidelines issued by CDM EB,
- Undertaking remote site visit, interview or interactions with the representative of the project participant,
- Reporting audit findings with respect to clarification and non-conformities and the closure of the findings as appropriate.
- Preparing a draft verification report of GS4GG programme of activities period complying with the GS4GG principles and requirements.
- Technical review of the draft verification opinion along with other documents as appropriate by an independent competent technical review team finalization of the verification opinion (this report)
- An independent technical review team reviews the verification report made by the verification team. After the final report is accepted by the Technical Reviewer it is then approved by Earthood Services Private Limited which is processed further according to the GS and CDM procedures.

### Conclusion

The review of the monitoring report, supporting documentation and subsequent follow up actions have provided ESPL with sufficient evidence to determine the fulfilment of stated criteria. Earthood is of the opinion that the PoA “Improved Cookstove and Safe Water Programme” (GSID: 11189) meets all the GS

requirements and has correctly applied the GS approved methodology Emission reduction from Safe Drinking Water Supply Version 1.0 /8/.

The GHG emission reductions were calculated correctly based on the approved methodology “Emission reduction from Safe Drinking Water Supply, version 1.0”/8/ and the monitoring plan contained in the registered PoA-DD/9/ and VPA-DD /10/.

Earthood Services Private Limited can certify that the emission reductions achieved in the monitoring period 01/01/2021 – 31/12/2021 by GS PoA “Improved Cookstove and Safe Water Programme” (GSID: 11189) amount to 1,558,670 tCO<sub>2</sub>e. Therefore, this is being submitted for request for issuance, as per GS4GG and UNFCCC procedures.

**SECTION B. Verification team, technical reviewer and approver**

**B.1. Verification team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection*	Interview(s)	Verification findings
1.	Team Leader	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
2.	Methodological Expert	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
3.	Technical Expert (TA 3.1)	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
4.	Verifier (old team member)	IR	Vatsa	Vaishali	Central Office	Y	N	Y	Y
5.	Local Expert	EI	Nanbal	Kumden	Central Office	Y	N	Y	Y
6.	Trainee Verifier	IR	Sharma	Riya	Central Office	Y	N	Y	Y

\*Due to COVID-19 pandemic, the site visit could not be conducted. Remote audit has been done as an alternative means

**Technical reviewer and approver of the verification report**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer and TA expert to TR	IR	Gautam	Ashok	Central Office
2.	Approver	IR	Singh	Kaviraj	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.	Observational error by monitoring survey staff of CME/VPA implementer while recording the responses of users in relation to survey parameters	High	The survey is conducted for representative samples of population, which may impact the population significantly. Surveyors may be unsupervised at the site.	Verification team randomly selected the samples from CME surveyed sampled WPS. The recorded survey forms by CME were checked with VVB remote audit inspection observations. The verification team also interviewed the monitoring staff and checked their training records.
2.	Error in transferring the recorded data to ER sheet	Medium	The procedure for transferring the recorded break-up sheet readings to the spreadsheet is manual in nature thus increasing the chances of error. However, CME has implemented internal quality checks to ensure prevention of any such potential error in the prepared ER calculation sheet /15/.	The surveying and monitoring personnel assigned for PoA implementation has been trained and certified. The interviews conducted during remote site survey confirms the regular training as per the monitoring plan and implementation procedures to reduce the risk of oversight or data transfer. All the values in ER calculation sheet have been verified from supporting documents and survey data forms. None of the discrepancies was reported due to transferring of data.
3.	Calculation Errors	Medium	The process is manual and therefore there is potential risk of errors / omissions/misstatements.	All calculations were checked by verification team concerning applicable requirements under various documents viz., methodology, PoA DD/9/ and VPA-DDs /10/.

### C.2. Consideration of materiality in conducting the verification

Based on the review of ER sheet, it can be confirmed that the actual individual and aggregated material error is determined for the PoA as per GS requirements. The verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet /15/. There are no material errors, overestimation of ER, omission, or misstatement.

## SECTION D. Means of verification

### D.1. Desk/document review

The verification of the information of the PoA was performed through the document review including review of monitoring report /5/ version 2.1 dated 14/02/2022. Additionally, cross checks were performed for information provided in the monitoring report using other source of information, the verification team's sectoral or local expertise and, if necessary, independent background investigations.

The desk review involves:

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

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

### D.2. On-site inspection

Duration of on-site inspection: NA				
No.	Activity performed on-site	Site location	Date	Team member
1.	NA	NA	NA	NA

On site assessment has not been conducted for the current verification, due to safety concerns over travel amid global pandemic COVID-19. The ongoing global pandemic due outbreak of COVID-19 virus contraction has led people to adopt safe practices such as social distancing, and travel restrictions across international boundaries. So, the verification team avoided the risk of getting infected during the physical onsite assessment. It is important to note that the GS4GG has provided alternative measures relating to mandatory on-site visits for VVBs to conduct an audit which includes the following /14/:

As per para 4.1.1 (b) of GS document interim measures states that if site visit cannot be postponed due to significant impact of delaying the site visit on VVB and/or project developer due to timeline/commitment as per validation/verification or GS-VERs delivery agreement, VVB may replace mandatory on-site visits with remote audits. The audit may include but not limited to validation, verification, the inclusion of VPAs, design change review etc.

Para 4.2.2 further defines the approach that may be undertaken for remote audits. These are –

- i. Use validation/verification techniques and advanced communication technology solutions to validate/verify information and compliance with applicable requirements to the extent possible, to ensure the completeness and credibility of the audit;
- ii. Use means such as, but not limited to, tele/video meetings; interviews with relevant stakeholders, local authorities, project participants, persons responsible for data collections, end user and/or beneficiaries of the project; photographic evidence, video recordings; data collection using drones, satellite image (where possible); relevant documents; and other publicly available information.
- iii. Transparently disclose in the audit report that
  - The audit is undertaken remotely, and
  - Describe the alternative means used and justification that they are sufficient for the audit

Accordingly, the verification team has applied alternative means, which are discussed below.

#### Alternative means used by VVB:

- i. For the current verification, remote audit inspection including interviews with the end-users and representatives of CME and VPA Implementors were conducted. Representatives of 11 institutions were sampled for WPS technology distributed under the VPA from the monitored database, with whom remote surveys were conducted. The sampling approach applied in this PoA is discussed elaborately in section D.4 below.
- ii. Remote interviews with the representatives of CME and VPA Implementors to discuss the implementation of VPAs and monitoring procedures for various parameters.

- iii. Review of documentary evidence and supporting documents including installation database, monitoring samples data, survey forms, technical specifications of WPS installed, other SDG monitoring surveys, etc. The entire list of documents reviewed for purpose of verification is available in Appendix 3 of this report.

These alternative methods were considered sufficient by the verification team for the current batch for this issuance and provide the VVB assessment team with enough evidence to arrive at a verification conclusion.

### D.3. Interviews

#### D.3.1. Interviews with CME and VPA Implementers

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Odunaya	Samuel	Impact Carbon (CME)	19/01/2022	PoA Implementation, Operational and Management Framework, sampling surveys, end-users' feedback, etc.	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
2.	Lohia	Rohit	Climate Secure India Private Limited	19/01/2022	Methodology application, monitoring plan, sampling method, ER calculations	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
3.	Kumar	Ritesh	Climate Secure India Private Limited	19/01/2022	Methodology application, monitoring plan, sampling method, ER calculations	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
4.	Gupta	Mohit	Climate Secure India Private Limited	19/01/2022	Methodology application, monitoring plan, sampling method, ER calculations	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
5.	Turgesen	Mark	Impact Water, Kenya	19/01/2022	Implementation, Distribution records, database management	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
6.	Neville	Tim	Impact Carbon (CME)	19/01/2022	Implementation, Distribution records, database management	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
7.	Huelsenbeck	Mark	Acting Country Director, Kenya	19/01/2022	Implementation, Distribution records, database management	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
8.	Emmanuel	Jonson	Monitoring personnel, Impact Water	19/01/2022	Monitoring system, training sessions, water quality test, hygiene campaign, etc.	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma

#### Type of questions asked by VVB to VPA Implementers:

- a. Role and responsibilities of CME or VPA Implementers in the implementation of PoA
- b. Monitoring and implementation process of the PoA
- c. Frequency of training conducted for monitoring personnel.
- d. Water quality test process
- e. How institution received training related to operation of WPS unit?

- f. What is annual hygiene campaign and how it is recorded?  
g. Any grievance received during current monitoring period.

CME and VPA Implementers explained the monitoring and operation of the PoA. In water hygiene campaign, CME team visits schools and conduct brief discussion about hand washing techniques. SMS campaign carried to all schools. Schools also celebrate water day and hygiene day under this campaign. Monitoring personnel interviewed during remote audit described the monitoring system and how cleanliness and hygiene is maintained while installing WPS. Data collection procedure followed during monitoring consists of collecting details of school name, address, signature of school representative, unique product ID and other related to monitoring parameters. They talked about water quality test and training received for conducting water quality test and survey.

All the details collected were found correct and inline to the monitoring plan described in the monitoring report /5/.

### D.3.2. Interviews with end-users

No.	Interviewee		WPS technology	Date	Subject	Team member
	School name	Institution ID				
1.	Classique Royal Kids Academy Ikenne	N1835011	UltraFlo	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
2.	L.A. Elementary Middle School (Toba)	N1870345	UltraTab	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
3.	Army Children Pry School	N1843273	UltraTab	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
4.	All Souls Angelican N/P/S	N1846239	UltraTab	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
5.	Y.N.L.G Pry School	N1843302	UltraTab	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
6.	Funmeg New Life Nur/Pry School	N1833240	UltraFlo	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
7.	Future Ambassador International Nursery/ Primary School	N1826413	UltraFlo	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
8.	Teelon International School	N1835907	UltraFlo	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
9.	A.U.D Oke Baale	N1826774	UltraTab	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
10.	Ifesowapo Community N/P School	N1846087	UltraTab	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma
11.	O & A Nursery and Primary School, Ikenne	N1835008	UltraFlo	19/01/2022	VVB remote survey	Deepika Mahala, Vaishali Vatsa, Kumden Nanbal, Riya Sharma

**Type of questions asked by VVB to end-user institutions:**

No.	Questions asked to end-user institutions	Responses Received
1.	To confirm the name of the school, type of school, total population, name and designation of the respondents,	Details correctly provided
2.	Type of product received (UltraFlo or UltraTab) and its unique product ID	Details correctly provided
3.	Primary source of water in the institution and water purification methods	Details correctly provided
4.	Questions related to hygiene indicator covered in this PoA	Positive
5.	Benefits received from WPS unit installed in their institutions	Positive
6.	Training received from CME team and monitoring survey confirmation	Positive
7.	Confirmation of having grievance number for outreaching	Positive

The representatives of each of the institutions interviewed during remote site survey reported that they are happy with the installation of WPS system. They expressed positive feedback and listed benefits of using WPS which includes access to safe water, and no incidence of water borne disease. They also reported that they are aware of the water quality test being conducted by the VPA Implementer and the grievance mechanism. No negative response was received during the interviews.

**D.4. Sampling approach****CME's sampling approach**

For the purpose of sampling, CME has followed the CDM guidelines for sampling and surveys for CDM project activities and programmes of activities version 9.0 /13/ which is in-line with the registered PoA-DD /9/. The CME has applied Stratified Random Sampling at PoA level for different monitoring parameters as per validated PoA DD /9/ and VPA-DDs /10/. 95/10 confidence precision was applied by CME in the sampling which is appropriate as per the single sampling covering 30 VPAs within the boundaries of PoA geographical location Nigeria. Thus, PoA wide single sampling plan was used by the CME.

However, for current MP, PP has sought deviation and applied the sampling plan in line with applied "Emission reductions from Safe Drinking Water Supply" Version 1.0. Please refer section E.6. for details.

**VVB's sampling plan:**

The VVB applied a sampling approach to confirm the implementation of the VPA and compliance of monitoring plan against the registered documents /9/. The VVB has followed Standard for Sampling and surveys for CDM project activities and programmes of activities, version 9, and applied acceptance sampling in the verification in accordance with para 28. Para 30 and 31 of standard suggests the AQL and UQL and maximum errors which have been followed by the VVB. The table 2 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 9, prescribes minimum sample size and acceptance number for discrepant values. Applying para 30 and 31 of the standard, verification will require 11 samples to verify the CME's sampling plan /13/.

The current verification is for VPA ID: GS11259, GS11260, GS11261, GS11262, GS11263, GS11264, GS11265, GS11266, GS11267, GS11268, GS11269, GS11270, GS11271, GS11272, GS11273, GS11274, GS11275, GS11276, GS11277, GS11278, GS11279, GS11280, GS11281, GS11282, GS11283, GS11284, GS11285, GS11286, GS11287, GS11288. The CME has applied across VPA sampling. The VVB has also apply across VPA sampling.

The verification team has selected the sample size as 11 institutions with 4 institutions extra as backup for the purpose of remote site inspection to check the acceptability of CME's sampling results or otherwise. VVB has taken 2 back up number for each of the technology due to high chances of unavailability of the school representatives on calls.

Sample size: per region

VPA Ref no.	AQL	UQL	Producer	Consumer	Sample	Acceptance
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GS11259, GS11262, GS11265, GS11268, GS11271, GS11274, GS11277, GS11280, GS11283, GS11286,	GS11260, GS11263, GS11266, GS11269, GS11272, GS11275, GS11278, GS11281, GS11284,	GS11261, GS11264, GS11267, GS11270, GS11273, GS11276, GS11279, GS11282, GS11285, GS11288	0.5%	20%	risk 10%	risk 10%	size; min 11	no. 0
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These 11 systems are divided as per the distribution ratio of different kinds of units:

WPS Unit type	Distribution number	VVB samples
Ultra-Flo	7827	5
Ultra-Tab	10867	6

The verification team selected the random samples of CME's sampled records to check the acceptability (or otherwise) of the data for each such record with CME's sample records and determine if the CME's sample records meet the requirements. All the 11 main institutions (5 samples from Ultra Flo and 6 samples from Ultra TAB) sampled for the remote audit survey were available at the time of remote survey over call. Therefore, no institutions from back up were included in the remote audit survey. During the remote interviews with end-users, all the details and were found correct and no discrepancies were observed in the monitoring data.

VVB confirmed that the required confidence level has been met for the sampled data and that the samples were randomly selected and are representative of the entire population. Prior to the remote site visit, VVB applied randomizer in the monitoring data and generate the random numbers for the required 11 samples (5 of Ultra-Flo WPS unit type and 6 Ultra-tab WPS unit type). The samples were randomly picked-up to ensure that the selected samples were representative of the entire population. In addition, 4 extra samples were taken from the randomized dataset to propose backup samples.

