Validation report form for inclusion of voluntary project activities

Gold Standard for Global Goals

BASIC INFORMATION		
Title and GS reference number of the programme of activities (PoA)	GS11189: Improved Cookstove And Safe Water Programme	
Version number of the validation report	3.0	
Completion date of the validation report	12/04/2024	
Title and reference number of each VPA to be included	**VPA Ref. no.**	**Title**
	GS 12390 to GS 12420	GS12390: Improved Cookstove and Safe Water Programme – Nigeria - VPA 74 to GS12420: Improved Cookstove and Safe Water Programme – Nigeria – VPA 104
Version numbers of the VPA-DDs to which this report applies	VPA 74 to VPA 104: Version 5.0, dated 09/04/2024	
Applied methodologies and standardized baselines for each CPA	**VPA no.**	**Applied methodologies**
	VPA 74 to VPA 104	Emission Reduction from Safe Drinking Water Supply, Version 1.0 – 03/05/2021
Sectoral scopes for each CPA	**VPA no.**	**Sectoral scopes (indicate mandatory and conditional sectoral scopes)**
	VPA 74 to VPA 104	Sectoral Scope: 3
Coordinating/managing entity (CME)	Impact Carbon LLC	
Host Parties	Nigeria	

Estimated SDG Impacts	**SDGs**	**Estimated Annual Average** **VPA 74 to VPA 104**	**Unit**

	SDG 13	58,192	tCO_2e
	SDG 1 (SDG Indicator 1.4.1)	725	Number
	SDG 3 (SDG Indicator 3.9.2)	90%	Percent
	SDG 6 (SDG Indicator 6.1.1)	725 90%	Numbers Percent
	SDG 7 (SDG Indicator 7.1.2)	90%	Percent
	SDG 8 (SDG Indicator 8.5.1)	19	Number
Name and UNFCCC reference number of the VVB	Earthood Service Private Limited E-0066		
Name, position and signature of the approver of the validation report	 Dr. Kaviraj Singh, Managing Director		

SECTION A. Executive summary

The purpose of the VPAs is to provide safe drinking water by the help of low GHG Water Purification Technologies (WPS). All the VPAs will use carbon finance to support local partners engaged in operation, sales and distribution and maintenance of various WPS technologies. The VPAs are being submitted for inclusion under the registered PoA under GS4GG (PoA GS 11189) programme and the Coordinating/managing entity of the PoA is Impact Carbon LLC and the VPA Implementor is Impact Water LLC. Details of all the VPAs to be included under the PoA in this validation are given below:

Parameter	Validated information
GS ID of the VPAs to be included	GS12390 (VPA 74) to GS12420 (VPA 104)
Title of the VPAs	Improved Cookstove and Safe Water Programme – Nigeria - VPA 74 to Improved Cookstove and Safe Water Programme – Nigeria – VPA 104
Methodology applied	**VPA 74 to VPA 104:** Emission Reduction from Safe Drinking Water Supply, Version 1.0
Crediting period	5 years, Renewable

VPAs aim at installing the WPS to the population of Nigeria and the targeted population of VPAs GS12390 (VPA 74) to GS12420 (VPA 104) are schools and institutions present within the geographical boundary of Nigeria. The targeted population uses traditional methods of boiling water using non-renewable/fossil fuel resources. This traditional technology includes three stone fired cookstove, that completely relies on non-renewable/fossil fuel which is the main source of indoor pollution and can cause various respiratory disorders.

Start date of VPA GS12390 (VPA 74) to GS12420 (VPA 104) is the sale of first water purification system under the VPAs. All the VPAs (VPA 74 to VPA 104) under the PoA has not yet started their implementation. Expected Start date and Expected Crediting period and start for VPA GS12390 (VPA 74) to GS12420 (VPA 104) are:

VPA	Start date	Crediting Period
VPA 74	08/01/2024	08/01/2024 to 07/01/2029
VPA 75	08/01/2024	08/01/2024 to 07/01/2029
VPA 76	08/01/2024	08/01/2024 to 07/01/2029
VPA 77	08/01/2024	08/01/2024 to 07/01/2029
VPA 78	01/02/2024	01/02/2024 to 31/01/2029
VPA 79	01/02/2024	01/02/2024 to 31/01/2029
VPA 80	01/02/2024	01/02/2024 to 31/01/2029
VPA 81	01/02/2024	01/02/2024 to 31/01/2029
VPA 82	01/03/2024	01/03/2024 to 28/02/2029
VPA 83	01/03/2024	01/03/2024 to 28/02/2029
VPA 84	01/03/2024	01/03/2024 to 28/02/2029
VPA 85	01/04/2024	01/04/2024 to 31/03/2029
VPA 86	01/05/2024	01/05/2024 to 30/04/2029
VPA 87	01/05/2024	01/05/2024 to 30/04/2029
VPA 88	01/05/2024	01/05/2024 to 30/04/2029
VPA 89	01/06/2024	01/06/2024 to 31/05/2029
VPA 90	01/06/2024	01/06/2024 to 31/05/2029
VPA 91	01/06/2024	01/06/2024 to 31/05/2029
VPA 92	01/06/2024	01/06/2024 to 31/05/2029
VPA 93	01/07/2024	01/07/2024 to 30/06/2029
VPA 94	01/07/2024	01/07/2024 to 30/06/2029
VPA 95	01/09/2024	01/09/2024 to 31/08/2029
VPA 96	01/09/2024	01/09/2024 to 31/08/2029

VPA 97	01/09/2024	01/09/2024 to 31/08/2029
VPA 98	01/09/2024	01/09/2024 to 31/08/2029
VPA 99	01/10/2024	01/10/2024 to 30/09/2029
VPA 100	01/11/2024	01/11/2024 to 31/10/2029
VPA 101	01/11/2024	01/11/2024 to 31/10/2029
VPA 102	01/11/2024	01/11/2024 to 31/10/2029
VPA 103	01/11/2024	01/11/2024 to 31/10/2029
VPA 104	01/11/2024	01/11/2024 to 31/10/2029

VPA GS12390 (VPA 74) to GS12420 (VPA 104) fall under the category of Regular as per the Project Cycle and GS Principle and Requirements. VPA GS12390 (VPA 74) to GS12420 (VPA 104) has a crediting period of 5 years, renewable twice (Total crediting period of 15 years). The start date and length and type of the crediting period is in-line with the PoA description in PoA-DD/4/ and GS PoA Requirements/11/.

Scope of Validation

The scope of the services provided by Earthood Services Private Limited is to perform validation of the VPAs GS12390 (VPA 74) to GS 12420 (VPA 104) under the PoA. The scope of validation is to assess the claims and assumptions made in the VPA DD against the GS4GG and UNFCCC's CDM criteria, including but not limited to, applied methodology Emission from Safe Drinking Water Supply, Version 1.0/5/, GS4GG Principle & Requirements ver.1.2/14/, GS4GG Programme of Activities Requirements ver. 2/11/, Community Services Activity Requirements ver 1.2/7/., GHG Product Requirements/8/, GHG emissions reductions sequestration and product requirements v2/27/.

Validation Process

The validation process is undertaken by the validation team that involves the following:

1. The desk review of documents and evidence submitted by the project participant in the context of GS4GG criteria along with the reference CDM rules and guidelines issued by CDM EB,

2. A remote audit to assess the baseline practices followed by interviews with CME and the VPA Implementers,

3. Reporting audit findings concerning clarifications and non-conformities and the closure of the findings, as appropriate,

4. Preparing a draft validation report for the inclusion of VPA complying with the Gold Standard requirements.

An independent Technical Review team reviews the validation report prepared by the validation team. The final validation report that is accepted by Technical Reviewer is then approved on behalf of Earthood Services Private Limited and processed further as per GS4GG procedures.

Conclusion

The review of the VPA DDs, supporting documentation and subsequent follow-up actions have provided Earthood with sufficient evidence to determine the fulfilment of stated criteria. Earthood is of the opinion that the VPAs titled "Improved Cookstove and Safe Water Programme – Nigeria - VPA 74 to Improved Cookstove and Safe Water Programme – Nigeria – VPA 104" as described in the final VPA DDs/9/ meet all relevant requirements of GS4GG, is in accordance with the laws and regulations of the host country Nigeria and has correctly applied the methodology "Emission reduction from Safe Drinking Water Supply", Version 1.0/5/ for safe drinking water. Therefore, the VPAs are being recommended to GS4GG for request for inclusion.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

S 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	Remote Audit inspection	Interviews	Validation findings
1.	Team Leader	IR	Varshney	Divij	Central office	Y	Y	Y	Y
2.	Technical Expert (TA 3.1), GS Approved Auditor	IR	Varshney	Divij	Central office	Y	Y	Y	Y

B.2. Technical reviewer and approver of the validation report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g.name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	IR	Mahala	Deepika	Central office
2.	TA Expert to TR (TA 3.1)	IR	Mahala	Deepika	Central office
3.	Approver	IR	Singh	Kaviraj	Central office

SECTION C. Means of validation

C.1. Desk/document review

The validation of the Voluntary Project Activities (VPAs) is performed primarily as a document review of the VPA design documents for VPA GS12390 (VPA 74) to GS12420 (VPA 104), Emission Reduction Calculation sheet/28/, the baseline survey forms/30/ and independent research on several platforms. The cross checks between information provided in the VPA-DDs/9/ and information from sources other than those used (if available), the validation team's sectoral or local expertise and, if necessary, independent background investigations.
The complete list of documents/evidence assessed by validation team is included under Appendix 3.

C.2. On-site inspection

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

During the current validation, the remote audit was conducted for the validation of inclusion of the VPA 74 to 104 under the registered PoA GS 11189. As per paras 5.12.6 of the PoA Requirements, "The CME shall take into consideration the fact that a site visit by the VVB may be required when a new technology/methodology is introduced into the PoA (if not completed at the time of registering the PoA)". It has been confirmed that CME has introduced water purification systems in the targeted population of schools and institutions of Nigeria, the WPS technology implemented is the same as the registered PoA and design certified VPAs 01 – 30.

Hence, no new technology has been introduced in the validating VPAs (VPA 74 – 104). Therefore, as per para 5.12.6 of PoA Requirements has been conducted by the validating VVB. The remote audit included the interviews with the CME representatives and the CPA implementers.

C.3. Interviews

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	Turgesen	Mark	Global Development Director, Impact Carbon and Impact Water	04-12-2023	VPA Implementation, distribution and operational framework, Stakeholder consultation Implementation, Distribution records, database management PoA-DD, Methodology applicability, Monitoring plan, Sampling methodology, ER calculations PoA-DD, Methodology applicability, Monitoring plan, Sampling methodology, ER calculations Data analysis, QA/QC	Divij Varshney
2.	Kumar	Ritesh	Climate Secure India Private Limited	04-12-2023		Divij Varshney
3.	Lohia	Rohit	Climate Secure India Private Limited	04-12-2023		Divij Varshney
Interview of Local Stakeholders						

1.	-	Regina	Local Stakeholder	17-11-2023	VVB Remote Audit	Divij Varshney
2.	-	Louis	Local Stakeholder	17-11-2023	VVB Remote Audit	Divij Varshney

Type of questions asked by the Team member

No.	Questions asked by Team member To Stakeholder participants	Nature of Responses Received
1.	Did you participate in the virtual stakeholder consultation and feedback round?	Positive
2.	The means of invitation	Positive
3.	Feedback given to the PoA and the included VPAs	Positive
4.	Evaluation of the feedback forms	Positive
5.	CME's resolution to the received feedback	Positive
6.	Grievance Mechanism	Positive

C.4. Sampling approach

CME Approach:

CME in its monitoring plan has mentioned to follow sampling procedures given in Emission reductions from Safe Drinking Water Supply, Version 1.0/5/ for determining the sample size of parameters corresponding to the VPA/technology. A confidence precision of 90/10 or 95/10 will be ensured by CME for meeting the annual/biennial monitoring criteria. The sampling approach undertaken by CME is duly explained under section B.7.2 of the VPA-DDs/9/, which has been assessed by the validation team and found to be correct and in-line to the applied methodology/5/.