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

Area of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>	-	-	-
Compliance of the monitoring report with the GS4GG monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	FAR#02
VPA's considered for verification and covered under this report	-	-	-
<b>Programme of activities</b>	-	-	-
Compliance of the programme implementation with the registered PoA-DD	-	-	FAR#01
Implementation and operation of the management system	CL#01		
<b>VPA Implementation</b>			
Compliance of the VPA implementation with the included VPA design document	-	CAR#01	-
Post-design certification changes	-	-	-
<b>Compliance of the monitoring activities with the registered monitoring plan</b>	-	-	-
Data and parameters fixed ex ante or at renewal of crediting period	-	CAR#01	-
Data and parameters monitored	-	CAR#02	-
Comparison of monitored parameters with last monitoring period	-	-	-
<b>Implementation of the sampling plan</b>	-	CAR#03	-
<b>Assessment of data and calculations of net emission reductions or removals</b>	-	-	-
Calculations of baseline value of each SDG Impact	-	-	-

Calculations of project value of each SDG Impact	-	-	-
Calculations of leakage GHG emissions	-	-	-
Calculations of net benefits for each SDG Impact	-	-	-
Comparison of actual GHG ER value achieved during this monitoring period with estimated value	-	-	-
Safeguarding principles	-	CAR#01	-
Stakeholder Inputs and Legal Disputes	-	-	-
Continuous input and grievance mechanism	-	-	-
Internal quality control	-	-	-
Verification opinion	-	-	-
<b>Total</b>	01	03	02

**SECTION E. Verification findings**

**E.1. General**

**E.1.1 Compliance of the monitoring report with the GS4GG monitoring report form**

<b>Means of verification</b>	The monitoring report form used is GS4GG Monitoring report template version 1.1 /6/, which is a valid version available at the time of verification. All the sections of the aforesaid form were filled as per the Monitoring report template guide version 1.1 /7/ and all the relevant details were provided in the form.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The monitoring report version 2.1 /5/ has been found to be completed using the valid version of the monitoring report form. The information provided in the monitoring report has been assessed in accordance with the GS4GG principles & requirements version 1.2/1/ and monitoring report template guide /7/.

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

There was one FAR raised from deviation request form /26/. Please refer Appendix 4 for details.

**E.1.3 VPAs considered for verification and covered under 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	Version of the PoA-DD
GS11259: Improved Cookstove and Safe Water Programme – Nigeria – VPA 01.	Yes	10/06/2022	5.0
GS11260: Improved Cookstove and Safe Water Programme – Nigeria – VPA 02.	Yes	10/06/2022	5.0
GS11261: Improved Cookstove and Safe Water Programme – Nigeria – VPA 03.	Yes	10/06/2022	5.0
GS11262: Improved Cookstove and Safe Water Programme – Nigeria – VPA 04.	Yes	10/06/2022	5.0
GS11263: Improved Cookstove and Safe Water Programme – Nigeria – VPA 05.	Yes	10/06/2022	5.0
GS11264: Improved Cookstove and Safe Water Programme – Nigeria – VPA 06.	Yes	10/06/2022	5.0
GS11265: Improved Cookstove and Safe Water Programme – Nigeria – VPA 07.	Yes	10/06/2022	5.0
GS11266: Improved Cookstove and Safe Water Programme – Nigeria – VPA 08.	Yes	10/06/2022	5.0
GS11267: Improved Cookstove and Safe Water Programme – Nigeria – VPA 09.	Yes	10/06/2022	5.0
GS11268: Improved Cookstove and Safe Water Programme –Nigeria – VPA 10.	Yes	10/06/2022	5.0
GS11269: Improved Cookstove and Safe Water Programme – Nigeria – VPA 11.	Yes	10/06/2022	5.0
GS11270: Improved Cookstove and Safe Water	Yes	10/06/2022	5.0

Programme – Nigeria – VPA 12.			
GS11271: Improved Cookstove and Safe Water Programme – Nigeria – VPA 13.	Yes	10/06/2022	5.0
GS11272: Improved Cookstove and Safe Water Programme – Nigeria – VPA 14.	Yes	10/06/2022	5.0
GS11273: Improved Cookstove and Safe Water Programme – Nigeria – VPA 15.	Yes	10/06/2022	5.0
GS11274: Improved Cookstove and Safe Water Programme – Nigeria – VPA 16.	Yes	10/06/2022	5.0
GS11275: Improved Cookstove and Safe Water Programme – Nigeria – VPA 17.	Yes	10/06/2022	5.0
GS11276: Improved Cookstove and Safe Water Programme – Nigeria – VPA 18.	Yes	10/06/2022	5.0
GS11277: Improved Cookstove and Safe Water Programme – Nigeria – VPA 19.	Yes	10/06/2022	5.0
GS11278: Improved Cookstove and Safe Water Programme – Nigeria – VPA 20.	Yes	10/06/2022	5.0
GS11279: Improved Cookstove and Safe Water Programme – Nigeria – VPA 21.	Yes	10/06/2022	5.0
GS11280: Improved Cookstove and Safe Water Programme – Nigeria – VPA 22.	Yes	10/06/2022	5.0
GS11281: Improved Cookstove and Safe Water Programme – Nigeria – VPA 23.	Yes	10/06/2022	5.0
GS11282: Improved Cookstove and Safe Water Programme – Nigeria – VPA 24.	Yes	10/06/2022	5.0
GS11283: Improved Cookstove and Safe Water Programme – Nigeria – VPA 25.	Yes	10/06/2022	5.0
GS11284: Improved Cookstove and Safe Water Programme – Nigeria – VPA 26.	Yes	10/06/2022	5.0
GS11285: Improved Cookstove and Safe Water Programme – Nigeria – VPA 27.	Yes	10/06/2022	5.0
GS11286: Improved Cookstove and Safe Water Programme – Nigeria – VPA 28.	Yes	10/06/2022	5.0
GS 11287: Improved Cookstove and Safe Water Programme – Nigeria – VPA 29.	Yes	10/06/2022	5.0
GS11288: Improved Cookstove and Safe Water Programme – Nigeria – VPA 30	Yes	10/06/2022	5.0

## E.2. Programme of activities

### E.2.1 Compliance of the programme implementation with the registered PoA-DD

<b>Means of verification</b>	<p>The purpose of the PoA “Improved Cookstove and Safe Water Programme” is to provide safe and clean drinking water through dissemination of low GHG water purification technologies (WPS) to schools in Nigeria.</p> <p>The monitoring period covered under this verification is 01/01/2021 – 31/12/2021 (Inclusive of both days). The implementation of the PoA has led to reduce the GHG emissions caused using non-renewable biomass/ fossil fuel for boiling water. It has also helped to reduce the incidence of waterborne/airborne illness and provided clean water to schools. The baseline study showed that the piped water can only be accessed by 11.7% of the total population of Nigeria. Only 4.71% of the schools/institutions has access to safe water derived from improved water sources or from water treatment method other than boiling. /16/ Therefore, installation of WPS under the current PoA has provided access to safe water to larger population in schools of Nigeria. All the VPAs selected under PoA are within the boundaries of PoA location i.e., Nigeria. The VPAs covered by the PoA under this monitoring period are VPA 01 to VPA 30 corresponding to its GSID GS11259 to GS11288.</p> <p>The PoA meets the eligibility criteria of the Gold Standard and has applied applicable methodology for quantification of GHG emission reductions. The latest and valid version of the methodology Emission reduction from Safe Drinking Water</p>
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Supply, version 1.0 /8/. The CME for the PoA is Impact Carbon LLC, which distributed the WPS technologies by actively engaging with the local partners. The VPA Implementer is Impact Water LLC who is responsible for operating VPAs as per CME management system and conduct monitoring and verification.

The aforesaid VPAs involve dissemination of two types of water purification systems:

I. Chlorination (UltraFLO/UltraTab)

The technical specifications of the WPS distributed under the VPAs is provided in the table below:

Description	UltraFLO	UltraTab
Application	Piped water	Un-piped water
Flow rate	20L/min	1 tablet treats 100 L
Capacity/lifespan	340,000 L / 5-year expiry	Expiry: 5 years Capacity: Big pack: 48,000 ltrs Small pack: 10,000 ltrs
Fixed or Portable	Fixed	Portable
Removal of E. Coli	99 (2-log)	99 (2-log)

All the deployed systems meet the eligibility requirements of the PoA DD /9/. The details of the systems were verified from the manufacturer’s specification /18/ provided by the CME.

Through the remote survey videos, the installation of WPS claimed by the CME were checked and found to be in-line with the technical description provided in the registered PoA-DD/9/ and monitoring report/5/.

The Verification team assessed the following information to verify the capacity and lifetime of systems under the VPAs:

1. Technical specification including capacity/ expiry of UltraFLO issued by Medentech (technology supplier)
2. Technical specification including capacity/ expiry of UltraTAB issued by Medentech (technology supplier)
3. The UltraTAB strip clearly mentions the treatment capacity of 1 tablet as 100ltrs and a Small Pack UltraTAB pack is standardized at 10 strips of 10 tablets each, rendering the capacity of Small Pack UltraTAB pack as 10,000 ltrs and Big pack: 48,000 ltrs as verified through photos UltraTAB photos
4. UltraFLO cartridges are manufactured in a standardized size as per the dimensions specified in the VPA-DDs and MR (verified physically during previous site visits as well as UltraFLO dimension declaration by CME) and pertains to the specifications issued by Medentech.
5. The expiry of the UltraFlo/UltraTAB was also found mentioned on the UltraFLO cartridge / UltraTAB pack respectively as 5 years (photographs of UltraFlo and UltraTAB units).
6. The photographs of the WPS installed by the CME were checked by the verification team and found to be in-line with the technical description provided in the registered PoA-DD/9/ and Monitoring report/5/ and manufacturer’s specifications /18/.

Also, the verification team checked the implementation status of the project activity through interviewing the CME, the VPA implementer, monitoring personnel and WPS User as defined in the PoA DD/9/, and monitoring report /5/.

Interview of the monitoring personnel via skype call involved in the QA/QC procedures revealed that the procedures mentioned in the PoA DD/9/ are being

followed and the training records/20/ regarding the trained personnel were checked.

The project location and coordinates shared by CME were verified using the "Google Map app"/27/ and found to be in-line with the registered PoA-DD/9/ and MR/5/.

Further, based on the review of sales database (presented in ER sheet)/15/, remote audit survey observations and interview conducted during the remote audit survey, the verification team found that:

- The VPA(s) were implemented within the boundary of the PoA as described in the revised accepted PoA-DD/9/.
- The CME is same as that mentioned in the revised accepted PoA-DD/9/
- The implementation and operation of the project activity have been conducted in accordance with the description contained in the revised accepted PoA-DD/9/ and included VPA-DDs/10/.
- All physical features of the VPA proposed in the included VPA-DDs/10/ were in place.
- The project participants/VPA implementer has operated the VPAs as per the included VPA DDs/10/.

A remote audit survey was conducted by the verification team; 11 WPS were surveyed. The uniqueness of the system as identified from UID written on the units

The information of the installed WPS was also verified from the distribution database/28/ which was cross checked for 11 WPS samples with their corresponding purchase orders/29/.

The emission reductions being claimed during this monitoring period are lesser than the estimated emission reductions in the revised or included VPA-DDs/10/, as given in the table under section E.8. for comparing ex-ante estimated ERs in the VPA DDs/10/ for the corresponding period with the actual ERs achieved.

The VPAs are within the threshold limits of the applied methodology/8/.

The monitoring report was compared and verified against the description provided in the revised accepted PoA-DD/9/ and found to be correct

The technical description of the project activity has been verified by assessing the description reported in the monitoring report against the applied methodology /8/ and cross-checked during remote site interviews. All the information was correctly mentioned in the monitoring report and its corresponding ER calculation sheet /5,15/.

The summary of the implemented PoA and the technology involved are described in the PoA-DD /9/ with sufficient details and clarity. The accuracy of the PoA description was determined based on the remote interviews with the CME representatives and project personnel as part of verification audit, review of supporting documents (as listed in Appendix 3), and interviews with the end-users. The specification of the Installed technologies under each VPA is cross-checked from the manufacturer's specifications at the VPA level. /18/ The assessment team has checked and reviewed the monitoring report with supportive evidence and found the details to be correct.

The start date of the monitoring period is 01/01/2021 as per the VPA-DD /10/ which is the start date of the operation. The crediting period is 01/01/2021 to 31/12/2025 which is of total 5 years. The monitoring period for this verification is 01/01/2021 to 31/12/2021.

Achieved emission reductions are 1,558,670 tCO<sub>2</sub>e for the current MP 01/01/2021 – 31/12/2021. The emission reduction calculation sheet was reviewed. /15/ CME has applied correct formulae and calculated emission reductions in accordance with the

	<p>applied methodology/8/.  VVB has also checked the project details such as title of the project, project location, technology applied, and VPAs in project portals of carbon standard CDM, VCS, GCC, GS and through random google search. The PoA was previously registered as PoA 9948 with a different PoA title under CDM which has been transparently transitioned to GS 11189 through GS approval process. The same information is reported by CME in MR.</p>
<b>Findings</b>	FAR#01 was raised from GS Design Certification Review and successfully closed.
<b>Conclusion</b>	<p>Based on the review of the monitoring report, PoA-DD, VPA-DD, installation database and remote site visit interviews conducted with the CME, VPA Implementers and end-users, the verification team found that:</p> <ol style="list-style-type: none"> <li>a) The VPAs are implemented within the boundaries of the PoA i.e., Nigeria as described in the PoA-DD</li> <li>b) CME for the PoA is Impact Carbon and VPA Implementer is Impact Water</li> <li>c) The distribution and operation of the PoA has been done in accordance with the description reported in the PoA-DD and included VPA-DD.</li> <li>d) The monitoring and implementation process is in line to the VPA-DD, which is further explained under section E.4 of this verification report.</li> <li>e) The crediting period of the PoA is of 5 years starting form 01/01/2021 to 31/12/2025. The monitoring period covered under this verification assessment is 01/01/2021 to 31/12/2021.</li> <li>f) Achieved ERs are lower than the estimated ERs for all the VPAs</li> </ol>

**E.2.2. Implementation and operation of the management system**

<b>Means of verification</b>	<p>The monitoring plan, as explained in section C of the monitoring report, has been found in compliance with the requirements of the applied methodology /8/. The roles &amp; responsibility of both CME &amp; VPA implementers are well defined. CME’s role is primarily with the documentation at both PoA &amp; VPA level, training of the Implementers confirmed during the remote interviews with the CME’s team.</p> <p>The documentation and record maintenance for each VPA under the PoA is performed by Program Manager. CME is responsible for outreaching, training, and ensuring proper addressal of concerns or grievances made by the end-users related to WPS technology being installed at their institutions. Each VPA implementer collected and reported the required data as much as possible to effectively monitor the emission reductions of each VPA in accordance with the monitoring plan in the VPA-DD.</p> <p>Training records is being maintained by the Program Manager and is also responsible for managing electronic database containing list of units installed/ distributed along with the required end user/ baseline information complied by customer engagement staff.</p> <p>The database of total sales records for each of the distributed WPS (UltraFlo/ UltraTab) is maintained electronically along with the paper records and/or SMS tracking records. The total sales record consists of following information</p> <ol style="list-style-type: none"> <li>a. Type of system (UltraFLO / UltraTAB)</li> <li>b. Unique serial number of the units installed / distributed</li> <li>c. Date of installation / distribution</li> <li>d. Address and details of school and contact detail (if available) of representative</li> <li>e. Type of School (Boarding / Non-boarding)</li> <li>f. Number of project technology installed/distributed in an institution</li> <li>g. School population count (number of students / staff in boarding / non-boarding category)</li> </ol> <p>The verification team confirmed that the distributed WPS units have Unique product ID as confirmed during the remote surveys. This was found consistent with the information given in the installation database /15/ and it was ensured that double</p>
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	counting is avoided. The management system maintained by the CME is in place with the PoA DD /9/.
<b>Findings</b>	CL#01 was raised and successfully closed.
<b>Conclusion</b>	The verification team assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system, training records /19,20/ as reported in the monitoring report. The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.

### E.3. VPA Implementation

#### E.3.1. Compliance of the VPA implementation with the included VPA design document

<b>Means of verification</b>	<p>The registered PoA aims to provide safe drinking water to the institutions in Nigeria. The PoA is primarily designed to replace the existing fossil fuel / non-renewable woody biomass-based means of purifying water by installing low emission / emission free Water purification systems to provide safe drinking water. Impact Water is the implementer of the VPAs and has fully implemented the VPAs with the help of Sales and Distribution Partners (SDP). The same has been verified from the agreement between the CME and VPA Implementer /35/. This monitoring report includes the implementation and monitoring of 30 VPAs- VPA GS 11259- GS 11288 in Nigeria.</p>				
	<p>The type of systems installed under the VPA are as follows:</p>				
	Type of installed technology (Service level)	Technology / operating concept	Technology	Implementation level (Cumulative Number of units installed)	MoV
	Institution/School Institution/School	Chlorination: This uses activated chlorine to kill pathogens in water	UltraFlo	2021- 7,827	The total number of UltraFlo distributed by the end of the monitoring period is 7,827 which is verified from the installation database provided in the ER sheet /15/.
		UltraTab	2021- 10,867	The total number of UltraTab distributed by the end of the monitoring period is 10,867 which is verified from the installation database provided in the ER sheet /15/.	
<p>The specification of water purification technology:</p>					
WPS Models	Lifetime	Fixed or Portable	Removal of E. coli	Minimum Watt / Voltage	MoV
UltraFLO	Expiry: 5 years Capacity: 340,000 ltrs	Fixed	99 (2-log)	Not applicable	Technical specifications of the UltraFlo system were verified through the details provided in the manufacturer's specifications /18/ and were found to be consistent with the information given in monitoring report /5/.
UltraTAB	Expiry: 5 years Capacity:	Portable	99 (2-log)	Not applicable	Technical specifications of the UltraFlo system were verified through the details

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	Big pack: 48,000 ltrs Small pack: 10,000 ltrs				provided in the manufacturer's specifications /18/ and were found to be consistent with the information given in monitoring report /5/.
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The table below provides details on VPA and technology specific figures for this monitoring period:

VPA no.	First WPS Installation date	Crediting period	No. of units (installed)		Estimated ERs	ERs achieved
			FLO	TAB		
GS11259	12/01/2018	01/01/2021-31/12/2025	593	34	59,312	52,914
GS11260	04/09/2018	01/01/2021-31/12/2025	612	0	59,312	48,906
GS11261	01/01/2019	01/01/2021-31/12/2025	614	0	59,312	51,404
GS11262	20/02/2019	01/01/2021-31/12/2025	412	203	59,312	52,128
GS11263	25/04/2019	01/01/2021-31/12/2025	507	119	59,312	52,929
GS11264	02/07/2019	01/01/2021-31/12/2025	284	342	59,312	40,819
GS11265	23/05/2019	01/01/2021-31/12/2025	251	388	59,312	57,525
GS11266	10/06/2019	01/01/2021-31/12/2025	185	451	59,312	54,546
GS11267	18/06/2019	01/01/2021-31/12/2025	318	324	59,312	52,384
GS11268	09/07/2019	01/01/2021-31/12/2025	179	482	59,312	56,746
GS11269	31/07/2019	01/01/2021-31/12/2025	87	563	59,312	53,986
GS11270	07/08/2019	01/01/2021-31/12/2025	361	273	59,312	54,618
GS11271	03/09/2019	01/01/2021-31/12/2025	139	379	59,312	45,024
GS11272	04/10/2019	01/01/2021-31/12/2025	16	555	59,312	51,235
GS11273	11/10/2019	01/01/2021-31/12/2025	16	619	59,312	57,039
GS11274	16/10/2019	01/01/2021-31/12/2025	27	599	59,312	53,876
GS11275	18/10/2019	01/01/2021-31/12/2025	10	645	59,312	57,215
GS11276	19/09/2019	01/01/2021-31/12/2025	12	662	59,312	56,143
GS11277	23/10/2019	01/01/2021-31/12/2025	20	656	59,312	56,580
GS11278	25/10/2019	01/01/2021-31/12/2025	78	573	59,312	56,746
GS11279	06/11/2019	01/01/2021-31/12/2025	261	399	59,312	56,311
GS11280	04/12/2019	01/01/2021-31/12/2025	98	578	59,312	57,068
GS11281	24/09/2019	01/01/2021-31/12/2025	27	642	59,312	52,181
GS11282	14/12/2019	01/01/2021-31/12/2025	9	648	59,312	52,030

GS11283	07/01/2020	01/01/2021-31/12/2025	617	30	59,312	53,951
GS11284	16/01/2020	01/01/2021-31/12/2025	617	9	59,312	53,82
GS11285	28/01/2020	01/01/2021-31/12/2025	589	39	59,312	54,248
GS11286	06/02/2020	01/01/2021-31/12/2025	390	263	59,312	47,088
GS11287	05/01/2019	01/01/2021-31/12/2025	173	72	59,312	18,171
GS11288	21/01/2020	01/01/2021-31/12/2025	325	320	59,312	51,007
Total WPS installed			7827	10867		
	As checked from the delivery notes/31/	Checked from the GS website	Checked from sales data base/28/	Checked from sales data base/28/	Checked from the ER sheet/15/	Checked from the ER sheet/15/

The start date of crediting period, inclusion dates of the VPAs were checked from the GS VPA DDs /10/. The First WPS Installation dates were checked from the screenshots of salesforce database/30/.

The implementation of the VPA as mentioned above is within the geographical boundary of PoA-DD /9/, which has been verified through review of lat-long data /27/, discussed already in Section E.2.1 above. Impact Carbon is the CME of the VPA, and Impact Water is the VPA Implementer /5/.

In case of UltraFLO, it shall be noted that water is transported from primary water sources such as wells, surface water and boreholes through pipes to drinking water storage tanks in project schools. The Ultra-FLO systems are installed on these pipes which was found to be in-line to requirement set in the VPA-DDs/10/.

In the absence of a pipeline connection to the drinking water storage tanks, UltraTABs are provided to the schools, which are designed for non-piped applications. An UltraTAB pack consists of 10 strips of 10 tablets each (or 48 tablets in each trip for big pack), wherein the tablets can be directly put in drinking water storage tank (@one tablet per 100L of water), thus, is feasible for un-piped applications

During the remote site audit survey conducted for the current issuance request, as well as, during the remote audit survey conducted for previous batches, it was clearly noted by the verification team that UltraFLO systems have only been installed on pipeline connections, even when the primary water source is different from City Council / Government / Municipal water connection. Similarly, UltraTABs are administered only in un-piped applications even when the schools may have a piped connection (not connected to drinking water storage tank).

Thus, all the systems have been implemented in line with the VPA DDs/10/.

The implementation of the VPAs, as defined in the monitoring report, were assessed through document reviews and remote survey. The VPAs covered in this PoA is within the geographical boundary of the PoA, which constitutes physical boundary as well. The water purification system (WPS) deployed under PoA is verified as follows.

The verification team during the current verification has carried out remote site visit and remote interviews with the CME/ VPA Implementers to understand and verify the VPA implementation and deviations in the monitoring, if any. It was observed that each school has unique Institution Salesforce ID, each WPS unit distributed was assigned a unique product ID, which ensured that there is no double counting for the technologies distributed in the VPA. The unique product ID on each unit, personal information of unit owners and installation date and supply dates of unit was

	cross checked with the installation database and monitoring samples data provided in ER calculation sheet /15/ and audit sample data. The operation of the technology was confirmed through remote interviews of the sampled institutions' representatives during the remote audit.
<b>Findings</b>	CAR#01 was raised and resolved.
<b>Conclusion</b>	<p>a) The verification team is of the opinion that physical features of the VPA have been implemented in accordance with the VPA-DDs /10/.</p> <p>b) No specific monitoring equipment had to be installed according to the monitoring plan.</p> <p>c) It is also confirmed, through the remote audit survey and review of the supporting documentation that physical features of the component VPA have been implemented in accordance with the VPA-DDs /10/.</p> <p>d) The VPA was also found to be completely operational in line with the VPA-DDs /10/. However, CME has sought a temporary deviation during the current MP for the systems that were fully consumed/ discontinued prior to the start of the current monitoring period.</p> <p>e) The information provided in the relevant sections of the monitoring report appropriately describes the implementation and operational status of the PoA</p>

**E.4. Post-design certification changes**

**E.4.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline**

PD has sought deviation for the monitoring methodology (Dev 184) dates 07/12/2021. This has been included in B.2.1 section in the MR. The proposed deviation was related to conduct the project surveys for WPS stratifying each technology irrespective of their age, and by grouping more than 10 small scale VPAs together. As per the justification, the VPAs included in this PoA in each country are identical and as follow same management plan, operational plan and technologies. This deviation was approved by GS, for the first crediting period of the VPAs GS11259 to GS11305, however put forward following two conditions:

1. The stratified random sampling approach applied for sample size calculation for the monitoring survey must meet all the requirements under Appendix 3 of Guideline: Sampling and surveys for CDM project activities and programmes of activities.
2. Continuity in the project's monitoring activities is maintained, and PD can justify that no monitoring gaps exist (especially for SDG parameters) within the Monitoring Period(s). However, if gap(s) exist, the project shall justify that conservative approach(es) have been applied in line with section 3 of the Deviation Approval Requirements and Procedures (version 1.1) and overarching GS principles (as applicable).

**E.4.2. Corrections**

Not Applicable

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

Not Applicable

**E.4.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline**

Not Applicable

**E.4.5. Changes to project design of approved project**

Not Applicable

**E.5. Compliance of the monitoring activities with the registered monitoring plan**

<b>Means of verification</b>	The monitoring plan as contained in monitoring report /5/ were reviewed against the monitoring requirements of the applied methodology /8/ as well as PoA-DD and
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	VPA-DDs /9,10/ with reference to the technology involved. Based on this review, it was found that the monitoring plan includes all the required parameters to be monitored in the context of the VPA design and description and allows proper determination of emission reductions in accordance with PoA-DD /9/ and applied methodology Emission reductions from Safe Drinking Water Supply, version 1.0/8/.
<b>Findings</b>	No findings were raised
<b>Conclusion</b>	The monitoring plan is in line with the approved methodology Emission reductions from Safe Drinking Water Supply, version 1.0/8/, that is included in the PoA-DD and VPA-DDs /9,10/.

**E.5.1. Data and parameters fixed ex ante or at renewal of crediting period**

**ABS<sub>Baseline</sub> Access to Basic Services (number of premises with at least one WPS distributed / installed under the baseline)**

<b>SDG Indicator</b>	1
<b>Means of verification</b>	The parameter represents number of premises with at least one WPS distributed / installed under the baseline. VPAs aim at distributing WPS to the institutions of Nigeria thereby replacing the baseline method of boiling of water for consumption. Thus, CME assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario. The value of the parameter is sourced from the VPA DDs/10/. Moreover, none of the end users replied to be using an improved technology before the receiving the project water purification system.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/ and VPA-DDs /10/. The value applied is correct and justified.

**IH<sub>Baseline</sub> Good Health and Well Being**

<b>SDG Indicator</b>	3
<b>Means of verification</b>	The parameter referred to % Of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in baseline (improved health). CME assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario. The value of the parameter is sourced from the VPA DDs/10/. Moreover, none of the end users replied to be using an improved technology before the receiving the project water purification system
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.

**SWO<sub>Baseline</sub> Clean Water and sanitation**

<b>SDG Indicator</b>	6
<b>Means of verification</b>	The PoA distributed WPS to the institutions of Nigeria thereby replacing the baseline method of boiling of water for consumptions. The parameter refers to % Users reporting safe water quality in baseline. Thus, CME assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario. The value of the parameter is sourced from the VPA DDs/10/. Moreover, none of the end users replied to be using an improved technology before the receiving the project water purification system.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.

**AAC<sub>Baseline</sub> Affordable and Clean Energy**

<b>SDG Indicator</b>	7
<b>Means of verification</b>	The PoA distributed WPS to the institutions of Nigeria thereby replacing the baseline method of boiling of water for consumptions. The parameter refers to access to affordable and clean energy % of operating WPS units under baseline. Thus, CME assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario. The value of the parameter is sourced from the VPA DDs/10/. Moreover, none of the end users replied to be using an improved technology before the receiving the project water purification system

<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.

**QE IG<sub>Baseline</sub> Decent Work and Economic Growth**

<b>SDG Indicator</b>	8
<b>Means of verification</b>	The PoA distributed WPS to the institutions of Nigeria thereby replacing the baseline method of boiling of water for consumptions. The parameter refers to Quantitative Employment and income generation (Number of person (male and female) hired under Baseline). Thus, CME assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario. The value of the parameter is sourced from the VPA DDs/10/..Moreover, none of the end users replied to be using an improved technology before the receiving the project water purification system
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.