VVB's Sampling approach:

The CME has conducted the baseline survey in Aug – Sept 2021 for the design certified VPAs (VPA 01 - 30), results of which has been used to establish the baseline scenario. The approach has been checked and found to be appropriate by the VVB since, it has been less than 3 years since the baseline survey was conducted and the results of the same has been validated and accepted by GS during the inclusion of VPA 01 – 30. Therefore, no sampling has been carried out to validate the baseline survey. Additionally, there is no implementation at the time of validation in the proposed VPAs, hence, there is no sales database to check the implementation and the baseline of the implemented technology. Hence, no sampling has been carried out for the proposed VPAs.

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

Areas of validation of compliance (SECTION D)	No. of CL	No. of CAR	No. of FAR
Titles of the VPAs and corresponding generic VPAs			
Compliance with VPA-DD form			
General description of the VPAs			
Application of methodologies and standardized baselines			
• Reference to methodologies and standardized baselines			
• Project boundary, sources and GHGs			
• Baseline scenario			

Estimation of emission reductions or net anthropogenic removals			
• Equations and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals			
• Data and parameters fixed ex ante	CL#01		
• Ex ante calculation of GHG emission reductions or net anthropogenic GHG removals	CL#02		
• Summary of ex ante estimates of GHG emission reductions or net anthropogenic GHG removals			
Monitoring plan			
• Data and parameters to be monitored		CAR#01 CAR#03	
• Description of the monitoring plan			
• Sampling Approach			
Additionality			
Start date, crediting period type and duration			
Environmental impacts			
Local stakeholder consultation		CAR#02	FAR#01
Remote Survey			
Eligibility for inclusion			
Safeguarding Principles			
Double counting			
GPS Location of units			
Implementation of the VPA			
Total	02	03	01

SECTION D. Validation findings

D.1. Proposed CPAs and corresponding generic VPAs

VPA title and reference number	Version number of the VPA-DD	Host Party	Version number of the PoA-DD into which the VPA is included
Improved Cookstove and Safe Water Programme – Nigeria - VPA74 GS12390	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA75 GS12391	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA76 GS12392	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA77 GS12393	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA78 GS12394	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA79 GS12395	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA80 GS12396	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA81 GS12397	5.0	Nigeria	5.0

Improved Cookstove and Safe Water Programme – Nigeria - VPA82 GS12398	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA83 GS12399	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA84 GS12400	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA85 GS12401	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA86 GS12402	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA87 GS12403	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA88 GS12404	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA89 GS12405	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA90 GS12406	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA91 GS12407	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA92 GS12408	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA93 GS12409	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA94 GS12410	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA95 GS12411	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA96 GS12412	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA97 GS12413	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA98 GS12414	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA99 GS12415	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA100 GS12416	5.0	Nigeria	5.0

Improved Cookstove and Safe Water Programme – Nigeria - VPA101 GS12417	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA102 GS12418	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA103 GS12419	5.0	Nigeria	5.0
Improved Cookstove and Safe Water Programme – Nigeria - VPA104 GS12420	5.0	Nigeria	5.0

D.2. Compliance with VPA-DD form

Means of validation	The VPA DDs/9/ have been prepared using the applicable version of GS VPA-DD template, i.e., version 2.3/10/. It has been checked from the GS website that the form used is appropriate and applicable for the VPA. Each section of the VPA-DD/9/ was also checked with the guidelines stated in the form/36/ and found to be fulfilling it.
Findings	No findings were raised.
Conclusion	The VPA-DDs /9/ are found to comply with the applicable form with all the sections filled are in line to the form guidelines/10/51/.

D.3. General description of the VPAs

Means of validation	The VPAs to be included in the PoA involve the installation/distribution of Water Purification System in Nigeria. VPA GS12390 to VPA 12420 (VPA 74 to VPA 104) are related to reduction of GHG emission and to provide clean drinking water to end-users. The CME of the VPAs is Impact Carbon LLC and VPA Implementor is Impact Water LLC. There is total 31 VPAs that are to be included in the host country of Nigeria. The geographical boundary of VPA is confined to be Nigeria through Interviews conducted with the CME's representatives/21/. The VPAs take forward the same goal as that of the PoA under which they seek inclusion. There are 31 VPAs included and implemented under the PoA are as follows: GS12390: Improved Cookstove and Safe Water Programme – Nigeria -VPA74 GS12391: Improved Cookstove and Safe Water Programme – Nigeria -VPA75 GS12392: Improved Cookstove and Safe Water Programme – Nigeria -VPA76 GS12393: Improved Cookstove and Safe Water Programme – Nigeria -VPA77 GS12394: Improved Cookstove and Safe Water Programme – Nigeria -VPA78 GS12395: Improved Cookstove and Safe Water Programme – Nigeria -VPA79 GS12396: Improved Cookstove and Safe Water Programme – Nigeria -VPA80 GS12397: Improved Cookstove and Safe Water Programme – Nigeria -VPA81 GS12398: Improved Cookstove and Safe Water Programme – Nigeria -VPA82 GS12399: Improved Cookstove and Safe Water Programme – Nigeria -VPA83 GS12400: Improved Cookstove and Safe Water Programme – Nigeria -VPA84 GS12401: Improved Cookstove and Safe Water Programme – Nigeria -VPA85 GS12402: Improved Cookstove and Safe Water Programme – Nigeria -VPA86 GS12403: Improved Cookstove and Safe Water Programme – Nigeria -VPA87 GS12404: Improved Cookstove and Safe Water Programme – Nigeria -VPA88 GS12405: Improved Cookstove and Safe Water Programme – Nigeria -VPA89 GS12406: Improved Cookstove and Safe Water Programme – Nigeria -VPA90 GS12407: Improved Cookstove and Safe Water Programme – Nigeria -VPA91 GS12408: Improved Cookstove and Safe Water Programme – Nigeria -VPA92 GS12409: Improved Cookstove and Safe Water Programme – Nigeria -VPA93 GS12410: Improved Cookstove and Safe Water Programme – Nigeria -VPA94

GS12411: Improved Cookstove and Safe Water Programme – Nigeria -VPA95
GS12412: Improved Cookstove and Safe Water Programme – Nigeria -VPA96
GS12413: Improved Cookstove and Safe Water Programme – Nigeria -VPA97
GS12414: Improved Cookstove and Safe Water Programme – Nigeria -VPA98
GS12415: Improved Cookstove and Safe Water Programme – Nigeria -VPA99
GS12416: Improved Cookstove and Safe Water Programme – Nigeria -VPA100
GS12417: Improved Cookstove and Safe Water Programme – Nigeria -VPA101
GS12418: Improved Cookstove and Safe Water Programme – Nigeria -VPA102
GS12419: Improved Cookstove and Safe Water Programme – Nigeria -VPA103
GS12420: Improved Cookstove and Safe Water Programme – Nigeria -VPA104

Technology:

The type systems implemented under the VPAs are as follows:

1. Water Purification System (WPS)

WPS is the only technology that is implemented under VPA 74 to VPA 104, the specification of the WPS technology mentioned in all the VPAs is cross-checked with the specification/33/ provided by the CME. The specifications are as follows:

Model	Technology Type	Lifetime	Removal of E. Coil
UltraFLO	Chemical	Expiry: 5 Years Capacity: Flo: 340,000 Ltrs Inline: 720,000 Ltrs	99 (2-log)
UltraTAB	Chemical	Expiry: 5 years Capacity: Big Pack: 48,000 Ltrs Small Pack: 10,000 Ltrs	99 (2-log)

Implementation status:

The WPS technology under VPA 74 to VPA 104 have been implemented and will start crediting under GS4GG as regular VPA in accordance with date of LSC in line with the GS Principle and requirements/14/. No implementation has been stated for the VPAs (VPA 74 to VPA 104) under the PoA. The crediting cycle length is 5 years and type of the crediting period is renewal twice for the VPAs, as per Paragraph 4.1.40 of Principles & Requirements (Version 1.2)/14/.

No-ODA

The VPA is not being funded by any Annex-I party which could be verified through the no ODA declaration provided by CME to the validation team/15/.

Grievance Mechanism:

According to GS4GG principle and requirements v1.2/14/ para 4.1.28, "If the Consultation is conducted after the start date, the Project Developer shall provide further explanation of how comments received during the consultation are taken into account and implement a Grievance Mechanism in line with the Stakeholder Consultation & Engagement Requirements."
The continuous Input or Grievance Expression Process Books is part of

	the project implementation and will be made available at various distribution sites. The stakeholder also has the option of contacting the CME via post or email to details provided below: **Impact Water** Global Impact H20 Innovations, Ltd. Plot 61, Adekunle Fajuyi Street, G.R.A. Ikeja, Lagos Nigeria **Contact Number:** +256 790 911 934 **Email:** info@impactcarbon.org All the details related to the management system and the grievance mechanism were confirmed from the CME representatives during the remote audit conducted on 04/12/2023/21/.
Findings	No Findings were raised.
Conclusion	The validation team confirms that the information provided is complete and correct concerning the description of technology and/or measures to be used, the description is as per the registered VPA DD and is following the GS4GG principles and requirement/14/ including a description of the purpose of the VPA. The validation team confirms that: 1. The validation team has assessed that the implementation and operation of the proposed VPAs, comply with the relevant GS4GG principles and requirements. 2. The data collection system meets the requirements of the applied methodologies and the other applied methodological regulatory documents. 3. The coordinating/managing entity has addressed the FARs identified during the GS preliminary review. Please refer to appendix 4 for details.

D.3.1. Assessment of the eligibility of the VPA under PoA

Means of validation

Paragraph 3 of the GS4GG Principles and Requirements/14/ includes the general criteria that applies to all the projects seeking Gold Standard Certification. The demonstration of the PoA meeting the eligibility criteria has been represented below:

Eligibility Criteria	Justification from CME	Means of Validation
Technology	**For WPS:** The WPS technologies under the VPA are in compliance with the national standards. **Supporting Evidence:** Technical specifications / official notification from approved agencies for Chlorination (UltraTAB / UltraFLO).	CME has submitted technical specifications/33/ of the project technology and letter that substantiates the compliance of WPS technology with national standard/44/. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (a)/14/.
Location	Each VPA will be located within the physical/geographical boundary of the PoA	The aim of the VPA/s is to provide safe drinking water to the schools and institutions in Nigeria

			(VPA 74 to VPA 104) as declared by CME under respective VPA-DDs/9/. The geographical boundary was confirmed against https://www.latlong.net/ and this is in line with para 3.1.1 (d) of Community Service Activity Requirements (Version 1.2)/7/. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (a)/14/.
	Additionality	Each VPA will satisfy the criteria for demonstrating additionality through one of the following options: **Option 1: As per Activity Requirement:** As per GS4GG Community services activity requirements, Version 1.2, Para 4.1.9, Projects that meet any of the following criteria are considered as deemed additional and therefore are not required to prove Financial Additionality at the time of design certification: (a) Positive list (Annex B of this document) (b) Projects located in LDC, SIDS, LLDC (c) Microscale projects **Option 2: CDM Tool** • Para 12 and 13 of Tool 19 (version 9.0); or • Para 10/Figure 1 of Tool 21	VPA aims at distribution of WPS in the institutions of Nigeria. Each of the WPS unit results in emission reductions less than 600 tCO_2e per annum, which has been verified through the Ex-ante ER calculation sheet/28/ and is found to be within the threshold as per para 1.1.3 of annex B of the CSA requirement version 1.2 /7/.

		(Version 13.1); or Para 11 of Tool 21 (Version 13.1)	
	De-Bundling	As per GS4GG Programme of activities requirements section 10.1.1, de-bundling provisions do not apply to Voluntary PoAs.	Not Applicable
	Double Counting	Each VPA will utilize identifiers for every appliance under the PoA to show that the appliance belongs to that specific PoA. The unique identifier will be designating each appliance as part of the PoA, and CME master distribution/installation records will ensure each sale is credited under only a single VPA.	The VPAs are located in Nigeria and is confirmed by the VVB during the remote survey conducted on 04/12/2023/21/. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (b)/14/. The various carbon registries have been checked by the Validation team to confirm that the VPA exclusively belong to the PoA. Furthermore, a declaration/22/ has been provided by the CME confirming about the provision to eliminate double counting. At the time of implementation, each WPS will be assigned a unique serial ID to enable the identification of the installed/ distributed WPS units belonging to the VPAs.
	History	VPAs are neither registered as project activities with other offset Schemes, included in other registered PoAs, nor the project activities that have been deregistered. unless transitioning to GS from other standard.	VPAs are not registered under any other PoA, which has been verified through checking the various registries like GS, CDM, VCS, GCC etc. and it is confirmed that VPAs are not registered in any other program, a declaration/23/ has also been submitted by the CME to confirm the

		same.
Start Date	Each VPA will prove that the start date of the VPA is on or after the start date of the PoA, or state that the VPA is claiming credits retroactively. As the project involves distribution/installation of WPS (distributed technology) the start date is the date of implementation of the first unit under the project.	The first date of the installation/crediting of WPS units will be the date of the commencement of the project for VPA 74 to VPA 104. The start date of VPA 74 to VPA 81 has been verified through the end-user agreement/44/. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (d)/14/. The start date of the VPAs will be checked through the end-user agreements.
Crediting Period	Each VPA will have a renewable crediting period.	Date and duration of all the VPAs is 5years and it is renewable twice.
Public Funding	Each VPA will confirm that it does not results in diversion of Official Development Assistance (ODA). Declaration by CME that the VPA does not involve any funding that results in diversion of ODA.	VPA are not receiving any external funding as per the ODA declaration/15/ submitted by the CME/VPA implementor.
CME Approval	Each VPA will prove it has received the approval of the CME of the PoA.	The CME approval letter/17/ has been submitted to provide evidence of CME's approval to all the VPAs.
Methodology	VPA will apply the GS methodology: "Emission Reductions from safe drinking water supply" Version 1.0 and adhere to all applicability conditions and other requirements of the methodology.	All the conditions of applicability of baselines & methodology have been explained in Section D.4 below.
Target Group	The target group of the PoA, and each included VPA, are schools and/or institutions: those that prior to the implementation of the PoA either used or	No Implementation has been done for the proposed VPAs. End-user agreement and sales database will be checked to show the end

		would have used, fossil fuels and/or non-renewable biomass to boil and purify water for drinking.	users are the Institutions in Nigeria. The supportive documents are found to be appropriate to check the targeted group for the VPAs. This is in accordance with GS4GG Principles and Requirements paragraph 3.1.1 (h)/14/.
	Sampling	VPA will adhere to the sampling requirements stipulated in "Standard for Sampling and surveys for CDM project activities and programmes of activities" version 09.0.	Sampling has been conducted on a VPA level. and follow the guidelines of Sampling and surveys for CDM project activities and programme of activities" (Version 09.0)/13/ Guidelines for Sampling & surveys for CDM project activities and programmes of activities" (Version 04.0)/32/.
	Stakeholder Consultation and Environmental Analysis	VPA will conduct a Local Stakeholder Consultation/ SFR, as applicable and adhere to the Environmental Impact Analysis requirements of the host country	Stakeholder Consultation report /42/ proves that all the VPAs are as per stakeholder's and Environmental guidelines. As per the Nigeria Environmental Impact Assessment (EIA) Decree 1992, this project does not fall under the category of mandatory requirement of Environmental Impact Assessment (EIA). Hence, EIA is not required for this project/45/.
	VER Ownership	Each VPA will assure ownership of the VERs is secured by the CME	VVB has reviewed the Sample of End-User agreement/18/ which are the evidence of VER ownership transfer to the VPA Implementor. Then, the ownership of the credits transferred

			to the CME through a contractual agreement between Impact carbon (CME) and Impact Water (VPA Implementor). Hence it has been confirmed that all the VER ownership has been transferred to CME.
	Meth threshold	Each WPS VPA will ensure that it will meet the small-scale thresholds and remain within those thresholds throughout the crediting period.	For WPS: According to Ex-ante ER sheets/28/, VPA-DDs/9/ the total emission for each VPA is 58,192 tCO2e that qualifies it as a small-scale project.
	SDG outcome assessment	The monitoring plan for SDG shall include: 1. reduction in smoke, PM, soot emissions after shifting to the project ICS 2. reduction in incidence of diarrhoea and water borne diseases etc. after shifting to the project WPS 3. Number of ICS/WPS distributed and operating. 4. Total Number of WPS distributed/installed under the project and % of WPS distributed/installed provide safe drinking water quality 5. Number of male/female persons hired. **6.** Fuel savings reported by users in the PoA after shifting to ICS	As per the VPA-DD (Section B.7), all the outcomes will be assessed and monitored accordingly. SDG indicators, its value and monitoring frequency is found to be in accordance with the VPA-DD/9/.
	Safeguarding Principles	Conducted at VPA level	Safeguarding principles are discussed individually under the section D and Appendix 1 of the VPA-DD/9/, all

			the principles are discussed along with the mitigation measures. The same has also been assessed in section E.1 of this report.
	Retroactive VPAs	Retroactive VPAs that are submitted to GS /SustainCert at a date later than one year from the VPA start date shall not be eligible for Gold Standard Certification.	Since, all the proposed VPAs under the PoA are regular VPAs as per the date of LSC/42/, and the implementation has not been started. The condition is found to be not applicable.
	CER Labelling	Projects in other standards seeking labelling of CERs under GS4GG shall demonstrate compliance with section 2.0, Annex B of GHG Emissions Reduction and Sequestration Product Requirements	Not applicable
	Conditions to be met in multi-country PoAs	Not applicable. Although the PoA is multi-country, a VPA shall remain limited to a singular country in the PoA and shall not include more than one country in the VPA boundary.	The project boundary is defined in the section A.2 of the VPA-DD/9/ and the entire project lies in the boundary of Nigeria, which has been verified though the remote site visit/21/.
Findings	No Findings were raised.		
Conclusion	The VVB has accepted and validated the general eligibility criteria that applies to all VPAs seeking Gold Standard Certification. The eligibility of the VPAs is found to be valid in accordance with the section 3.1.1 of GS4GG principles and requirements version 1.2/14/.		

D.4. Application of methodologies and standardized baselines

D.4.1. Reference to methodologies and standardized baselines

Means of validation

The methodology applied for the VPAs are Emissions reduction from Safe Drinking Water Supply, Version 1.0/5/

The applicability conditions of the methodology "Emission reductions from Safe Drinking Water Supply Version 1.0 – 03/05/2021"/5/ are validated below:

Applicability Criteria as per methodology	Justification from CME	Assessment
This methodology is	The VPA involves	The VPAs aim

	applicable to project activities that introduce a new, or rehabilitate an existing, zero-emission[1] or low-emission technology to supply safe drinking water.	distribution of Low GHG Emission Water Purification Systems ("WPS") in schools and Institutional premises that would have boiled water in the baseline.	at implementing WPS technologies in schools and Institutional premises that is replacing the requirement of boiling the water and reducing the GHG emission as confirmed through the interview of the CME's representative during the remote survey by the VVB.
	Technologies include school water treatment technologies (HWT), Institutional water treatment technologies (IWT), Community level water treatment technologies (CWT) and community water supply technologies (CWS).	The Project technology includes Institutional water treatment technologies (IWT).	The VPAs aims at providing safe water by using different technologies, all the technologies included are being distributed to the institutions based in Nigeria as confirmed during the remote audit /21/ and it was confirmed from the remote audit interviews that the project technologies include institutional water treatment technologies.
	Under this Methodology, a project's objectives are to reduce or avoid greenhouse gas emissions from boiling	The VPA involves distribution/installation of low greenhouse gas, Institutional	The VPA involves institutional water

[1] Zero emission technology refers here to emissions generated by technologies once installed within the targeted premises and operational – it does not refer to life cycle emissions such as upstream emissions associated with the production or delivery of the technology.

	unsafe drinking water in the baseline, and to supply drinking water that is safe for consumption when it enters the project schools or institutional premises. When the drinking water is treated in the school or institution (HWT or IWT), then the water supplied from the treatment technology should be safe. When the water is supplied or retrieved from a CWT or CWS directly to the premises of the school or institution, then the water entering the end-user premises should be safe.	water treatment technologies (IWT). These are point of use systems, located in the end user premises. These systems avoid GHG emissions from boiling unsafe drinking water in the baseline. Ex-post monitoring shall be conducted on sampling basis to demonstrate that the project systems deliver safe water. Emission reductions shall be accounted accordingly.	treatment technologies which are installed in the premises of the institutions and render safe water for drinking. The installation avoids boiling water as prevalent in the baseline. It was confirmed through the confirmation letter/25/ that the water from the systems is safe and boiling water for drinking is common in the baseline, which has been confirmed through the baseline survey results/30/. CME through the monitoring survey would ensure that the project systems deliver safe water.
	The methodology is applicable under the following conditions:	Please refer below for justifications:	

	a) Eligible school water treatment technologies (HWT), institutional water treatment technologies (IWT), and community level water treatment technologies (CWT) include bleach/chlorine, water filter (ceramic, sand, composite, membrane, etc.), UV disinfection, etc.	Examples of WPS technologies to be included in the VPA, but not limited to, are as follows: 1. Chemical disinfection (chlorine) – UltraTAB/ UltraFLO	CME will distribute the technology: chlorine disinfection (UltraTAB/ UltraFLO) under the VPA in the host country Nigeria which are under the eligible technologies under the methodology and hence, found to be appropriate. However, the VPAs have the provision to include more technologies.
	b) Eligible community water supply technologies (CWS) include new installation of new WPS hand-pumps, WPS hand-pumps rehabilitation, solar powered drinking water pumps, etc. Water pumps powered by fossil-fuel engines are not eligible, with the exception of backup fossil–fuel engines that are used for no more than 10% of operating hours (parameter SWDS 33).	Not applicable, as VPA involves distribution/installation of low greenhouse gas point of use Institutional water treatment technologies (IWT).	Not applicable. Since, VPA involves institutional water treatment technologies which are installed in the premises of the institutions.
	c) All projects involving CWT and CWS technologies must also include ongoing maintenance and repair of the project technology.	Not applicable, no CWT or CWS technologies are involved.	Not applicable. Since, VPA involves institutional water treatment technologies which are installed in the premises of the institutions.

	d) Where the project involves the rehabilitation of an existing technology, the project developer shall provide evidence that the existing technology is non-operational and that there is no planned maintenance or repair for at least 3 months after the date it became non-operational.	Not applicable, rehabilitation of existing technology is not envisaged in the VPA.	Not applicable. Since, VPA involves institutional water treatment technologies which are installed in the premises of the institutions.
	e) This methodology allows for project activities to include safe water treatment and/or supply technologies implemented for end-users in schools, and/or commercial premises such as shops or institutional premises including half or full day/boarding schools, prisons, army camps & refugee camps.	The VPA involves distribution/installation of low GHG, Institutional water treatment technologies (IWT) in schools and other Institutions in Nigeria.	VPAs are spread within geographical boundary of Nigeria and WPS units were found to be implemented in schools and other institutions of Nigeria. Since, the no implementation has been done for the VPAs, the same will be cross-checked at the time of verification of the VPAs.
	f) In cases where the safe water is retrieved at the CWT or CWS location, the water in its improved form shall be available within a distance of 1 km or less from the end-users, as demonstrated by satellite imaging or GPS coordinates[2] of each CWT or CWS	Not applicable, no CWT or CWS technologies are involved.	Not applicable. Since, VPA involves institutional water treatment technologies which are installed in the premises of the institutions.