**Project technological description, the detailed description of the planned project technology**

<b>SDG Indicator</b>	13															
<b>Means of verification</b>	<p>The value for this parameter has been verified from the Manufacturer’s specifications /18/.</p> <table border="1" data-bbox="448 920 981 1238"> <tr> <td>Description</td> <td>UltraFLO</td> <td>Ultra TAB</td> </tr> <tr> <td>Manufacturer</td> <td>Medentech</td> <td>Medentech</td> </tr> <tr> <td>Product Name</td> <td>UltraFLO</td> <td>Big Pack, Small Pack</td> </tr> <tr> <td>Technology type</td> <td>Chlorination</td> <td>Chlorination</td> </tr> <tr> <td>Performance classification</td> <td>Complies with National standard</td> <td>Complies with National standard</td> </tr> </table> <p>The evidence /18/ shared by the CME has been reviewed and it was found that project technological description is correctly reported in monitoring report /5/.</p>	Description	UltraFLO	Ultra TAB	Manufacturer	Medentech	Medentech	Product Name	UltraFLO	Big Pack, Small Pack	Technology type	Chlorination	Chlorination	Performance classification	Complies with National standard	Complies with National standard
Description	UltraFLO	Ultra TAB														
Manufacturer	Medentech	Medentech														
Product Name	UltraFLO	Big Pack, Small Pack														
Technology type	Chlorination	Chlorination														
Performance classification	Complies with National standard	Complies with National standard														
<b>Findings</b>	No findings were raised.															
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.															

**Regulatory framework for safe water supply, National, sub-national and local regulations or guidance for safe drinking water supply, operation and maintenance, including any tariff requirements in host country Nigeria**

<b>SDG Indicator</b>	13
<b>Means of verification</b>	<p>The project does not undermine or conflict with any national, sub-national and local regulations or guidance for safe drinking water supply, operation and maintenance, including any tariff requirements. Further, the national standards and local regulations for safe drinking water supply do not impose any cap on parameters used by the methodology and therefore have no implications on emission reduction calculations.</p> <p>The VPAs are in line with all the local and national Safe Water guidelines such as National Action Plan (NAP), National Water Resources Bill- 2020, and Nigerian Standard for Drinking Water Quality (NSDQW).</p>
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.

### Water resources in the project activity, Improved and Unimproved drinking water sources in Nigeria

<b>SDG Indicator</b>	13																					
<b>Means of verification</b>	<p>Baseline survey of Schools</p> <table border="1"> <thead> <tr> <th>S.No</th> <th>Drinking water source</th> <th>% Premises</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Government/ Private piped connection</td> <td>3.53</td> </tr> <tr> <td>2.</td> <td>Surface water</td> <td>2.35</td> </tr> <tr> <td>3.</td> <td>Well, /Borehole</td> <td>94.12</td> </tr> </tbody> </table> <p>The value for this parameter is different for improved and unimproved drinking water sources in Nigeria. The value is sourced form baseline survey sheet /23/.</p> <p>PD has taken following values for other water sources as per annex 2 of the applied methodology.</p> <table border="1"> <thead> <tr> <th>S.No.</th> <th>Source of drinking water</th> <th>% Premises</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Improved sources</td> <td>97.65%</td> </tr> <tr> <td>2.</td> <td>Unimproved Sources</td> <td>2.35%</td> </tr> </tbody> </table>	S.No	Drinking water source	% Premises	1.	Government/ Private piped connection	3.53	2.	Surface water	2.35	3.	Well, /Borehole	94.12	S.No.	Source of drinking water	% Premises	1.	Improved sources	97.65%	2.	Unimproved Sources	2.35%
S.No	Drinking water source	% Premises																				
1.	Government/ Private piped connection	3.53																				
2.	Surface water	2.35																				
3.	Well, /Borehole	94.12																				
S.No.	Source of drinking water	% Premises																				
1.	Improved sources	97.65%																				
2.	Unimproved Sources	2.35%																				
<b>Findings</b>	No findings were raised.																					
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPAA-DD /10/. The value applied is correct and justified.																					

### Stove technologies used in the project boundary; The proportion of different stove types used in premises in the geographical area of the project. If the project covers different types of end-users premises (e.g. households, institutions), then the stoves technologies should be determined for each premises type.

<b>SDG Indicator</b>	13												
<b>Means of verification</b>	<p>Baseline survey of Schools</p> <table border="1"> <thead> <tr> <th>S.no</th> <th>Stove Technology</th> <th>School/Institutions (%)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Traditional / 3 Stone Fire</td> <td>58.02</td> </tr> <tr> <td>2</td> <td>Traditional Charcoal Pot</td> <td>40.74</td> </tr> <tr> <td>3</td> <td>Kerosene Stove</td> <td>1.23</td> </tr> </tbody> </table> <p>Stove technologies used in the project boundary was found to be traditional 3 stone stoves, charcoal pots, or kerosene stove. The values are used to calculate baseline emission. The value is sourced from baseline survey sheet /23/.</p>	S.no	Stove Technology	School/Institutions (%)	1	Traditional / 3 Stone Fire	58.02	2	Traditional Charcoal Pot	40.74	3	Kerosene Stove	1.23
S.no	Stove Technology	School/Institutions (%)											
1	Traditional / 3 Stone Fire	58.02											
2	Traditional Charcoal Pot	40.74											
3	Kerosene Stove	1.23											
<b>Findings</b>	No findings were raised.												
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.												

### Expected technical life of project technology, The expected technical life of an individual project technology shall be defined in the PDD. The details include both technology/device life and filter life, if a filter is used and it is replaceable.

<b>SDG Indicator</b>	13												
<b>Means of verification</b>	<p>The expected technical life of the project technology is in accordance with the manufacturer's specifications /18/ and has been correctly reported in monitoring report /5/.</p> <table border="1"> <thead> <tr> <th>Description</th> <th>UltraFLO</th> <th>UltraTAB</th> </tr> </thead> <tbody> <tr> <td>Treatment Volume (Ltrs)</td> <td>340,000</td> <td>Big Pack: 48,000 Small Pack: 10,000</td> </tr> <tr> <td>Life Span / Expiry-filter</td> <td>5 years</td> <td>5 years</td> </tr> <tr> <td>Life Span / Expiry--system</td> <td>30 years</td> <td>30 years</td> </tr> </tbody> </table>	Description	UltraFLO	UltraTAB	Treatment Volume (Ltrs)	340,000	Big Pack: 48,000 Small Pack: 10,000	Life Span / Expiry-filter	5 years	5 years	Life Span / Expiry--system	30 years	30 years
Description	UltraFLO	UltraTAB											
Treatment Volume (Ltrs)	340,000	Big Pack: 48,000 Small Pack: 10,000											
Life Span / Expiry-filter	5 years	5 years											
Life Span / Expiry--system	30 years	30 years											
<b>Findings</b>	CAR#01 was raised and successfully closed.												

<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.
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**X<sub>f</sub>, The proportion of each different cooking fuel f used in the project boundary by end-users:**

<b>SDG Indicator</b>	13												
<b>Means of verification</b>	<p>The fuel used in the project location are woodfuel, charcoal and kerosene. The values are used to calculate baseline emission. The value is sourced from baseline survey sheet /23/.</p> <table border="1"> <thead> <tr> <th>S.no</th> <th>Baseline Fuel Usage</th> <th>School/Institutions (%)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Woodfuel</td> <td>58.02</td> </tr> <tr> <td>2.</td> <td>Charcoal</td> <td>40.74</td> </tr> <tr> <td>3.</td> <td>Kerosene</td> <td>1.23</td> </tr> </tbody> </table>	S.no	Baseline Fuel Usage	School/Institutions (%)	1.	Woodfuel	58.02	2.	Charcoal	40.74	3.	Kerosene	1.23
S.no	Baseline Fuel Usage	School/Institutions (%)											
1.	Woodfuel	58.02											
2.	Charcoal	40.74											
3.	Kerosene	1.23											
<b>Findings</b>	No findings were raised.												
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VAA-DD /10/. The value applied is correct and justified.												

**EF<sub>b, f, CO2</sub>, CO2 emission factor from use of fuels**

<b>SDG Indicator</b>	13
<b>Means of verification</b>	<p>Following are the values applied under this parameter  Wood = 112 TcO2/TJ  Charcoal = 165.22 TcO2/TJ (includes charcoal production emissions)</p> <p>The value for this parameter is sourced from IPC default value for wood and charcoal: IPCC 2006 Guidelines for National Greenhouse gas inventories /24/.</p>
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the PoA-DD /9/. The value applied is correct and justified.

**EF<sub>b, f, nonCO2</sub>, Non-CO<sub>2</sub> emission factor from use of fuels, in case the baseline fuel is biomass or charcoal**

<b>SDG Indicator</b>	13
<b>Means of verification</b>	<p>Following are the values applied under this parameter  AR5 GWP  - Wood: 9.46 TcO2e/TJ  - Charcoal: 44.83 TcO2e/TJ (includes production emissions of CH4 and N2O)</p> <p>The value for this parameter is sourced from IPC default value for wood and charcoal: IPCC 2006 Guidelines for National Greenhouse gas inventories /24/.</p>
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.

**η<sub>wb</sub>, Weighted average efficiency of the baseline water boiling devices.**

<b>SDG Indicator</b>	13																											
<b>Means of verification</b>	<p>The parameter calculates the weighted average of the baseline water boiling devices.</p> <table border="1"> <thead> <tr> <th>S.no</th> <th>Stove Technology</th> <th>School/Institutions (%)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Traditional / 3 Stone Fire</td> <td>58.02</td> </tr> <tr> <td>2</td> <td>Traditional Charcoal Pot</td> <td>40.74</td> </tr> <tr> <td>3</td> <td>Kerosene Stove</td> <td>1.23</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <th>S.no</th> <th>Stove Technology</th> <th>% Efficiency</th> </tr> <tr> <td>1</td> <td>Traditional / 3 Stone Fire</td> <td>10</td> </tr> <tr> <td>2</td> <td>Traditional Charcoal Pot</td> <td>15</td> </tr> <tr> <td>3</td> <td>Kerosene Stove</td> <td>50</td> </tr> </tbody> </table>	S.no	Stove Technology	School/Institutions (%)	1	Traditional / 3 Stone Fire	58.02	2	Traditional Charcoal Pot	40.74	3	Kerosene Stove	1.23				S.no	Stove Technology	% Efficiency	1	Traditional / 3 Stone Fire	10	2	Traditional Charcoal Pot	15	3	Kerosene Stove	50
S.no	Stove Technology	School/Institutions (%)																										
1	Traditional / 3 Stone Fire	58.02																										
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3	Kerosene Stove	1.23																										
S.no	Stove Technology	% Efficiency																										
1	Traditional / 3 Stone Fire	10																										
2	Traditional Charcoal Pot	15																										
3	Kerosene Stove	50																										

	The value 12.53% used for calculation has been sourced from baseline survey data /23/.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.

**$C_b$  , Proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water treatment method other than boiling.**

<b>SDG Indicator</b>	13
<b>Means of verification</b>	The value 4.71% applied in this parameter is the proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water treatment method other than boiling. The value has been sourced from baseline survey data /23/.
<b>Findings</b>	CAR#01 was raised and successfully closed.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.

**$q_i$ , Capacity of the household or institutional water treatment technology**

<b>SDG Indicator</b>	13						
<b>Means of verification</b>	<p>This parameter is referred to capacity of the household or institutional water treatment technology.</p> <table border="1"> <thead> <tr> <th>Description</th> <th>UltraFLO</th> <th>UltraTAB</th> </tr> </thead> <tbody> <tr> <td>Dosage rate (Treatment Capacity (Ltrs))</td> <td>340,000 L/ Cartridge</td> <td>Big Pack: 48,000 L/ Cartridge Small Pack: 10,000 L/ Cartridge</td> </tr> </tbody> </table> <p>The value has been sourced from technological specifications data provided by CME /18/.</p>	Description	UltraFLO	UltraTAB	Dosage rate (Treatment Capacity (Ltrs))	340,000 L/ Cartridge	Big Pack: 48,000 L/ Cartridge Small Pack: 10,000 L/ Cartridge
Description	UltraFLO	UltraTAB					
Dosage rate (Treatment Capacity (Ltrs))	340,000 L/ Cartridge	Big Pack: 48,000 L/ Cartridge Small Pack: 10,000 L/ Cartridge					
<b>Findings</b>	No findings were raised.						
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.						

**$f_{nr,b,f,y}$  , Fractional non-renewability status of woody biomass fuel during year  $y$ , in case the baseline fuel is biomass or charcoal**

<b>SDG Indicator</b>	13
<b>Means of verification</b>	This parameter is referred to fractional non-renewability status of woody biomass fuel during year $y$ in case the baseline fuel is biomass or charcoal. The value applied is 96% which is confirmed from the C4 EcoSolutions report shared by CME /25/.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.

**$QPW_p$  , Volume of drinking water per person per day for premises type  $p$**

<b>SDG Indicator</b>	13												
<b>Means of verification</b>	<p>The value of this parameter has been applied as per the applied methodology /8/.</p> <table border="1"> <thead> <tr> <th>Type of Premises</th> <th>Default value</th> <th>Applicability</th> </tr> </thead> <tbody> <tr> <td>Full-day premises</td> <td>4 L /person / day</td> <td>Premises like households etc.</td> </tr> <tr> <td>Boarding school</td> <td>4 L /person / day</td> <td>-</td> </tr> <tr> <td>Half time premises</td> <td>3 L /person / day</td> <td>Premises like day schools, offices etc.</td> </tr> </tbody> </table>	Type of Premises	Default value	Applicability	Full-day premises	4 L /person / day	Premises like households etc.	Boarding school	4 L /person / day	-	Half time premises	3 L /person / day	Premises like day schools, offices etc.
Type of Premises	Default value	Applicability											
Full-day premises	4 L /person / day	Premises like households etc.											
Boarding school	4 L /person / day	-											
Half time premises	3 L /person / day	Premises like day schools, offices etc.											

<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The value in the monitoring report /5/ and ER calculation sheet /15/ are consistent with the VPA-DD /10/. The value applied is correct and justified.