[2] Acceptable formats for GPS coordinates include DMS (degrees, minutes and seconds), DMM (degrees and decimal minutes), and DD (decimal degrees).

		location. Alternatively, as a proxy, a total collection time of 30 minutes or less for a round trip, including queuing, using the travel modes of walking or pedaling may be demonstrated.		
		g) Project technology performance level (HWT and IWT): It shall be demonstrated based on report of laboratory testing 3 or official notification 4 that the project technology or equipment achieves either (i) the performance target classification 3-star or 2-star level, meaning "Comprehensive Protection," as per the WHO International Scheme to Evaluate Household Water Treatment Technologies (World Health Organization, 2011) or (ii) compliance with the national standard or guideline for school drinking water treatment technology; if no national guideline or standard is available, then the project technology shall comply with the WHO International	The project technologies meet compliance with the national standard/guidelines. Please refer the confirmation letter from local agency.	VPAs were found to be as per National/Local standards and guidelines. A confirmation letter/25/ has also been provided by the CME.

[3] The testing should be undertaken under conditions that are representative of the operation conditions of the project site(s) including feedwater.
[4] For example, notifications from the national authority on health.

	Scheme requirements as per (i).		
	h) Project technology performance level (CWT and CWS): For each individual CWT or CWS, it shall be demonstrated at the start of each crediting period with water quality testing reports that the water directly supplied by the project water technology/source achieves both: i. microbial quality in line with either (i) national standards or guidelines for microbial quality of drinking water, or in the absence of such requirements, (ii) the guideline values for verification of microbial quality from the Guidelines for drinking-water quality (Table 7.10, WHO, 2017); and ii. compliance with (i) national standards or guidelines on priority chemical contamination and physical and aesthetic aspects, or in the absence of such requirements, (ii) international standards or guidelines on priority chemical contamination and physical and aesthetic aspects. (parameter SWDS 3).	Not applicable, no CWT or CWS technologies are involved.	Not applicable. Since, VPA involves institutional water treatment technologies which are installed in the premises of the institutions.
	i) The project must conduct annual water hygiene education campaigns for the	The project will conduct annual water hygiene education campaigns for the end-users. This has	The CME shall conduct the Annual Water Hygiene Education

	end-users.	been developed as a monitoring parameter. Refer monitoring plan section.	Campaigns for the awareness of end-users under the monitoring plan formulated by the CME as confirmed through the interviews of the CME/VPA implementer during the remote audit survey.
	Project shall document the national, regional and local regulatory framework for provision of safe drinking water in the project boundary (parameter SDWS 4). The project shall 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.	For national, regional and local regulatory framework for provision of safe drinking water in the project boundary refer section A.1 of the VPA-DD. The VPA 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.	As per the regulatory framework of Nigeria, the project does not undermines any law or guidelines of the host country for the safe drinking water supply, operation and maintenance.
	If the expected technical life of project technology (parameter SDWS 7) is shorter than the crediting period, describe measures to ensure that end users are provided replacement systems of comparable quality at the end of the expected technical life (for example, replace with comparable or better technology, retrofit with performance guarantee, etc.). This applies both for new technology and rehabilitated.	The technical lifetime of the systems is not limited. Instead, the system lifetime is based on the lifetime of the cartridge / Tab Pack as applicable. Depending on the type of system installed/distributed, the lifetime is deemed renewed automatically, every time the system is reinforced with a new cartridge / TAB pack Thus, the systems are not constrained with respect to lifetime. The supplies (quantity and date) made are being monitored as	The lifetime of the system is renewable as its lifetime depends upon the cartridge/Tab pack which are supplied by the project developer, if it stops working or expires. Hence, lifetime of the system cannot be fixed.

		part of proposed monitoring plan for this purpose.	
	All CWT and CWS projects must include ongoing maintenance and repair of the project technology. The PDD must describe the maintenance and repair plan, including the system for logging/documenting of technology operation and maintenance events including periods of downtime13. The log of operation and maintenance shall be required during the monitoring period to demonstrate project technology operation".	Not applicable, the VPA does not involve CWT/CWS systems.	Not applicable. Since, The VPA involves institutional water treatment technologies which are installed in the premises of the institutions.
Findings	No Findings were raised.		
Conclusion	The validation team confirms that the VPAs meet all the applicability conditions of the applied methodology /5/.		

D.4.2. Project boundary, sources and GHGs

Means of validation	The project boundary basically defines the physical and geographical boundary of the project facility as per the applied methodology/5/, and it is well defined in the VPA-DDs/9/ (section B3). The project boundary includes the point location of installed/distributed WPS units to provide safe drinking water users of Nigeria. Therefore, the project boundary covers all the points of installed/distributed WPS units, beneficiaries in all the locations. The project boundary is clearly defined in the VPA-DDs/9/. Emissions sources included in the project boundary have been appropriately included in all the VPA-DDs. CO_2, CH_4 and N_2O emissions due to use of non-renewable biomass in the traditional stove for baseline scenario (for all the project sites) has been included and in the project scenario the VPA replaces the use of non-renewable biomass/fossil fuel, the technologies included does not require electricity for operation, hence no project emissions are considered from the WPS units.
Findings	No findings
Conclusion	The project boundary, sources and GHGs have been determined in-line with the applied methodology/5/.

D.4.3. Baseline scenario

Means of validation	The baseline scenario in the VPAs is same as the one set at PoA level. CME has applied methodology "Emissions reduction from Safe Drinking Water Supply, Version 1.0"/5/. The Government of Nigeria has launched National Action Plan (NAP)/12/ to ensure the supply of safe water and basic sanitation to the people of Nigeria in line with the SDG Goal 6.1 and SDG Goal 6.2. Also, National Water Resources Bill- 2020/26/ has been implemented to provide the framework for the water resource for the equitable and sustainable

development, management, use and conservation of Nigeria's surface and ground water resources. Besides all the policies and framework for the safe water and sanitation, the CME has conducted the baseline survey in Aug – Sept 2021 for the design certified VPAs (VPA 01 - 30), results of which has been used to establish the baseline scenario. The approach has been checked and found to be appropriate by the VVB since, it has been less than 3 years since the baseline survey was conducted and the results of the same has been validated and accepted by GS during the inclusion of VPA 01 – 30.

The source of drinking water as per the baseline survey/19/ are:

Source of drinking water	Number of Schools/Institutions	Percentage of Schools/Institutions
Improved sources	166	97.65%
Unimproved Sources	4	2.35%

The majority of the surveyed population relies on fossil fuels for boiling water for drinking purposes. This project aims to reduce the burden of disease of Nigeria specifically related to water borne diseases.

The VPAs aim at the following:

Installation of WPS to provide safe drinking water to the institutions of Nigeria. (VPA 74 to VPA 104)

According to the applied methodology, the baseline scenario is that fossil fuel and/or NRB is used to boil water as means of water purification in the absence of the project activity.

In-line to para 3.4.2 and 3.4.3 of the applied methodology/5/ supressed demand has been taken into consideration for establishing the baseline in-line to the applied methodology/5/. Also, it has been confirmed through the ER sheet that VPAs are small-scale.

The baseline study in Nigeria for VPAs 01 - 30 established the baseline scenario, adopting values from GS design certified VPAs. VVB reviewed the baseline assessment of 170 institutions showing 97.65% using improved water sources, with 95.29% intending to boil water for treatment. Improved water sources were deemed eligible under suppressed demand, and the baseline already accounts for their safe use. No other carbon offset projects in the host country focus on providing safe drinking water as confirmed via independent research by VVB. The monitoring plan considers alternative water treatment technologies. Bringing safe water from home is not common, prompting schools to install purification systems. The baseline survey revealed no schools reporting students bringing safe water from home.

The assessment team has reviewed the VPA-DDs/9/ are in line with the applied methodology/5/ and it is confirmed that the CME has correctly identified the baseline scenario.

Findings	No Findings were raised.
Conclusion	The validation team based on the description provided above with regard to the assessment of the requirements confirms that: (a) All the assumptions and data used by the project participants are

	listed in the VPA-DDs/9/ and or it annexures, including their references and sources; (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the VPA-DDs/9/. (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the VPA-DDs. (e) The approved baseline methodology has been correctly applied to identify the most plausible baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed PoA. The validation team confirms that it has taken other steps and other sources of information used to cross-check the information contained in the PoA-DD/4/, wherever applicable, as listed above.

D.4.4. Ongoing financial need

Means of validation	It has been confirmed from the no ODA declaration/15/ that there is no provision for public funding available for the VPAs.
Findings	No findings.
Conclusion	Not applicable.

D.4.5. Prior consideration

Means of validation	Since, the proposed VPAs to be included under the PoA has not yet started their implementation. VPAs VPA 74 to VPA 104 (GS12390 to GS12420) are regular VPAs with the start date as stated in section D.6. The prior consideration is found to be Not applicable.
Findings	No findings.
Conclusion	prior consideration is not applicable.

D.4.6. Demonstration of Additionality

Means of validation	**Applicability conditions**	**Justification by the Project proponent**	**Means of validation**
	Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	As per Positive List - Annex B, the project meets the criteria given in 1.1.3 *Project activities solely composed of isolated units where the users of the technology/measure are schools or communities or institutions and where each unit results in <= 600 MWh of energy savings per year or <=600 tonnes of emission reductions*	VPA 74 to VPA 104 aims at installation of WPS in the institutions of Nigeria. It will be ensured that each WPS unit results in emission reductions less than 600 tCO_2e per annum which is within the threshold of the applied methodology/5/. The same has been verified through the ex-ante ER sheet/28/ and each

		per year.	unit installed is found to be within the threshold limit.
	Describe how the proposed project meets the criteria for deemed additionality.	Each project unit shall result in emission reductions less than 600 tCO2e per annum. In case the VPA generates more than 60,000 tCO2e per annum, the VERs shall be capped at 60,000 tCO2e per annum Hence the project meets the requirements of Positive List mentioned within the CSA Requirements and hence is deemed additional. Refer cell E34 of the Tab: Assumptions & ER Values of ER calculator	Each project WPS unit will result in emission reduction less than 600 tCO2e/annum. The same has been verified through the ex-ante ER sheet/28/ and each unit installed is found to be within the threshold limit.
Findings	No Findings were raised.		
Conclusion	The VPA was found to be additional.		

D.5. Estimation of emission reductions or net anthropogenic removals

D.5.1. Equations and parameters applied to calculate GHG emission reductions or net anthropogenic GHG removals

Means of validation	The VPAs apply methodology Emissions reduction from Safe Drinking Water Supply, Version 1.0/5/. The methodological choices have been explained below: The applied methodology Emissions reduction from Safe Drinking Water Supply, Version 1.0/5/ defines the methodological steps to determine the project emissions, baseline emissions, leakages and anthropogenic emissions by the proposed project activity. For water purification technologies the overall GHG reductions achieved by the project activity in year y are calculated as follows: The baseline emission factor shall be calculated as follows: $EF_{b} = SE_{w,b,y} * \sum(x_{f} * (EF_{b,f,CO2} * f_{NRB,f,y} + EF_{b,f,nonCO2})) \div 10^{9}$ Where: EF_{b} = Emission factor for the use of fuel to obtain safe water in the baseline (tCO2e/L) $SE_{w,b,y}$ = Specific energy required to boil water (kJ/L), to be calculated as per the paragraph below x_{f} = Proportion of fuel f used in the baseline (fraction determined based on an energy basis) $EF_{b,f,CO2}$ = CO2 emission factor from use of fuel f (tCO2/TJ) $EF_{b,f,nonCO2}$ = 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.

$f_{NRB,f,y}$ = 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 as non-renewable. This parameter is omitted when f is a fossil fuel

f = Index for baseline fuel types.

The specific energy required to boil water using the baseline technology ($SE_{w,b,y}$) is determined as follows, by calculating the energy input required to obtain 1 L of boiling water, including boiling and vaporization losses, taking into account default or measured stove efficiency.