### E.5.2. Data and parameters monitored

#### ABS<sub>Project</sub> Access to Basic Services (number of premises with at least one WPS distributed / installed under the project)

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	1
	Measuring /Reading /Recording frequency	Continuous
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	18,694 The verification team confirmed the value from installation database provide in Installation database of ER sheet and found it correct /15/. The institutions selected during through acceptance sampling were also checked for the details mentioned for these schools in the database. The information was found to be consistent between the database and the VVB survey.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

#### IH<sub>Project</sub> % of users reporting reduce in incidence of diarrhoea and water borne diseases etc. (improved health) in project

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	3
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	This parameter accounts for % Of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in project (improved health). The parameter is determined through surveys and the frequency of monitoring is annual or biennial. Surveys forms/21/ were checked and found to be consistent with the ER sheet)worksheet :

		<p>monitored samples)/15/.</p> <p>VVB has conducted acceptance sampling to verify the CME survey results.</p> <p>The institution heads interviewed during remote site survey(11 samples) confirmed that none of school staff or students reported cases of diarrhoea and water borne diseases and provided their positive feedback to the WPS technology installed at the school. The information was found to be consistent between the CME survey and the VVB survey.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The CME staff conducting the surveys are trained as confirmed from the training records/20/.
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the monitoring plan /9 / and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**SWO<sub>Baseline</sub> % WPS distributed / installed providing safe drinking water to beneficiaries in project**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	6
	Measuring /Reading /Recording frequency	Annual/ Biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>94.44%</p> <p>The frequency of monitoring is annual or biennial. The value obtained from water quality test is correctly calculated and reported in sample size calculation worksheet of ER sheet /15/. The tests were conducted by the trained staff of CME and results were evaluated in the central office.</p> <p>Test reports for 11 samples were checked/21,34/ and found to be consistent with the survey results were presented in ER sheet(monitored survey)/15/.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, CME has employed 19 personnel that has been trained to conduct monitoring surveys and water quality test. Training records and HR records were reviewed.
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**AAC<sub>Project</sub> Access to affordable and clean energy (% of operating WPS units under Project)**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	7
	Measuring /Reading /Recording frequency	Annual/ Biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	93.20%  The value is correctly calculated and reported in sample size calculation worksheet of ER sheet /15/.  The parameter is determined through annual surveys.  Surveys forms/21/ were checked and found to be consistent with the ER sheet)worksheet : monitored samples)/15/.  VVB has conducted acceptance sampling to verify the CME survey results.  11 samples were checked and found to be consistent with the survey results were presented in ER sheet(monitored survey)/15/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the surveys are trained as confirmed from the training records/20/.
In case project participants have deviation from gold standard?	Yes, please see section E.7.	
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**QE IG<sub>project</sub> Quantitative Employment and income generation (Number of person (male and female) hired under project)**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	8
	Measuring /Reading /Recording frequency	Annual/ Biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	Total number of employees hired during this monitoring period is 19.  This parameter represents quantitative Employment and income generation (Number of person (male and female) hired under project). The value has been confirmed from statement of employees at impact Water document /36//.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary	NA

	QA/QC processes in place?	
	In case project participants have deviation from gold standard?	NA
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

***M<sub>q,y</sub>* Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually or more frequently
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	0.9444 The value of this parameter is obtained from water quality test. Water quality testing of the project devices was conducted on sampling basis. The samples of treated water collected from project devices and tested using field testing kits. Institution heads interviewed during remote audit confirmed that representative from VPA Implementers had visited recently to collect water sample. This was cross-checked from the photographic evidence of sampled data /21/ submitted for the verification.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the test are trained as confirmed from the training records/20/.
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**Water hygiene education campaigns— Hygiene campaigns carried out among project safe water end users**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	117 samples monitored Water hygiene education campaigns is conducted annually. The verification team reviewed Hygiene Awareness Campaign Report /22/ and the questionnaire used for project

		<p>monitoring that consists of questions related to hygiene.</p> <p>Surveys forms/21/ were checked and found to be consistent with the ER sheet) worksheet: monitored samples)/15/.</p> <p>VVB has conducted acceptance sampling to verify the CME survey results.</p> <p>The institution heads interviewed during remote site survey(11 samples) confirmed hygiene campaigns were conducted at the school. The information was found to be consistent between the CME survey and the VVB survey.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the surveys are trained as confirmed from the training records/20/.
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	CAR#02 was raised and successfully closed.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**X<sub>cleanboil,y</sub> Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology**

<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observations</b>
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>The parameter accounts for Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology.</p> <p>Surveys forms/21/ were checked and found to be consistent with the ER sheet)worksheet : monitored samples)/15/.</p> <p>VVB has conducted acceptance sampling to verify the CME survey results.</p> <p>The institution heads interviewed during remote audit(11 samples) confirmed that none of the school boil water for drinking purpose and they only consume water purified from installed WPS unit in the school. The information was found to be consistent between the CME survey and the VVB survey.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the surveys are trained as confirmed from the training records/20/.
	In case project participants have	Yes, please see section E.7.

	deviation from gold standard?	
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**HN<sub>p,y</sub> Number of individuals per premises type p in the project boundary in year y**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	418 The parameter represents the number of individuals per premises in the project boundary. The value reported is the average value across all the VPAs covered in the monitoring period.  The number of individuals in each of the schools covered under the sampled data(acceptance sampling) was cross-checked during remote site survey and found correct. The verification team confirms that value reported in the ER sheet is correct.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the surveys are trained as confirmed from the training records/20/.
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**N<sub>p,y</sub> Accumulated number of premises type p with at least one individual project technology in year y**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	18,694 The parameter calculates the total number of premises with at least one individual technology type. The verification team confirms that each WPS unit distributed in schools were given unique product ID and it was ensured that there is no double counting.
	Does the data management ensure correct transfer of data and reporting of	Yes, CME has employed 19 personnel that has been trained to conduct monitoring surveys and

	emission reductions and are necessary QA/QC processes in place?	water quality test. Training records and HR records were reviewed.
	In case project participants have deviation from gold standard?	NA
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**$U_{p,y}$  Usage rate of the project technology by premises type p during year y**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>93.20%</p> <p>The value is correctly calculated and reported in monitoring report and ER calculation sheet. /5,15/</p> <p>The CME has determined the value of the parameter through usage surveys.</p> <p>Surveys forms/21/ were checked and found to be consistent with the ER sheet) worksheet: monitored samples)/15/.</p> <p>VVB has conducted acceptance sampling to verify the CME survey results.</p> <p>The institution heads interviewed during remote audit (11 samples) confirmed that the device installed in their school is active. The information was found to be consistent between the CME survey and the VVB survey</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Surveys have been conducted by trained staff/20/.
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**$DP_{p,y}$  Average days the project technology is present for end-users in the premises p in year y**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and	Yes

	monitoring methodology? (Yes / No)	
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	The number of operational school days in the monitoring period is 224, excluding weekends, holidays and term-breaks, as applicable for boarding and non-boarding premises.  The school academic calendar/32/ for Nigeria was checked to confirm that the number of days has been calculated correctly removing the holidays.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/9/.	

**$DN_{p,y}$  Average number of individual project technologies in each project premises type p in year y**

Means of verification	Criteria/Requirements	Assessment/Observations
	SDG Indicator	13
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	The total number of individual project units by each project premise type in each specific VPA is recorded in the database and monitored annually through surveys.  The number of units were checked during the VVB sampling and institution heads were asked during remote audit about the total number of units installed in each school and cross-checked from the installation database provided in ER calculation sheet /15/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
	In case project participants have deviation from gold standard?	Yes, please see section E.7.
	<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan /9/ and applied methodology /8/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan /9,10/.	

**E.5.3. Comparison of monitored parameters with last monitoring period**

Means of verification	Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
	ABS <sub>Project</sub>		18,694

	IH <sub>Project</sub>	94.44	NA
	SWQ <sub>Project</sub>	94.44	NA
	AAC <sub>Project</sub>	93.20	NA
	QE IG <sub>Project</sub>	19	NA
	Water hygiene education campaigns	117 samples monitored	NA
	M <sub>q,y</sub>	0.9444	NA
	X <sub>cleanboil,y</sub>	0%	NA
	HN <sub>p,y</sub>	418	NA
	N <sub>p,y</sub>	18,694	NA
	U <sub>p,y</sub>	93.20	NA
	DP <sub>p,y</sub>	224	NA
	DN <sub>p,y</sub>	1.10	NA
<b>Findings</b>	No findings were raised.		
<b>Conclusion</b>	This is first monitoring period of verification of PoA. The verification team confirms that all the values of monitoring parameters obtained in this monitoring period is accurately calculated and reported in monitoring report and ER sheet /5,15/.		

**E.6. Implementation of sampling plan**

<b>Means verification</b>	<b>of</b>	<p>The CME as per the monitoring plan has followed CDM Guidelines for sampling and surveys for CDM project activities and programmes of activities /13/ to design the sampling plan for the VPAs in line with the applied methodology are Emissions reduction from Safe Drinking Water Supply, Version 1.0/5/. The CME has applied across VPA sampling for all the 30 VPAs covered under this PoA. As per the sampling plan stated in the monitoring report /5/, a minimum 95% confidence interval and a 10% margin of error requirement is achieved for the sampled parameters.</p> <p>PD has provided random number generator screenshots /37/ to substantiate the process of sampling process. VVB has checked the shared evidence and confirmed that the PD has done random sampling and the samples were chosen randomly for monitoring.</p> <p>Parameters determined through sampling</p>																					
		<table border="1"> <thead> <tr> <th>Data/Parameter</th> <th>Description of parameter</th> </tr> </thead> <tbody> <tr> <td>M<sub>q,y</sub></td> <td>Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard</td> </tr> <tr> <td>U<sub>p,y</sub></td> <td>Usage rate of the project technology by premises type p during year y</td> </tr> </tbody> </table>		Data/Parameter	Description of parameter	M <sub>q,y</sub>	Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard	U <sub>p,y</sub>	Usage rate of the project technology by premises type p during year y														
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		<p>Other parameters:</p> <table border="1"> <thead> <tr> <th>Data/Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>ABS<sub>Project</sub></td> <td>Access to Basic Services (number of premises with at least one WPS distributed / installed under the project)</td> </tr> <tr> <td>IH<sub>Project</sub></td> <td>% of users reporting reduce in incidence of diarrhoea and water borne diseases etc. (improved health) in project</td> </tr> <tr> <td>SWQ<sub>Project</sub></td> <td>% WPS distributed / installed providing safe drinking water to beneficiaries in project</td> </tr> <tr> <td>AAC<sub>Project</sub></td> <td>Access to affordable and clean energy (% of operating WPS units under Project)</td> </tr> <tr> <td>QE IG<sub>Project</sub></td> <td>Quantitative Employment and income generation (Number of person (male and female) hired under project)</td> </tr> <tr> <td>Water hygiene education campaigns</td> <td>Hygiene campaigns carried out among project safe water end users</td> </tr> <tr> <td>X<sub>cleanboil,y</sub></td> <td>Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology</td> </tr> <tr> <td>HN<sub>p,y</sub></td> <td>Number of individuals per premises type p in the project boundary in year y</td> </tr> <tr> <td>N<sub>p,y</sub></td> <td>Accumulated number of premises type p with at least one individual project technology in year y</td> </tr> </tbody> </table>		Data/Parameter	Description	ABS <sub>Project</sub>	Access to Basic Services (number of premises with at least one WPS distributed / installed under the project)	IH <sub>Project</sub>	% of users reporting reduce in incidence of diarrhoea and water borne diseases etc. (improved health) in project	SWQ <sub>Project</sub>	% WPS distributed / installed providing safe drinking water to beneficiaries in project	AAC <sub>Project</sub>	Access to affordable and clean energy (% of operating WPS units under Project)	QE IG <sub>Project</sub>	Quantitative Employment and income generation (Number of person (male and female) hired under project)	Water hygiene education campaigns	Hygiene campaigns carried out among project safe water end users	X <sub>cleanboil,y</sub>	Proportion of project end-users that boil safe (treated, or from safe supply) water after installation of project technology	HN <sub>p,y</sub>	Number of individuals per premises type p in the project boundary in year y	N <sub>p,y</sub>	Accumulated number of premises type p with at least one individual project technology in year y
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$U_{p,y}$	Usage rate of the project technology by premises type p during year y
$DP_{p,y}$	Average days the project technology is present for end-users in the premises p in year y
$DN_{p,y}$	Average number of individual project technologies in each project premises type p in year y

The target population is institutions of Nigeria. All the VPAs i.e., GS11259 to GS11288 (VPA 01 to VPA 30) is implemented in the same physical location of Nigeria with same baseline scenario and technology and therefore the CME has chosen to apply across VPA sampling.

The CME has applied stratified random sampling for determining the usage rate of units distributed based on age as project technologies age over time and/or are replaced and accordingly calculate the sample size.

The CME requested for the deviation from GS/26/ with regards to the monitoring requirement of the WPS and the requirements of the methodology which got approved on 07/12/2021.

The CME has sought deviation for the current crediting period. Though the applied methodology para 4.2.2./8/ allows only 10 VPAs to be grouped together for across VPA sampling, CME has clubbed 30VPAs under current verification. Moreover, the sample size has been determined through 95/10 C/P, but the CME has applied maximum limit of 100 for the sample size in line with para 4.2.3. of the applied methodology/8/. The deviation form was checked to confirm the above/26/.

Detail of approved deviation:

Reference: Dev\_184

Title: Deviation from ageing-based survey for WPS

Date of approval: 07/12/2021

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

The deviation was also requested for no units-based scale limit and lifespan of the units to be considering the renewal of cartridges/tablets. Thus, also removing the factor of aging of the product over the time.

CME requested to have project surveys for WPS stratifying each technology irrespective of their age and by grouping more than 10 small scale VPAs together. This was approved by GS as WPS system are not affected by ageing over time. The functioning of the WPS is dependent on filters/cartridges. Once the cartridges or filters are fully consumed and replaced with a completely new one making it revive their lifetime again.

The collection of monitoring data is done by trained personnel appointed by CME team. Usage related surveys and collection of water samples for water quality test has been done by the monitoring team. The monitoring (Surveys and Water Quality Tests) was conducted from 13-09-2021 to 22-09-2021/21/.

The sampling approach undertaken by CME is duly explained under section D.4 of the monitoring report /5/, which has been assessed by the verification team and found to be correct and in-line to the standard /13/.

**Reliability and precision calculation:**

The verification team has verified the ER calculation spreadsheets /15/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under “Standard for sampling and surveys for CDM project activities and Programme of Activities” v9.0 /13/ and confirms that the calculation of achieved reliability was done correctly.

	All parameters of interest are included in the ER spreadsheet for the VPAs. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the ER calculation sheets/15/ corresponding to final Monitoring Report /5/, which were also found correct. Thus, the verification team confirms that in all cases the reliability has been demonstrated and the results are reliable.
<b>Findings</b>	CAR#03 is raised and successfully closed.
<b>Conclusion</b>	Sampling plan followed in the PoA and reported in monitoring report, ER sheet /5,15/ is in line with CDM guidelines for sampling and surveys /13/ and applied methodology /8/.