$SE_{w,b,y} = 360.83/\eta_{wb}$

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

η_{wb} = Efficiency of the stoves for baseline water boiling (%). Weighted average of baseline stove types

The baseline emissions shall be calculated as follows:

$BE_y = EF_b \times (1 - C_b - X_{cleanboil,y}) \times Q_y \times M_{q,y}$

Where:

BE_y = Baseline emissions from the use of fuel to obtain safe water in the baseline (tCO2e)

C_b = Proportion of project end-users who in the baseline were already using a safe water supply that did not require boiling (%)

$X_{cleanboil,y}$ = Proportion of project end-users that boil safe water in the project year y (%)

Q_y = Quantity of safe drinking water provided by the project in year y (L)

$M_{q,y}$ = Modifier for the water quality in year y

In the case of IWT, the quantity of safe drinking water provided by the project Q_y is determined as follows:

$Q_y = \sum N_{p,y} \times U_{p,y} \times QPW_{hh,p,y} \times DP_{p,y}$

Where:

$N_{p.y}$ = Number of premises type p with at least one project technology in year y

$U_{p,y}$ = Usage rate of the project technology by premises type p during year y (%)

$QPW_{hh,p,y}$ = Volume of drinking water per premises p per day in year y (L)

$DP_{p,y}$ = Days the project technology is present for end-users in the premises p in year y

The volume of drinking water per premises per day 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:

	$QPW_{hh,p,y}$ = min ((q_i × $t_{p,y}$ × $DN_{p,y}$), (QPW_p × $HN_{p,y}$)) Where: q_i = Capacity of the HWT or IWT individual project technology (L/h) $t_{p,y}$ = Usage time of the project technology by premises type p in year y (h/day) $DN_{p,y}$ = Average number of individual project technologies in each project premises type p in year y $N_{p,y}$ = Number of individuals per premises type p (e.g. household, school) in year y QPW_p = Volume of drinking water per person per day for premises type p (L). Apply the default value or monitored value through water consumption field tests in the project scenario, capped at 5.5 L per person per day <u>Project Emissions:</u> No project emissions as no electricity/ fuel use are involved as per the applied methodology. The emission reductions are calculated as follows: $ER_y = BE_y - PE_y - LE_y$ Where: ER_y = Emission reductions in year y (t CO2e/yr) BE_y = Baseline emissions in year y (t CO2e/yr) PE_y = Project emissions in year y (t CO2e/yr) LE_y = Leakage emissions in year y (t CO2e/yr) Emission reduction estimated from each of the VPAs (GS12390 to GS12420) is 58,192 tCO2e per annum which has been verified from the emission reduction sheets/28/.
Findings	No findings were raised.
Conclusion	The methodological choices are justifiable and appropriate as per GS4GG requirements. All the values applied, and calculations are reviewed from the ER calculation sheets/28/, baseline survey sheet/30/ and were found to be acceptable by the assessment team.

D.5.2. SDG outcome assessment

Means of validation

The monitoring plan in the PoA-DD/04/ is correctly applied to the PoA. The monitoring plan has been found to be in compliance with the requirements of the applied methodology/5/.

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact Indicator (Proposed or SDG Indicator)	VVB Assessment
SDG 13: Climate Action (mandatory)	Not applicable	Amount of CO_2e emissions reduced by the project per year.	The reduction in the use of fossil fuel to boil the unsafe water will result in emission reductions and eventually

					reduce the effects of climate change in country like Nigeria. The value of the parameter will be checked through the ER sheet/28/.
		SDG 1: No poverty	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in schools with access to basic services **Indicator:** Total number of premises (Schools / institutions) with at least one WPS distributed / installed under the project	The distribution of WPS has helped to raise the living standard and provided the basic services to the end-users of Nigeria. The value of the parameter will be verified through the Installation database/12/.
		SDG 3: Good Health and Well Being	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	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	VPAs are reducing the health-related risk associated with the unsafe water. WPS has improved the water quality of the water for the Nigeria's population. The value of the parameter will be monitored through the ex-post monitoring surveys conducted by CME.
		SDG 6:Clean Water and Sanitation	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for	6.1.1 Proportion of population using safely managed drinking water services	VPAs which aimed at installing the WPS in the institution ensures better

			all	Indicator: Total Number of WPS distributed/installed under the project and % of WPS distributed/installed providing safe drinking water quality	water quality. The value of the parameter will be monitored through the ex-post monitoring surveys conducted by the CME.
		SDG 7: Affordable and Clean Energy	7.1 By 2030, ensure universal access to affordable, reliable, and modern energy services	7.1.2 Proportion of population with primary reliance on clean fuels and technology **Indicator:** % Schools / institutions reporting an operational WPS in project	VPAs aim at distributing WPS which helped in reducing the dependency on traditional stove thereby increasing the access to safe drinking water. The value of the parameter will be monitored through the ex-post monitoring surveys conducted by the CME.
		SDG 8: Decent Work and Economic Growth	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1Average hourly earnings of female and male employees, by occupation, age and persons with disabilities **Indicator:** Number of male / females employment created by project	Implementation of VPAs has led to generation of employment as compared to the baseline situation. The value of the parameter will be checked through the employment records/47/.
Findings	None				
Conclusion	The SDGs chosen by CME are accurate & the monitoring of all the parameter align with the methodology of Emissions reduction from Safe Drinking Water Supply Version 1.0 /5/				

D.5.3. Data and parameters:

Means of validation	The monitoring plan in the PoA-DD/04/ is correctly applied to the PoA. The monitoring plan has been found to be in compliance with the requirements of the applied methodology Emissions reduction from Safe Drinking Water Supply, Version 1.0/5/. The values of ex-ante parameter and monitored parameters can be found in the table given below.

Parameter(s) fixed ex-ante:
For VPA 49 to VPA 73

Relevant SDG Indicator	Parameter	Value in VPA-DD	Assessment
SDG 1	Access to Basic Services (number of premises with at least one WPS distributed / installed under the baseline), $ABS_{baseline}$	0	VPAs aim at distributing WPS to the institutions of Nigeria thereby replacing the baseline method of boiling of water for consumption. Thus, PD assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario.
SDG 3	% of users reporting reduce in incidence of diarrhoea and water borne diseases etc. in baseline , $IH_{baseline}$	0%	VPAs aim at distributing WPS to the institutes of Nigeria thereby replacing the baseline method of boiling of water for consumption. Thus, PD assumes the parameter value to be zero as none of the institutes were having WPS in the baseline

				scenario.
	SDG 6	Total Number of WPS distributed /installed under the baseline and % users reporting safe water quality in baseline, $SWO_{baseline}$	0	VPAs aim at distributing WPS to the institutes of Nigeria thereby replacing the baseline method of boiling of water for consumption. Thus, PD assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario.
	SDG 7	Access to affordable and clean energy (% of operating WPS units under Baseline), $AAC_{baseline}$	0%	VPAs aim at distributing WPS to the institutions of Nigeria thereby replacing the baseline method of boiling of water for consumption. Thus, PD assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario.
	SDG 8	Quantitative Employment and income	0	VPAs aim at distributing WPS to the institutes of

<table>
<tr><td></td><td></td><td>generation (Number of person (male and female) hired under Baseline), QE $IG_{baseline}$</td><td></td><td>Nigeria thereby replacing the baseline method of boiling of water for consumption. Thus, PD assumes the parameter value to be zero as none of the institutes were having WPS in the baseline scenario.</td></tr>
<tr><td>SDG 13</td><td>Project technology description</td><td><table>
<tr><th>Description</th><th>UltraFLO</th><th>UltraTAB</th></tr>
<tr><td>Manufacturer</td><td>Medentech</td><td>Medentech</td></tr>
<tr><td>Product Name</td><td>FLO, Inline</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></td><td>The value for this parameter has been applied as verified from the Manufacturer’s specification /33/, as shared by the CME. Also, it has been confirmed through an official confirmation letter from the SON, that the products comply with national standards/25/.</td></tr>
<tr><td>SDG 13</td><td>Regulatory framework for safe water supply</td><td>President of Nigeria launched the National Action Plan (NAP), a 13-year strategy for the Revitalization of Nigeria’s Water Supply, Sanitation, and Hygiene (WASH) Sector. The goal of the Revitalization Strategy is to ensure that all Nigerians have access to sustainable and safely managed WASH services by</td><td>The VPAs are in line with all the local and national Safe Water guidelines, which has been verified through the confirmation</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td>2030, in compliance with the Sustainable Development Goals (SDG) for Water (Goal 6.1) and Sanitation (Goal 6.2).
National Water Resources Bill-2020, enacted by National assembly of Federal Republic of Nigeria, establishes regulatory framework for the water resource sector in Nigeria and provide framework for the equitable and sustainable development, management, use and conservation of Nigeria's surface and ground water resources. The objective of the bill is to also ensure the citizen's right of access to safe water and basic sanitation.
The establishment of Nigerian Standard for Drinking Water Quality (NSDQW) ensures the safety of the drinking water supplies and the protection of public health.

The implementation of the project is fully in line with the relevant water resources policies/framework of Nigeria. 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.</td><td>letter from the Standards Organization of Nigeria /25/.</td></tr>
<tr><td>SDG 13</td><td>Water sources in the project boundary</td><td><table><tr><th>No</th><th>Drinking water source</th><th>Premises (%)</th></tr><tr><td>1.</td><td>Governme</td><td>3.53</td></tr></table></td><td>The value for this parameter is different for Improved Source and Unimproved</td></tr>
</table>

			<table><tr><td></td><td>nt/ Private piped connection</td><td></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></table> As pe the Annex 2 of the methodology, the classification of Improved Sources and Unimproved Sources is: <table><tr><td>S.No</td><td>Source of drinking water</td><td>% Premises</td></tr><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></table>	Sources, all the values of the parameter has been taken from the baseline survey/19/ conducted by CME in Aug-Sept 2021, results of which have been duly verified by the VVB since, it has been less than 3 years since the baseline survey was conducted and the results of the same has been validated and accepted by GS during the inclusion of VPA 01 – 30.
SDG 13	Stove technologies used in the project boundary	<table><tr><td>Stove Technology</td><td>School/ Institutions (%)</td></tr><tr><td>Traditional / 3 Stone Fire</td><td>58.02</td></tr><tr><td>Traditional Charcoal Pot</td><td>40.74</td></tr><tr><td>Kerosene Stove</td><td>1.23</td></tr></table>	Stove technologies used in the project boundary was found to be traditional 3 stone fire (58.02%), Traditional charcoal pot (40.74%) and Kerosene Stove (1.23%) as confirmed from the baseline survey/19/ conducted by CME in Aug-Sept 2021,