**E.7. Assessment of data and calculations of emission reductions or net removals**

**E.7.1. Calculations of baseline value of each SDG Impact**

<b>Means of verification</b>	The targeted SDG and its corresponding baseline estimate are given below:			
	Sustainable Development Goals Targeted	SDG Impact	Parameter description	Baseline estimate
	SDG 1	No Poverty	Number of premises with at least one WPS distributed / installed under the baseline	0
	SDG 3	Good Health and Well-Being	% Of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in baseline (improved health)	0
	SDG 6	Clean Water and Sanitation	% Users reporting safe water quality in baseline	4.71
	SDG 7	Affordable and Clean Energy	Access to affordable and clean energy (% of operating WPS units under Baseline)	0
	SDG 8	Decent Work and Economic Growth	Quantitative Employment and income generation (Number of person (male and female) hired under Baseline)	0
	SDG 13	Climate Action	CERs	1,558,740
	<p>For SDG 13. Climate Action, baseline emissions are calculated as follows:</p> $EF_b = SE_{w,b,y} * \sum(x_f * (EF_{b,f,CO2} * f_{NRB,f,y} + EF_{b,f,nonCO2})) \div 10^9$ <p>Where:</p> <p><math>EF_b</math> = Emission factor for the use of fuel to obtain safe water in the baseline (TcO2e/L)  <math>SE_{w,b,y}</math> = Specific energy required to boil water (KJ/L), to be calculated as per the paragraph below  <math>x_f</math> = Proportion of fuel f used in the baseline (fraction determined based on an energy basis)  <math>EF_{b,f,CO2}</math> = CO2 emission factor from use of fuel f (TcO2/TJ)  <math>EF_{b,f,nonCO2}</math> = Non-CO2 emission factor arising from use of fuel f, when the baseline fuel f is biomass or charcoal (TcO2e/TJ). This parameter is omitted when f is a fossil fuel.  <math>f_{NRB,f,y}</math> = Fractional non-renewability status of woody biomass fuel during year y (fraction). For biomass, it is the fraction of woody biomass that can be established</p>			

	<p>as non-renewable. This parameter is omitted when f is a fossil fuel.  f = Index for baseline fuel</p> <p>Calculations of specific energy required to boil water using the baseline technology (<math>SE_{w,b,y}</math>) is as follows:</p> $SE_{w,b,y} = 360.83/\eta_{wb}$ <p>Where:  360.83 = Default amount of energy required to obtain 1 L of water after 5 minutes of boiling from a first principles approach KJ/l  <math>\eta_{wb}</math> = Efficiency of the stoves for baseline water boiling (%). Weighted average of baseline stove types.</p> <p>The baseline emissions shall be calculated as follows:</p> $BE_y = EF_b \times (1 - C_b - X_{cleanboil,y}) \times Q_y \times M_{q,y}$ <p>Where:  <math>BE_y</math> = Baseline emissions from the use of fuel to obtain safe water in the baseline (TcO2e)  <math>C_b</math> = Proportion of project end-users who in the baseline were already using a safe water supply that did not require boiling (%)  <math>X_{cleanboil,y}</math> = Proportion of project end-users that boil safe water in the project year y (%)</p> <p><math>Q_y</math> = Quantity of safe drinking water provided by the project in year y (L)  <math>M_{q,y}</math> = Modifier for the water quality in year y</p> <p>In the case of IWT, the quantity of safe drinking water provided by the project <math>Q_y</math> is determined as follows</p> $Q_y = \sum N_{p,y} \times U_{p,y} \times QPW_{hh,p,y} \times DP_{p,y}$ <p>Where:  <math>N_{p,y}</math> = Number of premises type p with at least one project technology in year y  <math>U_{p,y}</math> = Usage rate of the project technology by premises type p during year y (%)  <math>QPWhh,p,y</math> = Volume of drinking water per premises p per day in year y (L)  <math>DP_{p,y}</math> = Days the project technology is present for end-users in the premises p in year y</p> <p>The volume of drinking water per premises is determined by considering whether the capacity of the project device is sufficient to provide at least the default amount of drinking water, as follows:</p> $QPWhh,p,y = \min((q_i \times DN_{p,y}), (QPW_p \times HN_{p,y}))$ <p>Where:  <math>q_i</math> = Capacity of the HWT or IWT individual project technology (L)  <math>DN_{p,y}</math> = Average number of individual project technologies in each project premises type p in year y  <math>HN_{p,y}</math> = Number of individuals per premises type p (e.g. household, school) in year y  <math>QPW_p</math> = Volume of drinking water per person per day for premises type p (L) * average number of operational days in the year  Applied the default value or monitored value through water consumption field tests in the project scenario, capped at 5.5 L per person per day</p> <p>The calculation of the baseline has been verified from the ER calculation sheet and was found correct and consistent.</p>
<p><b>Findings</b></p>	<p>No findings were raised.</p>
<p><b>Conclusion</b></p>	<p>The verification team verified that  a) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under Section E.5 of this</p>

	<p>report. The complete monitoring data is also presented in the corresponding ER calculations sheet /15/ of final Monitoring Report /5/.</p> <p>b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.5 of this report.</p> <p>c) The calculations of baseline emissions as presented in the corresponding ER calculations sheet /15/ of final Monitoring Report /5/ were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of VPA-DD/10/, registered PoA-DD /9/ and the applied methodology /8/.</p> <p>d) All assumptions used in the emission calculations were found appropriate and therefore justified</p> <p>e) Appropriate emission factors, IPCC default factors and other reference values have been correctly applied. This has also been elaborated under Section E.5 of this report.</p>
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### E.7.2. Calculations of project value of each SDG Impact

<b>Means of verification</b>	<p>The targeted SDG and its corresponding project estimate are given below:</p> <table border="1"> <thead> <tr> <th>Sustainable Development Goals Targeted</th> <th>SDG Impact</th> <th>Parameter description</th> <th>Project estimate</th> </tr> </thead> <tbody> <tr> <td>SDG 1</td> <td>No Poverty</td> <td>Number of premises with at least one WPS distributed / installed under the project</td> <td>18,694</td> </tr> <tr> <td>SDG 3</td> <td>Good Health and Well-Being</td> <td>% Of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in project (improved health)</td> <td>94.44%</td> </tr> <tr> <td>SDG 6</td> <td>Clean Water and Sanitation</td> <td>% Users reporting safe water quality in project</td> <td>94.44%</td> </tr> <tr> <td>SDG 7</td> <td>Affordable and Clean Energy</td> <td>Access to affordable and clean energy (% of operating WPS units under Project)</td> <td>93.20%</td> </tr> <tr> <td>SDG 8</td> <td>Decent Work and Economic Growth</td> <td>Quantitative Employment and income generation (Number of person (male and female) hired under Project)</td> <td>19</td> </tr> <tr> <td>SDG 13</td> <td>Climate Action</td> <td>CERs</td> <td>0</td> </tr> </tbody> </table> <p>For SDG 13. Climate Action, the project estimate is 0 as the project technology involves chlorination which does not require any fuel/ electricity use. The assessment team has reviewed the equations used in line with the VPA-DD and applied methodology. The calculation of the baseline has been verified from the ER calculation sheet /15/ and was found correct and consistent.</p>	Sustainable Development Goals Targeted	SDG Impact	Parameter description	Project estimate	SDG 1	No Poverty	Number of premises with at least one WPS distributed / installed under the project	18,694	SDG 3	Good Health and Well-Being	% Of users reporting reduction in incidence of diarrhoea and water borne diseases etc. in project (improved health)	94.44%	SDG 6	Clean Water and Sanitation	% Users reporting safe water quality in project	94.44%	SDG 7	Affordable and Clean Energy	Access to affordable and clean energy (% of operating WPS units under Project)	93.20%	SDG 8	Decent Work and Economic Growth	Quantitative Employment and income generation (Number of person (male and female) hired under Project)	19	SDG 13	Climate Action	CERs	0
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SDG 8	Decent Work and Economic Growth	Quantitative Employment and income generation (Number of person (male and female) hired under Project)	19																										
SDG 13	Climate Action	CERs	0																										
<b>Findings</b>	No findings were raised.																												
<b>Conclusion</b>	<p>The verification team verified that</p> <p>a) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under section of this verification report. Also, the monitoring has been provided for the review in the ER calculation sheet /15/.</p> <p>b) The information provide in the monitoring report /5/ was cross-checked with other source, wherever appropriate.</p>																												

### E.7.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	The verification team reviewed section B.6.1 of the VPA-DD/10/ and found that no potential leakage is present. The leakage assessment has been done in line with
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	the methodology “Emission reductions from Safe Drinking Water Supply” Version 1.0. As reported, the leakage shall be reassessed after the end of second year of crediting period since, the monitoring frequency for leakage is “every two years”.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	Leakage assessment was found to be done in line to the applied methodology and verified from VPA-DD /8,10/.

**E.7.4. Calculations of net benefits for each SDG Impact**

<b>Means of verification</b>	Net benefits achieved under each SDG Impact are tabulated below:				
	SD G	SDG Impact	Baseline estimate	Project estimate	Net benefit
	1	No Poverty	0	18,694	18,694
	3	Good Health and Well Being	0	94.44%	94.44%
	6	Clean Water and Sanitation	0	94.44%	94.44%
	7	Affordable and Clean Energy	0	93.20%	93.20%
	8	Decent Work and Economic Growth	0	19	19
	13	Climate Action	1,558,670TcO2e	0	1,558,670TcO2e
	Below are the equations used for calculating net benefits for each SDG Impact				
	<p>Net Benefit (SDG 1) = <math>ABS_{Project} - ABS_{Baseline}</math>                      Net Benefit (SDG 3) = <math>IH_{USERS,Project} - IH_{Baseline}</math>                      Net Benefit (SDG 6) = <math>SWQ_{Project} - SWQ_{Baseline}</math>                      Net Benefit (SDG 7) = <math>AAC_{Project} - AAC_{Baseline}</math>                      Net Benefit (SDG 8) = <math>QE\ IG_{Project} - QE\ IG_{Baseline}</math></p> <p>The emission reductions are calculated as follows:</p> $ER_y = BE_y - PE_y - LE_y$ <p>Where:  <math>ER_y</math> = Emission reductions in year y (t CO2e/yr)  <math>BE_y</math> = Baseline emissions in year y (t CO2e/yr)  <math>PE_y</math> = Project emissions in year y (t CO2e/yr)  <math>LE_y</math> = Leakage emissions in year y (t CO2e/yr)</p>				
<b>Findings</b>	No findings were raised.				
<b>Conclusion</b>	The verification team verified that <ol style="list-style-type: none"> <li>The complete data was available and is duly reported;</li> <li>The description with regards to cross-check of reported data is included under respective parameters and its assessment has been done in section E.5 of this report</li> <li>Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed</li> <li>The total number of eRs achieved during the current monitoring period is 1,588,980 TcO2e.</li> </ol>				

**E.8. Comparison of actual GHG ER value achieved during this monitoring period with estimated value**

<b>Means of verification</b>	The value estimated in ex ante calculations of approved PoA-DD and VPA-DDs /9,10/ for the monitoring period and the actual values achieved during this monitoring period has been report in section E.5 of the monitoring report /5/.		
	SDG	Values estimated	Actual values achieved

	in ex ante calculation of approved PDD for this monitoring period (TcO2e)	during this monitoring period (TcO2e)				
13-GS11259	59,312	52,914				
13-GS11260	59,312	48,906				
13-GS11261	59,312	51,404				
13-GS11262	59,312	52,128				
13-GS11263	59,312	52,929				
13-GS11264	59,312	40,819				
13-GS11265	59,312	57,525				
13-GS11266	59,312	54,546				
13-GS11267	59,312	52,384				
13-GS11268	59,312	56,746				
13-GS11269	59,312	53,986				
13-GS11270	59,312	54,618				
13-GS11271	59,312	45,024				
13-GS11272	59,312	51,235				
13-GS11273	59,312	57,039				
13-GS11274	59,312	53,876				
13-GS11275	59,312	57,215				
13-GS11276	59,312	56,143				
13-GS11277	59,312	56,580				
13-GS11278	59,312	56,746				
13-GS11279	59,312	56,311				
13-GS11280	59,312	57,068				
13-GS11281	59,312	52,181				
13-GS11282	59,312	52,030				
13-GS11283	59,312	53,951				
13-GS11284	59,312	53,82				
13-GS11285	59,312	54,248				
13-GS11286	59,312	47,088				
13-GS11287	59,312	18,171				
13-GS11288	59,312	51,007				
<b>Total</b>	<b>1,779,360</b>	<b>1,558,670</b>				
<p>The emission reductions have been correctly calculated in accordance with the applied methodology /8/. The ER calculation sheet /15/ were reviewed and all the values report in monitoring report is consistent with the ER sheet.</p> <p><b>Verified and certified emission reductions as per commitment period:</b></p> <table border="1"> <thead> <tr> <th>Commitment period</th> <th>Amount achieved</th> </tr> </thead> <tbody> <tr> <td>01/01/2021 – 31/12/2021</td> <td>1,558,670TcO2e</td> </tr> </tbody> </table>			Commitment period	Amount achieved	01/01/2021 – 31/12/2021	1,558,670TcO2e
Commitment period	Amount achieved					
01/01/2021 – 31/12/2021	1,558,670TcO2e					
<b>Findings</b>	No findings were raised.					
<b>Conclusion</b>	<p>The verification team confirms that</p> <ul style="list-style-type: none"> <li>a) The actual values of achieved eRs during this monitoring period has been correctly reported in the monitoring report.</li> <li>b) The total number of eRs achieved during the current monitoring period is 1,588,980 TcO2e.</li> </ul>					

**E.3. Safeguarding principles**

<b>Means of verification</b>	There was no safeguarding principle assessed 'Yes' or 'Potentially' and added to this monitoring plan.
<b>Findings</b>	CAR#01 was raised and successfully closed.
<b>Conclusion</b>	Not applicable.

**E.4. Stakeholder Inputs and Legal Disputes**

<b>Means of verification</b>	There were no legal disputes, and no inputs/ grievances were received for this monitoring period. CME collects feedback on a regular basis and during remote survey with end-users it was found that none of the end-users have issues with the WPS system. No negative feedback was received during remote surveys. PD confirmed in section G.3 of the MR that the is in compliance with the Host Country's legal, environmental, ecological, and social regulation and has not reported any challenges related to the same in the concerned monitoring period.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The validation team confirms that the PoA receives no negative feedback on the WPS units distributed to institutions.

**E.5. Continuous input and grievance mechanism**

<b>Means of verification</b>	The CME has provided various means through which the end-users can contact them. The continuous Input or Grievance Expression Process Books is part of the project implementation and has been made available at office of Impact Water in Nigeria. The stakeholder also has the option of contacting the CME via post or email to details provided below: <b>Impact Carbon Nigeria</b> Global Impact H2O Innovations, Ltd. Plot 61, Adekunle Fajuyi Street, G.R.A. Ikeja, Lagos Nigeria. GS Contact (mandatory): <a href="mailto:help@goldstandard.org">help@goldstandard.org</a> Contact no.: +256 790 911 934 Email: <a href="mailto:info@impactcarbon.org">info@impactcarbon.org</a>
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The validation team confirms that the PoA receives no negative feedback on the WPS units distributed to institutions. The validation team confirms the expression book which is available in all sites & a working email ID, reflects the good practice in the host countries.

**SECTION F. Internal quality control**

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

The technical review process may accept or reject the verification opinion or raise additional findings in which case these must be resolved before requesting for registration. The technical review process is recorded in the internal documents of Earthood, and the additional findings gets included in the report. The final report approved by the technical reviewer is authorized by Managing Director and issued to the CME and/or submitted for request for registration, as appropriate on behalf of Earthood Services Private Limited.

**SECTION G. Verification opinion**

The verification of PoA "Improved Cookstove and Safe Water Programme" was performed based on rules and requirements defined by GS4GG Principles and Requirements and UNFCCC for the CDM program of activities. The purpose of this project activity is to provide safe and clean drinking water through dissemination of low GHG water purification technologies (WPS) to schools and other institutions in Nigeria. Earthood Services Private Limited (Earthood), contracted by Impact Carbon, has performed the independent verification of the emission reductions for the GS PoA "Improved Cookstove and Safe Water Programme" (GSID: 11189) for the first monitoring period 01/01/2021 – 31/12/2021 (Inclusive of both days) as reported in the Monitoring Report, version 5.0 dated 06/10/2022 .

Earthood confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. Project representatives 'Impact Carbon' and 'Impact Water' are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

The verification activities were conducted in accordance with ESPL’s CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the monitoring report is in compliance with applicable CDM and GS rules and regulations and in accordance with applied methodology, Emission reductions from Safe Drinking Water Supply version 1.0.

As a result, it is confirmed that the emission reductions achieved from the implementation of GS PoA “Improved Cookstove and Safe Water Programm” are correctly reported in the GS Monitoring Report, version 5.0 dated 06/10/2022 and corresponding ER calculation sheets for the monitoring period 01/01/2021 – 31/12/2021 which are amount as 1,558,670TcO2e.

**SECTION H. Certification statement**

Earthood Services Private Limited (Earthood), contracted by Impact Carbon, has performed the independent verification of the emission reductions for the GS PoA “Improved Cookstove and Safe Water Programme” (GSID: 11189) for the first monitoring period 01/01/2021 – 31/12/2021 (Inclusive of both days) as reported in the Monitoring Report, version 5.0 dated 06/10/2022 .

Project representatives ‘Impact Carbon’ and ‘Impact Water’ are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the programme of activity. It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

In our opinion, the GHG emissions reductions reported for the project activity for the period 01/01/2021 – 31/12/2021 (Inclusive of both days) are fairly stated in the Monitoring Report, version 5.0 dated 06/10/2022 . The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology Emission reductions from Safe Drinking Water Supply version 1.0/8/ and the monitoring plan contained in the PoA-DD version 5.0 dated 25/05/2022. Earthood Services Private Limited is able to certify that the GS PoA “Improved Cookstove and Safe Water Programme” (GSID: 11189) during the monitoring period 01/01/2021 – 31/12/2021 has achieved emission reductions amount to 1,558,670 TcO2e.

**Verified and certified emission reductions as per commitment period:**

<b>Commitment period</b>	<b>Amount achieved</b>
01/01/2021 – 31/12/2021	1,558,670 TcO2e

<b>Start Dates</b>	<b>End Dates</b>	<b>Amount Achieved</b>					
		<b>VERs (TcO2e)</b>	<b>ABS (SDG1)</b>	<b>IH (SDG3)</b>	<b>SWQ (SDG6)</b>	<b>AACS (SDG7)</b>	<b>QE IG (SDG8)</b>
01/01/2021	31/12/2021	1,558,670	18,694	94.44%	89.73%	93.20%	19

## Appendix 1. Abbreviations

Abbreviations	Full texts
<b>General</b>	
ACM	Approved Consolidated Methodology
AM	Approved Methodology
BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CME	Coordinating and Managing Entity
CL	Clarification Request
CO2	Carbon dioxide
CP	Crediting Period
DR	Desk Review
EB	Executive Board
EI	External Individual
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Green House Gas
GSC/GSP	Global Stakeholder Consultation Process
IPCC	Intergovernmental Panel on Climate Change
IR	Internal Resource
KP	Kyoto Protocol
LSC	Local Stakeholder Consultation Process
MoC	Modalities of Communication
MoV	Means of Verification
MP	Monitoring Plan
ODA	Official Development Assistance
PA	Project Activity
PCP	Project Cycle Procedure
PD	Project Developer
PDD	Project Design Document
PE	Project Emission
PoA	Programme of Activities
PoA DD	Programme of Activities Design Document
PS	Project Standard
RCP	Renewal of Crediting Period
RFR	Request for Registration
TcO2e	tonnes of Carbon di Oxide equivalent
TPH	Tonnes Per Hour
TR	Technical Reviewer
UNFCCC	United Nations Framework Convention on Climate Change
V	Version
VPA	Verified Project Activity
VVB	Validation and Verification Body
VVS	Validation and Verification Standard
<b>Project Specific</b>	
GS4GG	Gold Standard for Global Goals
LSC	Local Stakeholder Consultation
MoV	Means of Verification
SDG	Sustainable Development Goals
WPS	Water Purification System technology

## Appendix 2. Competence of team members and technical reviewers

Competence Statement			
<b>Name</b>	Deepika Mahala		
<b>Country</b>	India		
<b>Education</b>	M. Sc. (Environment Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
<b>Experience</b>	5 Years +		
<b>Field</b>	Climate Change		
Approved Roles			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G		
<b>Local expert</b>	YES (India)		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.2 & TA 3.1)		
<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	15/04/2021
<b>Approved by</b>	Anshika Gupta	<b>Date</b>	15/04/2021

Competence Statement			
<b>Name</b>	Vaishali Vatsa		
<b>Education</b>	M.Sc. (Environmental Studies and Resource Management), TERI University		
<b>Experience</b>	4 months		
<b>Field</b>	Climate Change		
Approved Roles			
<b>Team Leader</b>	NO		
<b>Validator</b>	Yes		
<b>Verifier</b>	Yes		
<b>Methodology Expert</b>	NO		
<b>Local expert</b>	NO		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	NO		
<b>TA Expert (X.X)</b>	NO		
<b>Trainee</b>	NO		
<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	30/12/2019
<b>Approved by</b>	Anshika Gupta	<b>Date</b>	02/01/2020

Competence Statement			
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<b>Name</b>	Kumden Nanbal Luka		
<b>Country</b>	Nigeria		
<b>Education</b>	B.tech. in Urban and Regional Planning		
<b>Experience</b>	1+ years		
<b>Field</b>	Environment; Urban-Rural planning		
<b>Approved Roles</b>			
<b>Team Leader</b>	No		
<b>Validator</b>	No		
<b>Verifier</b>	No		
<b>Methodology Expert</b>	No		
<b>Local expert</b>	Yes (Nigeria)		
<b>Financial Expert</b>	No		
<b>Technical Reviewer</b>	No		
<b>TA Expert</b>	No		
<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	23/11/2018
<b>Approved by</b>	Anshika Gupta	<b>Date</b>	23/11/2018

<b>Competence Statement</b>			
<b>Name</b>	Riya Sharma		
<b>Education</b>	M.Sc. Biodiversity & Conservation		
<b>Experience</b>			
<b>Field</b>	Climate Change & Environment		
<b>Approved Roles</b>			
<b>Team Leader</b>	NO		
<b>Validator</b>	NO		
<b>Verifier</b>	NO		
<b>Methodology Expert</b>	NO		
<b>Local expert</b>	NO		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	NO		
<b>TA Expert (X.X)</b>	NO		
<b>Trainee</b>	YES		
<b>Reviewed by</b>	Deepika Mahala (Quality Manager)	<b>Date</b>	19/08/2021
<b>Approved by</b>	Ashok Gautam (Technical Manager)	<b>Date</b>	25/08/2021

<b>Competence Statement</b>			
<b>Name</b>	Ashok Gautam		
<b>Country</b>	India		
<b>Education</b>	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
<b>Experience</b>	16 Years +		
<b>Field</b>	Energy, Climate Change & Environment		
<b>Approved Roles</b>			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		

<b>Verifier</b>	YES		
<b>Methodology Expert</b>	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AMS III.AR, AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B, ACM0016		
<b>Local expert</b>	YES (India)		
<b>Financial Expert</b>	YES		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
<b>Reviewed by</b>	Deepika Mahala	<b>Date</b>	13/01/2022
<b>Approved by</b>	Kaviraj Singh	<b>Date</b>	13/01/2022

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	GS	GS Principle & Requirements	Version 1.2	Others
2.	GS	GS Validation & Verification Body Requirements	Version 2.0	Others
3.	UNFCCC	Standard: CDM PS for PoA	Version 3.0	Others
4	UNFCCC	Standard: CDM VVS for PoA	Version 3.0	Others
5	CME	Monitoring report	Version 5.0 dated 06/10/2022	CME
6	GS	Monitoring report template	Version 1.1	Others
7	GS	Template Guide Monitoring report	Version 1.1	Others
8	GS	Emission Reductions from Safe Drinking Water Supply	Version 1.0	Others
9	CME	PoA-DD	Version 5.0 dated 25/05/2022	CME
10	CME	VPA-DDs GS11259, GS11260, GS11261, GS11262, GS11263, GS11264, GS11265, GS11266, GS11267, GS11268, GS11269, GS11270, GS11271, GS11272, GS11273, GS11274, GS11275, GS11276, GS11277, GS11278, GS11279, GS11280, GS11281, GS11282, GS11283, GS11284, GS11285, GS11286, GS11287, GS11288	Version 5.0 dated 10/06/2022	CME
11	GS	GS Programme of Activities requirements	Version 1.2	Others
12	GS	Community Services Activity requirements	Version 1.2	Others
13	UNFCCC	Standard for Sampling and surveys for CDM project activities and programmes of activities	Version 9.0	Others
14	GS	COVID 19: Interim measures	-	Others
15	CME	ER calculation sheet	Version 5.0 dated 06/10/2022	CME
16	CME	Table 2.1.1, Nigeria Demographic and Health Survey 2018, Report	October 2019	CME
17	CME	Nigeria Multiple Indicator Cluster Survey 2016-17	February 2018	CME
18	Medentech	Manufacturer's specifications documents	13/05/2021	CME
19	CME	WQT Training certificates	2021	CME
20	CME	Training attendance records	09/09/2021	CME
21	CME	Filled Monitoring survey forms	-	CME
22	CME	Hygiene Awareness Campaign Report	-	CME
23	CME	Baseline survey sheet	-	CME
24	IPCC	IPCC default value for wood and charcoal: IPCC 2006 Guidelines for National Greenhouse gas inventories	2006	Others
25	C4 EcoSolutions	C4 EcoSolutions. Calculations of the fraction of non-renewable biomass ( $f_{NRB}$ ) Nigeria	-	CME
26	GS	Deviation request form	07/12/2021	CME
27	Google	Google maps	-	Other
28	CME	WPS distribution Database	-	CME
29	CME	Purchase order	-	CME
30	CME	Salesforce residual capacity calculator	-	CME

31	CME	Delivery notes	-	CME
32	CME	School academic calendar	-	CME
33	CME	Photo of UID on WPS unit	-	CME
34	CME	Photo of water quality test	-	CME
35	CME	VPA implementer and CME contract	30/06/2021	CME
36	VPA Implementer	Statement of Employees at Impact Water	-	VPA Implementer
37	CME	Random number generator screenshots	-	CME

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

**Table 1. Remaining FAR from validation and/or previous verification**

<b>FAR ID</b>	01	<b>Section no.</b>	E.2.1	<b>Date</b> : 15/08/2022
<b>Description of FAR</b>				
PD shall address following FARs raised at the GS design certification review round:				
The following requirements as indicated in the Deviation Request Form (dated 07/12/2021) shall be followed during the first monitoring period:				
<ol style="list-style-type: none"> <li>1. The stratified random sampling approach applied for sample size calculation for the monitoring survey must meet all the requirements under Appendix 3 of Guideline: Sampling and surveys for CDM project activities and programmes of activities.</li> <li>2. Continuity in the project's monitoring activities is maintained, and PD can justify that no monitoring gaps exist (especially for SDG parameters) within the Monitoring Period(s). However, if gap(s) exist, the project shall justify that conservative approach(es) have been applied in line with section 3 of the Deviation Approval Requirements and Procedures (version 1.1) and overarching GS principles (as applicable).</li> </ol>				
The PD shall document the deviation request, its implications, and GS' decision in the appropriate section of the Monitoring Report (for the relevant MP). The verifying VVB shall, through appropriate means at its disposal, evaluate the Project's compliance with the above condition(s) and provides its opinion in the Validation and Verification Report.				
<b>Project participant response</b>				<b>Date</b> : DD/MM/YYYY
-				
<b>Documentation provided by project participant</b>				
-				
<b>VVB assessment</b>				<b>Date</b> : 16/08/2022
<ol style="list-style-type: none"> <li>1. Section D.4 Implementation of sampling plan of the MR has been reviewed and it was found that PD has correctly applied the sampling guidelines and followed the applied CDM Guideline: Sampling and surveys for CDM project activities and programmes of activities. Therefore, finding stands closed.</li> <li>2. PD shall maintain the continuity in the project's monitoring activities and will monitor SDG parameters without monitoring gap.</li> </ol>				
Section B.1.1 of the MR included the FAR from GS Deviation request. The response added by PD was reviewed and assessed in the verification report.				
VVB concluded that all the FARs raised during GS Design Certification review have been addressed by PD and already included in the relevant section of MR. The same has been assessed and included in the verification report.				

<b>FAR ID</b>	02	<b>Section no.</b>	E.1.2	<b>Date</b> : 09/02/2022
<b>Description of FAR</b>				

Below is the FAR raised in the deviation form for the verifying VVB/PD for the first monitoring period:

The PD shall ensure that no systemic bias exists in the usage of chlorine tablets which might be leading to an overestimation of emission reduction. If a bias is identified, the PD must apply a conservative approach and shall also propose a revision to the monitoring plan to ensure a continuous supply of UltraTAB. The verifying VVB (through the end-user database and onsite verification) ensure that the PD meets the mentioned requirement and is following a conservative approach.