<table>
<tr><td></td><td></td><td></td><td></td><td>results of which has been duly verified the VVB since, it has been less than 3 years since the baseline survey was conducted and the results of the same has been validated and accepted by GS during the inclusion of VPA 01 – 30.</td></tr>
<tr><td></td><td>SDG 13</td><td>Expected technical life of project technology</td><td><table>
<tr><th>Description</th><th>UltraFLO</th><th>UltraTAB</th></tr>
<tr><td>Treatment Volume (Ltrs)</td><td>Flo: 340,000 Inline: 720,000</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>
</table></td><td>The technical lifespan of the technology is in accordance with the technical specification /33/ records provided by the CME. Also, it has been observed that the product (filters) distributed are consumables and will be distributed by the VPA Implementor to the target population, so the lifetime of the same is not found to be constraint. The approach applied by the CME has been reviewed and found to be</td></tr>
</table>

			appropriate.
SDG 13	Percentage of fuel f use in target population , x_f	58.02% Wood Fuel 40.74% Charcoal 1.23% Kerosene	The value of this parameter has been applied as 58.02% for wood-fuel, 40.74% for charcoal and 1.23% for Kerosene which is found to be in accordance with Baseline survey of Schools and institutions/19 / conducted by CME in Aug-Sept 2021, results of which has been duly verified by the VVB for design certified GS VPAs (VPA 01 - 30) since, it has been less than 3 years since the baseline survey was conducted and the results of the same has been validated and accepted by GS during the inclusion of VPA 01 – 30.
SDG 13	CO2 emission factor from use of fuels, $EF_{b,f,CO2}$	Wood = 112 tCO2/TJ Charcoal = 165.22 tCO2/TJ (includes charcoal production emissions)	The value of this parameter has been taken from the default value from the IPCC

				default value for Wood and charcoal: IPCC 2006 Guidelines for National Greenhouse gas Inventories, which is found to be inline with the applied methodology/5/.
	SDG 13	Non-CO2 emission factor from use of fuels, in case the baseline fuel is biomass or charcoal, $EF_{b,f,nonCO2}$	AR5 GWP - Wood: 9.46 tCO2e/TJ - Charcoal: 44.83 tCO2e/TJ (includes production emissions of CH4 and N2O)	The value of this parameter has been taken from the default value from the IPCC default value for Wood and Charcoal: IPCC 2006 Guidelines for National Greenhouse gas Inventories, which is found to be inline with the applied methodology/5/.
	SDG 13	Proportion of project end-users who in the baseline were already using safe water, either from an improved water source, or from a water	4.71%	The value of this parameter applied has been calculated based on the baseline survey conducted by CME in Aug-Sept 2021, results of which has been duly

			treatment method other than boiling, C_b		verified by the VVB for design certified GS VPAs (VPA 01 - 30) since, it has been less than 3 years since the baseline survey was conducted and the results of the same has been validated and accepted by GS during the inclusion of VPA 01 – 30. The value of the parameter Cb has been sourced from the design certified VPAs (VPA 01 -–30). The concerned VPAs (01 – 30) use the same technology/ measures as the previously included VPAs and are implemented within the same geographical boundary; thus, the baseline scenario and value of baseline parameters, including parameter Cb, in the concerned	

				VPA-DDs have been raised from the GS design certified VPAs (01 – 30). The study is being undertaken in 2021 (less than three years old), relevant to schools in Nigeria, and has already been validated independently by a third party and certified by Gold Standard, making it the most thorough study with the greatest relevance to the VPAs under consideration.
	SDG 13	Capacity of the school or institutional water treatment technology, q_i	<table><tr><th>Description</th><th>UltraFLO</th><th>UltraTAB</th></tr><tr><td>Treatment Capacity (Ltrs)</td><td>FLO; 340,000 Inline: 720,000</td><td>Big Pack: 48,000 Small Pack: 10,000</td></tr></table>	The value of this parameter has been applied are as per the manufacturer specification/33/.
	SDG 13	Fractional non-renewability status of woody biomass fuel during year y, in case the baseline fuel is biomass or charcoal, $f_{nrb,f,y}$	82.30%	The fraction of woody non-renewable biomass saved by the project activity has been determined and fixed at the time of validation. Calculation of fNRB is reviewed in a separate

					calculation sheet provided by CME. Application of Tool 30: Calculation of the fraction of non-renewable biomass, v4.0/48/ is found to be appropriate. The tool choices are explained below: -According to para 9 of tool, the fNRB value may either be fixed ex-ante or be monitored ex-post. The PP has chosen to fix the value ex-ante. -In line with para 10 of the tool, the most recent historical data available for the same vintage has been used for the fNRB calculations i.e. values from year 2020 and 2021. -The calculations for fNRB value, as demonstrated in the calculation sheet, have been done using the equations 1,2, 3 and 4 of the applied tool. The application of these equations is

					found appropriate and in line with the tool. All parameters' sources used for calculations of fNRB are found to be of similar vintages and using the latest available data from credible national and government released studies and census. The values of all parameters used in calculations were checked from the sources provided in calculation sheets and were found to be consistently reported. The calculations were also found in line with tool 30, v4.0. Thus, it is concluded that description, justification, sources and calculations are in accordance with applied methodology and tool. The value applied is found to be appropriate and acceptable. As required by

					Tool/48/, the value of fNRB has been compared with the product of estimated annual forest area net change rate and the above average-ground forest biomass density, as reported in the FAO report, Nigeria 2020/50/. The justification for the higher value has been provided in the fNRB report, which has been assessed and is found to be appropriate. The value of fNRB has also been cross-checked with the Bailis et al literature/52/, where the estimated value of fNRB is the results of various assumptions applied in the literature, which includes under-estimation of wood consumption based on 2013 reports, making	

<table>
<tr><td></td><td></td><td></td><td></td><td>adjustments and assumptions about plantations and the fraction of the country's forested area under formal management. The justification provided has been reviewed and is found to be appropriate. The value of tis parameter has been applied as per fNRB calculation sheet/34/. The value of the fNRB has also been cross-checked with the other registered GS projects (GS 11671) is found to be appropriate.</td></tr>
<tr><td></td><td>SDG 13</td><td>Litres per person per day, QPWp</td><td><table>
<tr><th>Type of Premises</th><th>Default value</th><th>Applicability</th></tr>
<tr><td>Full-day premises</td><td>4 L /person / day</td><td>Premises like schools 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>
</table></td><td>The Value of this parameter has been applied as per the applied methodology/5/.</td></tr>
</table>

	SDG 13	Weighted average efficiency of the baseline water boiling devices, η_{wb}	12.53%	The value of this parameter has been calculated in line with the applied methodology/5/. CME has taken three types of baseline stoves, Traditional 3-stone fire, traditional charcoal stove, and Kerosene Stove. The number of stoves of each type has been identified by the baseline survey, which is found to be appropriate. The calculation of weighted average to determine the efficiency has been checked and found to be appropriate. The value of the charcoal pot efficiency and kerosene stove has been sourced from the design certified VPAs (VPA 01 to 30). The concerned VPAs (74 - 104) use the same technology/	

					measures as the previously included VPAs and are implemented within the same geographical boundary; thus, the baseline scenario and value of baseline parameters, in the concerned VPA-DDs have been raised from the GS design certified VPAs (01 - 30). The study is being undertaken in 2021 (less than three years old), relevant to schools in Nigeria, and has already been validated independently by a third party and certified by Gold Standard, making it the most thorough study with the greatest relevance to the VPAs under consideration. The PP has used the data (Life Cycle Assessment of Cooking Fuel	

				Systems in India, China, Kenya, and Ghana by USEPA, dated August 2017, Table 2-7 for kerosene) as a source for the consideration of thermal efficiency of kerosene which was found credible on the following grounds. The research is based on a published report in 2016. The aim of the research is to evaluate based on sensitivity analyses the effect of stove thermal efficiency, stove technology use, electrical grid mix, forest renewability factor, and allocation approach on environmental impacts of cookstove use. The value of efficiency of baseline charcoal and kerosene in improved stove for global level is	

			46% whereas PP has applied this value as 50% as a conservative measure for ER calculation. As per VVB's opinion the value of efficiency of kerosene is found to be justified and the source of value is a third-party study which is credible in nature and as per applied methodology.

Baseline survey:

For some of the parameters mentioned above the value has been sourced from the baseline survey and design certified VPAs (VPA 01 - 30). The sampling approach adopted for conducting the surveys was reviewed by the team to validate the values. The population considered for drawing the samples was obtained from the official website of federal Ministry of Education, Republic of Nigeria which was found reliable source of information. The population size was about 125,000 schools therefore as per the applied methodology (which reiterated to TPDDTEC for baseline surveys) the minimum sample size of 100 was applicable. A total of 200 schools were targeted to obtain the required information. Out of the 200 schools that were reached 170 responded and results from those were reviewed in the desk review. The sampling approach and results obtained from the survey were found satisfactory.

Data and parameters to be monitored:

For VPA 74 to VPA 104

Relevant SDG Indicator	Parameter	Value in VPA-DD	Frequency	Assessment
SDG 1	Access to Basic Services (Total number of premises with at least one WPS	725	Continuous	The CME has applied the value based on the maximum number of project technology (SSC Threshold), which

		distributed / installed under the project); $ABS_{Project}$			can be distributed in the respective VPAs. The value of the parameter will be monitored annually through sales records which will be maintained by the CME on a regular basis.
	SDG 3	% of users reporting reduction in incidence of diarrhoea and water borne diseases etc. (improved health) in project, $IH_{Project}$	90%	At least annual or biennially	The CME has applied the estimated value as per judgement and through other projects of similar nature. The value will be monitored annually/biennially through ex-post monitoring survey.
	SDG 6	Total Number of WPS distributed/installed under the project and % WPS distributed / installed providing safe drinking water to beneficiaries in project; $SWQ_{project}$	725 and 90%	At least annual or biennially	The CME has applied the estimated value as per judgement and through other projects of similar nature. The value will be monitored annually/ biennially through ex-post water quality test.
	SDG 7	Access to affordable and clean energy (% users reporting an operational WPS in Project); $AAC_{project}$	90%	At least annual/ biennially	The CME has applied the estimated value as per judgement and through other projects of similar nature. The value will be monitored annually/biennially through ex-post monitoring survey.
	SDG 8	Quantitative Employment and income	19	Annually/ biennial	The CME has applied the estimated value as

		generation (Number of person (male and female) hired under project); QE $IG_{project}$			per judgement and through other projects of similar nature. The value will be monitored annually/biennially and will maintain the HR /sales records.
	SDG 13	$M_{q,y}$: Ongoing water quality indicated as the fraction of the samples that pass microbial quality standard of host country	0.90	Annual	The value of the parameter will be determined through water quality test on the sampling basis ex-post. It will be determined annually, and the first round of testing will be conducted within six months from the start date of registration. The approach applied is found to be inline with the applied methodology/5/.
	SDG 13	Water hygiene education campaigns	-	Annual	The CME will apply the value as per the survey based on the questionnaire to assess hygienic handling of clean water. The parameter will follow annual frequency and the parameter will be monitored through question-based survey.
	SDG 13	Proportion of project end-users that boil safe (treated, or from safe supply) water after installation	0 %	Annually	The value of the parameter will be determined through project survey. It will be determined annually. The approach applied is found to be in line with the applied

	of project technology; $X_{cleanboil,y}$			methodology/5/.
SDG 13	Number of individuals per premises type p in the project boundary in year y: $HN_{p,y}$	420	Annually	The value of the parameter will be determined through the sales or distribution records and will be recorded at the time of installation of the project technology. The CME will cross-check the data recorded in database through one of the methods (project survey, official governmental publications or statistics, credible published literature, studies) as specified in the applied methodology. The approach by the CME has been checked and is found to be in line with the applied methodology/5/.
SDG 13	Accumulated number of premises type p with at least one individual project technology in year y: $N_{p,y}$	725	Continuous	The value of the parameter will be determined through Sales or Distribution records. It will be monitored continuously.
SDG 13	Usage rate of the project technology by premises type p during year y; $U_{p,y}$	90%	Annually	The value of the parameter will be determined through project surveys. The parameter is monitored to check the operationality of the project technology in the targeted population.

				The parameter will be monitored annually.
SDG 13	Average days the project technology is present for end-users in the premises p in year y; $DP_{p,y}$	210	Annually	The value will be calculated annually through sales records and Schools Academic calendar/46/ which will be maintained by the CME on a regular basis.
SDG 13	Average number of individual project technologies in each project premises type p in year y; $DN_{p,y}$	1.0	Annually	The value will be monitored annually through sales records which will be maintained by the CME on a regular basis.

The assessment team confirmed that the monitoring parameters are sufficient to calculate the emission reductions in accordance with the applied methodology/5/. The parameters will be calculated or measured as mentioned above section.

The validation team confirms that list of parameters identified by the CME and as mentioned in the PDD/04/ are in line with the monitoring methodology and SDG monitored parameters will be assessed on the basis of monitoring frequency mentioned.

The underlying parameters for f_{NRB}:
The value for parameter '$f_{NRB,f,y}$' fraction of renewable biomass was determined by the CME. An f_{NRB} calculation sheet was submitted by the CME along with the details of the sources used. The parameters used to determine this value were demonstrated in the calculation sheet and were assessed by the assessment team. The following formula was used for f_{NRB} calculation, which is found to be in line with TOOL30/48/:

$f_{NRB} = NRB / (NRB+RB)$
Where,

f_{NRB}	Fraction of non-renewable biomass in the country/region or project area (fraction or %)
NRB	Quantity of non-renewable biomass (t/yr) in the country/region or project area, determined as per paragraphs 10 and 11 below
RB	Quantity of renewable biomass in the country/region or project area, determined as per section 4.2 below (t/yr)

Since NRB is determined on a region-specific basis by the CME, the following method was applied in line with paragraph 9 of TOOL30:

NRB= H – RB

Where,

H	Total annual consumption of wood in the absence of the project activity in the country/region/project area (t/yr)

The **consumption of woody biomass (H)** was determined in accordance with paragraph 11 of TOOL30, which provides two options to calculate this parameter. The parameter was determined using option (a) i.e. official statistics and reports. The calculations were checked from the calculation sheet and sources provided in that sheet as well as cross check against online resources wherever deemed necessary by the assessment team.

The total annual consumption of wood in the absence of project activity in the region was calculated based on total biomass consumption from domestic and non-domestic sources. The values for all these variables were obtained from UN data for the year 2020 & 2021/49/, which is the most recent data available at the time of f_{NRB} assessment. All source links were assessed and discussed in detail against each input parameter in detail. These calculations were assessed and accepted by the assessment team.
Estimation of **renewable biomass (RB)** is carried out in line with paragraph 15 of TOOL30:

$RB = \sum(MAIforest,i \times (Fforest,i - Pforest)) + \sum(MAIother,i \times (Fother,i - Pother))$ Where,

MAIforest,i	Mean Annual Increment of woody biomass growth per hectare in subcategory i of forest areas (t/ha/yr)
MAIother,i	Mean Annual Increment of woody biomass growth per hectare in subcategory i of other wooded land areas (t/ha/yr)
Fforest,i	Extent of forest in sub-category i (ha)
Fother,i	Extent of other wooded land in sub-category i (ha)
Pforest	Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (ha)
Pother	Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other wooded land areas (ha)
i	Sub-category i of forest areas and other wooded land areas

The forest area and other wooded area was determined using data from FAO, Nigeria, 2020/50/. Hence, the source is found to be acceptable.

The f_{NRB} thus calculated is provided in the f_{NRB} calculations sheet.
A summary of sources and assessment of all parameters in line with applied methodology and TOOL30 mentioned above used in calculation of $f_{NRB,y}$ have been provided in table below:

Parameter and description	**Value**	**Data Source**	**Assessment**
f_{NRB} (Fraction of non-renewable biomass in the country/region or project area)	82.30%	Calculated in line with TOOL30 equation (1)	The calculation of this parameter was found to be in line with equation(1)
NRB (Quantity of non-renewable biomass (t/yr) in the	214,697,990 m^3/yr	Calculated in line with TOOL30	

country/region or project area)		equation (2)	of TOOL30 as checked against fNRB calculation sheet and VPA-DD.
RB (Quantity of renewable biomass in the country/region or project area)	46,186,010 m^3/yr	Calculated in line with TOOL30 equation (6)	
H (Total annual consumption of wood in the absence of the project activity in the country/region/project area)	260,884,000 m^3/yr	The UN data from 2020 and 2021 has been compared by the CME. Since, the value of 2020 data is lower, 2020 data is used for the calculation, which is found to be conservative and hence, acceptable by the CME.	

Implementation of Sampling Plan

The CME as per the monitoring plan shall follow CDM Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 04.0)/32/ and Standard for Sampling and surveys for CDM project activities and programmes of activities (Version 09 .0)/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 target population will be the institutions and schools of Nigeria. All the VPAs i.e., GS12390 to GS12420 (VPA 74 to VPA 104) will be implemented in the Nigeria with same baseline scenario and technology and therefore the CME has chosen to apply across VPA sampling. The CME will apply 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 with regards to the monitoring requirement of the WPS and the requirements of the methodology which got approved on 07/12/2021. The deviation was basically requested for ageing-based survey for WPS systems. 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 as is also observed in all water purification technologies. There is no mechanical wear and tear in the water purification process. The functioning of the WPS in the VPAs is dependent on filters/cartridges. The cartridges or filters upon being consumed and replenished with a fresh tablet/cartridge replenishes the functioning of the equipment.

	The survey team are required to visit each institution for the surveys with a survey questionnaire and backups shall be taken into consideration in case of non-availability of the users. The Validation team confirms that the sample requirements are in line with the applied methodology/5/.
Findings	CL#01, CAR#01 and CAR#03 was raised and resolved.
Conclusion	The sampling plan was found to be accurately set by the CME as per the implemented technology.

D.6. Start date, crediting period type and duration

Means of validation

According to GS4GG Principles and Requirements version 1.2 para 4.1.40/14/, "For distributed technology projects, the start date is the date of installation of the first unit under the project". The first unit installed under the VPAs are marked as the start date of the VPAs/44/, which has been verified through the first WPS sales receipt and end-user agreement and is found to be appropriate. The start date of the crediting period is found to be in line with the section 7.6 of the VVS standard v1.0. The expected operational lifetime of the VPA is 21 years. The VPA crediting period is of 5 years, renewable twice. The start date and crediting period of the VPAs (VPA 49 to VPA 73) are as follows:

VPA	Start date	Crediting Period
VPA 74	08/01/2024	08/01/2024 to 07/01/2029
VPA 75	08/01/2024	08/01/2024 to 07/01/2029
VPA 76	08/01/2024	08/01/2024 to 07/01/2029
VPA 77	08/01/2024	08/01/2024 to 07/01/2029
VPA 78	01/02/2024	01/02/2024 to 31/01/2029
VPA 79	01/02/2024	01/02/2024 to 31/01/2029
VPA 80	01/02/2024	01/02/2024 to 31/01/2029
VPA 81	01/02/2024	01/02/2024 to 31/01/2029
VPA 82	01/03/2024	01/03/2024 to 28/02/2029
VPA 83	01/03/2024	01/03/2024 to 28/02/2029
VPA 84	01/03/2024	01/03/2024 to 28/02/2029
VPA 85	01/04/2024	01/04/2024 to 31/03/2029
VPA 86	01/05/2024	01/05/2024 to 30/04/2029
VPA 87	01/05/2024	01/05/2024 to 30/04/2029
VPA 88	01/05/2024	01/05/2024 to 30/04/2029
VPA 89	01/06/2024	01/06/2024 to 31/05/2029
VPA 90	01/06/2024	01/06/2024 to 31/05/2029
VPA 91	01/06/2024	01/06/2024 to 31/05/2029
VPA 92	01/06/2024	01/06/2024 to 31/05/2029
VPA 93	01/07/2024	01/07/2024 to 30/06/2029
VPA 94	01/07/2024	01/07/2024 to 30/06/2029
VPA 95	01/09/2024	01/09/2024 to 31/08/2029
VPA 96	01/09/2024	01/09/2024 to 31/08/2029
VPA 97	01/09/2024	01/09/2024 to 31/08/2029
VPA 98	01/09/2024	01/09/2024 to 31/08/2029
VPA 99	01/10/2024	01/10/2024 to 30/09/2029
VPA 100	01/11/2024	01/11/2024 to 31/10/2029
VPA 101	01/11/2024	01/11/2024 to 31/10/2029
VPA 102	01/11/2024	01/11/2024 to 31/10/2029
VPA 103	01/11/2024	01/11/2024 to 31/10/2029
VPA 104	01/11/2024	01/11/2024 to 31/10/2029

The start date of the crediting period is also the start date of the project. The total duration of the crediting period will be 15 years which is in

	accordance with section 4.1.5 of GS4GG Community Services Activity Requirements (Version 1.2)/7/. The crediting period is 5 years for each Design Certification Renewal Cycle and in total two Design Certification Renewal Cycles. Although the lifetime of the WPS model is 5 years as confirmed from the manufacturer's specifications/33/, which comes under the length of the crediting period i.e., 5 years. It has been observed that the product (filters) distributed are consumables and will be distributed by the VPA Implementor to the target population, so the lifetime of the same is not found to be constraint.
Findings	No findings
Conclusion	The lifetime and crediting period of the VPAs lies within the crediting period of the PoA and is in accordance with GS4GG Principles and Requirements/14/.

D.7. Environmental impacts

Means of validation	EIA is not required in the Host country Nigeria.
Findings	Not Applicable
Conclusion	Not Applicable

D.8. Stakeholder consultation

Means of validation	The CME, Carbon Impact LLC held physical local stakeholder meetings on 29th August 2023 at BW Starfire Hotel, Lagos, Nigeria. Local Stakeholder consultation report/42/ was checked to confirm that all the relevant stakeholders were invited to the LSC meeting through email, post and public notification/42/. It was confirmed from the remote site interviews with the CME representatives that during the meeting, a detailed objective of the project activity was given to attendees and the transfer of product ownership was also discussed. Stakeholder feedback round (SFR) was also conducted which started from 10/11/2023 to 13/12/2023, which has been verified through the SFR round invitation mails/42/. No additional comments have been received from the participants that will influence the project design or implementation. The LSC participants were also interviewed about the LSC meeting discussion, grievance mechanism and impact of project and opinion about the project and the positive response has been received. The VVB team confirms that there were no negative comments received from the stakeholder consultation rounds and all the queries or concerns raised by the stakeholder were satisfactorily resolved by the CME. The PD has maintained grievance mechanism in place so as to capture the inputs or comments from the stakeholders: i. Annex W expression book has been kept at the Office of Impact Water in Nigeria ii. help@goldstandard.org iii. Nigeria: +256 790 911 934 iv. info@impactcarbon.org
Findings	CAR#02 and FAR#01 was raised and resolved.
Conclusion	LSC was found to be conducted for the VPA. The validation team confirms that CME has considered and addressed all the stakeholder comments.