**Project participant response** **Date : 13/02/2022**

The programme does not include any systemic bias wrt to usage of chlorine tablets. For each beneficiary school / institution, the number of UltraTAB packs supplied, during a monitoring period is monitored with their product IDs to accurately determine the total treatment capacity supplied. Further, the Impact Water customer care team at regular intervals check with the beneficiary schools / institutions regarding the supply status to ensure continuity. The schools also have access to the Impact Water contact details which is used in case reinforcements are needed thereby ensuring continuity.

Further, the ER calculation approach adopted in the project ensures that credits are claimed only for the period for which the school / institution is operational and has treatment supplies available. As a conservative measure, if there is a supply shortfall in a school / institution, the VERs calculated are limited by the available treatment capacity. This ensures that any period affected by dis-continuity in the supplies is not accounted in the emission reductions. Hence PD has ensured that no systemic bias exists in the usage of chlorine tablets/cartridges and there is no over-estimation of ERs.

**Documentation provided by project participant**

Deviation form

**VVB assessment** **Date: 15/02/2022**

The verification team has assessed the ER calculation sheet and supportive documents shared by CME. The distribution and installation date of WPS system UltraTab and its resupply date has been clearly given in the 'installation database' worksheet of ER calculation sheet. the supply of UltraTab packs were confirmed from sampled institutions during remote audit surveys with end-users. Therefore, no systemic bias exists in the usage of chlorine tablets. Further, CME has clarified that there is no overestimation of ERs and calculation of ERs has been done conservatively, only for the period for which the school / institution is operational and has treatment supplies available.

FAR#02 has been properly addressed by CME and therefore FAR stands closed.

**Table 2. CL from this verification**

**CL ID** 01 **Section no.** E.2.1 **Date : 27/01/2022**

**Description of CL**

The verification team found following issue related to supply/ installed quantity date of below listed institution salesforce ID. Below data were retrieved from 'installation database' and 'monitoring samples' worksheets of the ER sheet, and further verified from the survey forms and purchase order forms of respective institutions selected for verification audit.

Sample with inconsistent dates						
Institution Salesforce ID	Institution name	IW System type	Date of last maintenance (monitoring samples worksheet)	Supply/ installation date (Installation database worksheet)	Installation date as per purchase order form	
N1826413	Future Ambassador International Nursery/Primary School	UltraFlo	13/04/2021	18/03/2020	08/03/2019	
N1835008	O & A NURSERY AND PRIMARY SCHOOL, IKENNE	UltraFlo	28/06/2021	17/03/2020	05/11/2018	
N1835011	CLASSIQUE ROYAL KIDS ACADEMY	UltraFlo	24/05/2021	17/03/2020	07/12/2018	

	IKENNE				
N1835907	TEELON INTERNATIONAL SCHOOL	UltraFlo	01/07/2020	17/03/2020	05/10/2018
Sample with consistent date below:					
N1833240	FUNMEG NEW LIFE NUR/PRY SCHOOL	UltraFlo	03/06/2021	23/10/2018	23/10/2018

The installation date of IW system mentioned in the survey form was confirmed by reviewing purchase order form. the supply/ installation date column provides date of installation and/or last date of supply (if made, any).

In the case of Institution N1826413, the IW system was installed on 08/03/2019. The institution received re-supply only once on the date of 13/04/2021 which is the date of last maintenance as per the monitoring samples worksheet. CME shall clarify the date under Supply/ installation date (Installation database worksheet) has been determined as for?

Similarly, for institutions with ID N1835008, N1835011, and N1835907, supply/installation date given in 'installation database' worksheet is unclear to the verification team.

**Project participant response** **Date : 03/02/2022**

Please refer the relevant columns in the ER calculator:

Description	ER sheet Reference	Justification
Date of last maintenance	Worksheet – Monitored samples, column T	This column refers to question 2.2 of the monitoring survey questionnaire form. At the time of conducting ex-post sampling surveys, it is cross-checked if the institution has been receiving regular supplies / maintenance. The latest (most recent) date of receiving supply / maintenance, as reported by the school representative <u>at the time of survey</u> has been reported under column T.
Supply/ installation date	Worksheet – Installation database, column O	This column specifies the date of last supply received <u>before the starting of the monitoring period</u> . In case, the system is installed during the monitoring period, then column O represents the date of installation for such systems.
Installation date as per purchase order form	Not included in the ER sheet.	This information is deemed irrelevant for ER calculations. The date of initial installations of systems (unless newly installed) is not required for ER calculations. Instead, date of last supply / maintenance is important to ensure continuity of system.

For N1826413, as explained above, please note the following:

13/04/2021	18/03/2020	08/03/2019
Date of most recent supply at the time of monitoring survey (16/09/2021)	Date of most recent supply prior to start of monitoring period (01/01/2021)	Date of initial installation of the system in the school.

The same is true for all other systems referred by the VVB team in CL above.

**Documentation provided by project participant**

**VVB assessment** **Date: 09/02/2022**

VVB has accepted the justification provided by CME. Date of last maintenance (given in monitoring samples worksheet) is the latest (most recent) date of receiving supply / maintenance, as reported by the school representative at the time of survey, and Supply/ installation date (Installation database worksheet) is the date of last supply received before the starting of the monitoring period. CL#01 stands closed.

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	E.3.1, E.5.1, E.9	<b>Date</b>	27/01/2022
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Description of CAR	
<p>1. Expiry date of filter and system are mentioned for Ultra Tab. CME shall clarify if the Ultra Tab system can have two different expiry dates?</p> <p>The life span/ expiry of the system for both Ultra FLO and Ultra Tab mentioned on page 18 of the MR(20 years) are inconsistent with the VPA DD(30 years).</p>	
<p>2. The MR refers to Kenya for several parameters like <math>x_f</math>, <math>EF_b</math>, <math>f_{CO_2}</math>, Water sources in the project boundary, Stove technologies used in the project boundary while the MR for batch 1 cover VPA 1 - 30 are implemented in Nigeria.</p>	
<p>3. The year in the date of MR submitted is 2021. CME shall correct the document date.</p>	
<p>4. For parameter, <math>C_b</math>, the value mentioned in the MR is 4.17% while the value in the VPA DD for the parameter is 4.71%. CME shall correct the inconsistency.</p>	
<p>5. Under section number F of the MR, reference to GS PoA-KPID section E.2 has been mentioned. However, section E.2. of GS PoA KPID was found to be irrelevant to the safeguard reporting/principles.</p>	
Project participant response	Date : 03/02/2022
<p>1. The expiry date of the UltraTAB refers to expiry date of chlorine tablets from the date of manufacturing, which is 5 years. However, the lifetime of system is never ending and has been considered as 30 years as a conservative measure. Every-time a school receives a new supply of TAB pack, the lifetime of the system is automatically deemed renewed, the supplies being a consumable. In case of any damage to the water storage tank, the same can be replaced thereby not constraining lifetime of the system. Hence the technical lifetime of the system automatically gets extended every-time supplies are made.</p> <p>The life span/ expiry of the system for both Ultra FLO and Ultra Tab mentioned in the MR has been revised as per VPA-DD.</p>	
<p>2. Reference to Kenya, mentioned for several parameters, has been removed from the MR. Revised MR is being submitted</p>	
<p>3. Year of completion date of the monitoring report has been revised in MR.</p>	
<p>4. The value of parameter <math>C_b</math> has been corrected in MR as per VPA-DD.</p>	
<p>5. As per section E.2 of the PoA-DD mitigation measure to the monitoring plan for any of the safeguarding principles is not required. Hence reporting on the safeguarding principle in section F of the MR is deemed not applicable. Reference of section E.2 of the PoA-DD has been mentioned in section F of the MR to substantiate the above-mentioned statement.</p>	
Documentation provided by project participant	
VVB assessment	Date: 09/02/2022
<p>1. In the section D.1, under parameter "expected technical life of project technology" life span/ expiry of filter and life span/ expiry of system is given which represent expiry date of chlorine tablets and lifetime of system considered, respectively. Also, the lifespan of a system has been revised to 30 years which is found consistent with the information provided in VPA-DD.</p>	
<p>2. CME has revised the source of data as Nigeria Schools/ institution in parameters Water sources in the project boundary, Stove technologies used in the project boundary, <math>x_f</math>, <math>\eta_{wb}</math>.</p>	
<p>3. Year of completion date of the monitoring report has been revised to 03/02/2022 in the monitoring report version 2.0.</p>	
<p>4. The value of parameter <math>C_b</math> has been revised to 4.71% which is the correct value as per the VPA-DD.</p>	
<p>5. According to the monitoring report version 1.1 template guide, Section F requires "Information on any assessment questions answered 'Potentially' or where Requirements call for regular re-assessment". Since the mitigation measure to the monitoring plan for any of the safeguarding principles is not required as reported in the section E.2 of the PoA-DD, the justification has been accepted.</p>	
All the points have been addressed and therefore CAR#01 stands closed.	

<b>CAR ID</b>	02	<b>Section no.</b>	E.5.2	<b>Date :</b> 27/01/2022
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>1. For the parameter, Water hygiene education campaigns, it is not clear how the sample size calculation was done? Whether the number 100 mentioned on page 24 of the MR is the total monitored samples or the required number of samples as the total numbers of samples covered as 117 as per column BF of worksheet 'monitored sheet', ER sheet.</li> <li>2. Not all monitored parameters are listed under section D.3.of the MR.</li> <li>3. Under column W, Available treatment capacity at the start of Monitoring Period / Installation (Ltrs) are punched values. CME shall provide supportive to verify the values.</li> </ol>				
<b>Project participant response</b>				<b>Date :</b> 03/02/2022
<ol style="list-style-type: none"> <li>1. Water hygiene campaigns were conducted as part of the project monitoring. For 117 samples using the script provided at the start of questionnaire form, hygiene awareness was raised. Questions related to safe water storage facility, handling and water borne diseases were also asked from sampled users via the project monitoring survey questionnaire to collect feedback in hygiene related aspects.</li> <li>2. All monitored parameters have now been listed under section D.3 of the MR. Revised MR is being submitted.</li> <li>3. "Available treatment capacity at the start of Monitoring Period / Installation (Ltrs)" value, mentioned in column W of 'installation database' worksheet, has been directly derived from the sales force database.</li> </ol>				
<b>Documentation provided by project participant</b>				
GS11189 VPA 01-30 Nigeria WPS - MP1 ER sheet v2.0 03022022				
<b>VVB assessment</b>				<b>Date:</b> 09/02/2022
<ol style="list-style-type: none"> <li>1. CME has revised the sample size of water hygiene education campaigns to 117 which the sample size of project survey.</li> <li>2. Section D.3 of the revised monitoring report 2.0 has been reviewed and it was found that Parameter – water hygiene education campaigns, DN<sub>p,y</sub> is still missing from the parameter table.</li> <li>3. Sales force database of the institutions sampled for remote site audit has been provided. The verification team cross-check the information provided in 'installation database' worksheet with sales force database and found correct.</li> </ol> <p>Since point 2 of CAR#02 is still not addressed properly, CAR stands open.</p>				
<b>Project participant response</b>				<b>Date :</b> 11/02/2022
<ol style="list-style-type: none"> <li>2. Parameters, water hygiene education campaigns and DN<sub>p,y</sub> have now been added to section D.3 of the MR.</li> </ol>				
<b>Documentation provided by project participant</b>				
<b>VVB assessment</b>				<b>Date:</b> 15/02/2022
CME has revised the section D.3 of the MR and has added all the monitoring parameters in the parameter table. Since all the points are addressed, CAR#02 stands closed.				

<b>CAR ID</b>	03	<b>Section no.</b>	E.6	<b>Date :</b> 27/01/2022
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>1. As per guidelines given for section D.4 in the monitoring report template guide version 1.1, CME shall include following information: <ol style="list-style-type: none"> <li>(a)Description of implemented sampling design;</li> <li>(b)Collected data;</li> <li>(c)Analysis of the collected data;</li> <li>(d)Demonstration that the required confidence/precision level has been met;</li> <li>(e)Demonstration that the samples were randomly selected and are representative of the population</li> </ol> <p>Information given in the section D.4 of monitoring report is not inline with the above guidelines.</p> </li> <li>2. The CME has not followed Guideline: Sampling and surveys for CDM project activities and programmes of activities and Standard "Sampling and surveys for CDM project activities and programmes of</li> </ol>				

activities” and sought deviation for the entire crediting period. CME is requested to provide the evidence for the same as the deviation is not available on GS registry.	
<b>Project participant response</b>	<b>Date : 03/02/2022</b>
<p>1. Information given in the section D.4 of monitoring report has been revised to be in line with the monitoring report template guide version 1.1. Revised MR is being submitted.</p> <p>2. CME had sought a deviation on the sampling approach mentioned in para 4.2.2 and on page 51 for parameter SDWS 27 of the monitoring methodology. The adopted sampling approach is in compliance with the para 12(a)(iii), 13(b),13(c) and 14 of the “Standard: Sampling and surveys for CDM project activities and programmes of activities”, version 9.0 and also the sample size was calculated using equations (1), (2), (3), (4) and (9) of Appendix 3 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0. Thus, the deviation is from the methodology and not from the Guideline: Sampling and surveys for CDM project activities and programmes of activities and Standard “Sampling and surveys for CDM project activities and programmes of activities”. The deviation approved by GS is being submitted.</p>	
<b>Documentation provided by project participant</b>	
<p>1. GS11189 VPA 01-30 Nigeria WPS - MP1 ER sheet v2.0 03022022</p> <p>2. GS11189-Deviation-Request-Form_TAC decision</p>	
<b>VVB assessment</b>	<b>Date: 09/02/2022</b>
<p>1. CME has revised the section D.4 in line with the requirements given in section D.4 in the monitoring report template guide version 1.1. Sampling plan reported in the monitoring report version 2.0 is found correct and consistent.</p> <p>2. Approved Deviation Request Form dated 07/12/2021 has been shared by the CME.</p> <p>CAR#03 stands closed.</p>	

**Table 4. FAR from this verification**

<b>FAR ID</b>	01	<b>Section No.</b>		<b>Date : 17/10/2022</b>
<b>Description of FAR</b>				
The VVB involved in subsequent verification shall ensure that continuity in the project’s monitoring activities is maintained, and PD can justify that no monitoring gaps exist (especially for SDG parameters) within the Monitoring Period(s). However, if gap(s) exist, the project shall justify that conservative approach(es) have been applied in line with section 3 of the Deviation Approval Requirements and Procedures (version 1.1) and overarching GS principles (as applicable).				
<b>Project participant response</b>				<b>Date : DD/MM/YYYY</b>
<b>Documentation provided by project participant</b>				
<b>VVB assessment</b>				<b>Date: DD/MM/YYYY</b>