SECTION E. Sustainability Assessment

E.1. Safeguard principles assessment

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Assessment team's Opinion/ justification for the mitigation measure
Principle 1: Human Rights			
1. Does the project developer, its representatives and the Project disrespect internationally proclaimed human rights? 2. Is the project involved or complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights? 3. Have local communities or individuals raised human rights concerns regarding the project (e.g., during the stakeholder engagement process, grievance processes, public statements)? 4. Is there a risk that rights-holders (e.g., Project-affected stakeholders) do not have the capacity to claim their rights? 5. Does this project undermine national or regional measures for the realisation of the right to development?	No	- is informed by human rights analysis, including from UN human rights mechanisms (human rights treaty bodies, universal periodic review, special procedures) - includes measures to assist the government to realise (respect, protect and fulfil) human rights under international law and to implement human rights-related standards in national law (whichever is higher) - enhances the availability, accessibility and quality of benefits and services for potentially marginalised individuals and groups, and to increase their inclusion in decision-making processes that may impact them (consistent with the non-discrimination and equality human rights principle) - provides reasonable accommodations to strengthen inclusivity and accessibility of project benefits and services to persons with disabilities. The project incorporates a human rights-based approach through various strategies that align with international human rights standards and principles.	VVB has confirmed that the CME and the VPA Implementor will respect related laws of Nigeria and will not lead to violations of human rights or discrimination of any kind as defined in the Universal Declaration of Human Rights/43/.
Would the project potentially involve or lead to: 1. adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of	No		VVB has confirmed that the CME and the VPA Implementor will respect related the laws of Nigeria and will not lead to violations of human rights or discrimination of any kind as defined in the Universal Declaration of Human Rights/43/.

marginalised groups? 2. inequitable or discriminatory impacts on affected populations, particularly people living in poverty or marginalised or excluded individuals or groups, including persons with disabilities? 3. restrictions in availability, quality of and/or access to resources or basic services, in particular to marginalised individuals or groups, including persons with disabilities? 4. exacerbation of conflicts among and/or the risk of violence to project-affected communities and individuals?		• The project design is informed by human rights analysis, drawing from UN human rights mechanisms such as human rights treaty bodies, universal periodic reviews, and special procedures. This ensures that the project's goals and strategies align with recognized human rights principles and obligations. • The project includes measures to assist the government of Nigeria in realizing, respecting, protecting, and fulfilling human rights under international law. By supporting the dissemination of WPS to schools and institutions, the project contributes to the government's efforts to provide safe drinking water, which is a fundamental human right. • By targeting schools and institutions that may have limited access to clean drinking water, the project directly addresses the needs of potentially vulnerable populations, consistent with the non-discrimination and equality human rights principle. • The project strives to provide reasonable accommodation to strengthen inclusivity and accessibility of its benefits and services to persons with disabilities. This could involve ensuring that the water purification technologies are designed and	

		distributed in a way that accommodates the needs of individuals with disabilities, promoting their equal access and participation. • The project's central focus is on providing safe drinking water, aligning with the human right to water and sanitation. By addressing a critical need, the project directly contributes to the enjoyment of a fundamental human right. • Access to clean water reduces the risk of waterborne diseases, which positively impacts the right to health. By improving community health, the project indirectly supports other related human rights. • The project explicitly targets marginalized groups such as schools and institutions with limited access to clean water. This demonstrates a commitment to addressing disparities and ensuring that those who are often underserved benefit from the project. • The project's emphasis on involving local communities, including marginalized individuals, in decision-making processes fosters inclusivity and empowers these groups to shape the project's outcomes. • The project acknowledges the challenge of limited water access and aims to overcome barriers by	

		providing water purification systems. By doing so, it directly addresses the restriction in availability of a basic resource, especially for marginalized individuals. • improving water quality and reducing waterborne diseases, the project contributes to community well-being. This, in turn, can lead to reduced tensions and conflicts over access to limited resources, supporting conflict prevention.	
Principle 2. Gender Equality			
1. Have women's groups/leaders raised gender equality concerns regarding the project, (e.g., during the stakeholder engagement process, grievance processes, public statements)? 2. Does the project undermine the principles of non-discrimination, equal treatment, and equal pay for equal work? 3. Does the project prevent men and women from having equal opportunities to participate in identified tasks and activities, whether through paid work, volunteer work, or community contributions, as appropriate? 4. Does the project limit the participation of women or men based on pregnancy, maternity/paternity leave, or marital status? 5. Is information about project objectives	No	• The project's focus on providing water purification systems (WPS) to schools and institutions directly supports gender equality by reducing the burden on women and girls who often bear the responsibility of water collection. • Access to safe drinking water through WPS contributes to better health outcomes, benefiting women and girls, and aligns with Sustainable Development Goal (SDG) 3: Good Health and Well-being. • The project's emphasis on distributing WPS technologies primarily to schools and institutions reduces the influx of workers to communities, mitigating the risk of changes in power dynamics that could exacerbate gender-based violence.	The VPA will not directly or indirectly lead or contribute to adverse impacts on gender. The VPA is about implementation of water purification systems in Nigeria are foreseen to improve the general conditions of women and not to lead to any risk of contributing issues. This is in line with the Gender equality and HR policy of the Impact Carbon (CME).

being communicated in a way that is inappropriate for the local context and not tailored to the methods of understanding of both women and men, which could hinder their participation? 6. Has the project assessed gender risks without referencing the country's gender strategy or equivalent national commitment? 7. Has expert stakeholder(s) been involved, and has their input been requested for the project design on gender equality and women's empowerment? Would the project potentially involve or lead to: 1. adverse impacts on gender equality and/or the situation of women and girls? 2. exacerbation of risks of gender-based violence? For example, through the influx of workers to a community, changes in community and household power dynamics, increased exposure to unsafe public places and/or transport, etc. 3. reproducing discriminations against women based on gender, especially regarding participation in design and implementation or access to		• Improved community health and safety resulting from the project can indirectly contribute to a safer environment, aligning with SDG 5: Gender Equality and SDG 16: Peace, Justice, and Strong Institutions. • The project aims to increase the inclusion of women and girls in decision-making processes, addressing potential discrimination by ensuring their perspectives are considered. • By providing training and employment opportunities related to WPS technologies, the project promotes gender equality in access to opportunities, in line with SDG 8: Decent Work and Economic Growth. • The project's focus on reducing the use of non-renewable biomass and fossil fuels aligns with environmental sustainability goals, reducing pressure on natural resources and indirectly supporting livelihoods that depend on them. • Proper training on technology usage and maintenance ensures responsible resource management, consistent with SDG 15: Life on Land, and supports women's roles in resource access and protection. • In summary, the project is designed to support gender equality, minimize	

opportunities and benefits? 4. limitations on women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well-being.		gender-based violence risks, promote inclusivity, and enhance women's access to resources and opportunities. It aligns with various Sustainable Development Goals while actively working to mitigate any potential adverse impacts on gender equality, women's empowerment, and resource management.	
Principle 3: Community Health and Safety			
1. Does the project involve potential risks to the health and safety of affected communities during its life cycle? 2. Does the project involve any potential risks to the workers' safety and health? Where the project potentially involve or lead to: 1. construction and/or infrastructure development (e.g., roads, buildings, dams)? 2. air pollution, noise, vibration, traffic, injuries, physical hazards, poor surface water quality due to runoff, erosion, sanitation?	No	Safe Water Provision: The project's primary focus on distributing water purification systems (WPS) to schools and institutions directly addresses the risk of unsafe drinking water. By providing a reliable and efficient means of purifying water, the project reduces the potential for waterborne diseases, contributing to improved community health. Indoor Air Quality Improvement: The project's emphasis on replacing the use of non-renewable biomass/fossil fuel for boiling water helps improve indoor air quality. Traditional	The VPAs involves the distribution of the WPS systems to the targeted population in Nigeria. The project activities do not pose risks to the health of the community. The VPA will reduce the risk of illness in communities caused by unsafe drinking water. Also, the distributed WPS technology will help in improving the indoor air quality caused by the burning of biomass/ fossil fuel.

3. harm or losses due to failure of structural elements of the project (e.g., collapse of buildings or infrastructure)? 4. risks of water-borne or other vector-borne diseases (e.g., temporary breeding habitats), communicable and noncommunicable diseases, nutritional disorders, mental health? 5. transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g., explosives, fuel and other chemicals during construction and operation)? 6. adverse impacts on ecosystems and ecosystem services relevant to communities' health (e.g., food, surface water purification, natural buffers from flooding)?		cooking practices using solid biomass fuel often result in indoor air pollution, which can lead to respiratory illnesses. By reducing the reliance on such practices, the project contributes to a healthier indoor environment. Reducing Respiratory Illnesses: The project's shift away from inefficient cookstoves and solid biomass/fossil fuel-based water boiling practices reduces exposure to harmful pollutants that contribute to respiratory illnesses. This reduction in pollution helps mitigate health risks and enhances overall community well-being. Health Awareness and Education: The project may include components of health awareness and education, informing communities about the importance of clean water, proper hygiene practices, and the risks associated with unsafe water sources. This knowledge empowers community members to make informed decisions about their health and safety. Technology Training: As part of the project, training may be provided on the proper use and maintenance of the water purification technologies. Ensuring that community members understand how	

		to operate and care for the systems helps maximize their benefits and minimizes potential risks. Environmental Impact: By eliminating the use of non-renewable biomass and fossil fuels, the project contributes to mitigating environmental risks associated with deforestation, air pollution, and greenhouse gas emissions, which can have long-term health implications for communities. In summary, the project's focus on safe water provision, indoor air quality improvement, respiratory illness reduction, health education, and proper technology training collectively addresses identified risks to community health and safety. These measures work together to create healthier and safer living conditions for the communities benefiting from the project.	
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the project involve altering, damaging, or removing sites, objects, or structures of significant cultural heritage?	No	The project's focus on the dissemination of WPS to schools and institutions in Nigeria emphasizes addressing water purification needs. This does not involve activities adjacent to or within cultural heritage sites without adversely affecting historical, cultural, or religious values. The implementation does not require significant	The project involves the dissemination of the WPS technology to the targeted population in Nigeria. The WPS dissemination doesn't involve anything which can lead to alteration, damage or removal of any critical cultural heritage as confirmed through remote audit.

		excavations, demolitions, or drastic environmental changes.	
Principle 4.2 Forced Eviction and Displacement			
Does the project involve any risks related to involuntary relocation of people?	No	The project emphasizes working closely with local communities, schools, and institutions to ensure that all activities are carried out with their full involvement and consent avoiding forced evictions, involuntary relocations, or economic displacement.	Not Applicable
Principle 4.3 Land Tenure and Other Rights			
Does the project involve any risks related to identifying and managing legitimate tenure rights that may be affected by the project?	No	The project is designed to focus on water purification systems (WPS) distribution to schools and institutions in Nigeria, with the primary objective of providing safe and clean drinking water. The target beneficiaries are schools and institutions, which are generally established entities with established land arrangements. This reduces the likelihood of conflicting with existing land tenure and property rights. Also, the project does not involve activities that would require extensive land use, such as infrastructure development or resource extraction, and therefore less likely to be associated with uncertainties in land tenure.	Not Applicable
Principle 4.4 Indigenous People			
Does the project involve Indigenous People within the Project area of influence who may be affected directly or indirectly by the Project?	No	The project is designed to minimize the potential involvement or negative impacts on areas inhabited by indigenous peoples and their rights. Several justifications support this: • Targeted Distribution: The project explicitly	The project activity involves the dissemination of WPS technology to the targeted population in Nigeria. It has been conformed through remote audit that target areas are distinct from indigenous territories. The technology involved doesn't have direct or

		focuses on distributing water purification systems (WPS) to schools and institutions in Nigeria. These target areas are distinct from indigenous territories, which reduces the likelihood of affecting or encroaching upon indigenous lands and territories. • Geographical Scope: The project's geographic scope is centred on schools and institutions within Nigeria, with a focus on water purification. This localized approach is not aimed at areas specifically inhabited by indigenous peoples, minimizing the risk of encroachment or disruption to their traditional livelihoods. • Non-Invasive Technology: The project involves the distribution of water purification technologies, which do not entail large-scale infrastructure development or resource extraction. These technologies are less likely to have direct negative impacts on indigenous lands, natural resources, and territories. • Human Rights Consideration: The project explicitly acknowledges and integrates a human rights-based approach, ensuring that access to safe drinking water is a fundamental right. While not specifically	indirect negative impacts on indigenous lands, natural resources, and territories.

		targeted at indigenous peoples, this approach underscores the project's commitment to equitable access to clean water, which aligns with the broader principles of human rights.	
Principle 5 Corruption			
1. Does the project involve, or is it complicit in, contributing to or reinforcing corruption or corrupt projects? 2. Does the project have a risk of encouraging bribery, kickbacks, or other unethical behavior?	No	-	Not applicable
Principle 6.1 Labour Rights and Working conditions			
1. Does the project involve, facilitate, or condone forced labor, or pose a potential risk of forced labor? 2. Does the project violate any labor or health and safety laws, international obligations, or ILO conventions? 3. Does the project violate the principles of equal opportunity and fair treatment in its employment decisions? 4. Does the project violate national laws, if available regarding non-discrimination in employment? 5. Does the project allow child labor? 6. Does the project have	No	The project is designed to uphold ethical and fair labor practices, prioritizing the well-being and rights of all workers involved, and aligns with Sustainable Development Goal 8 (Decent Work and Economic Growth). The project: • ensures that all workers are engaged voluntarily, with transparent terms and conditions of employment. • is committed to complying with both national labor laws and international labor standards, ensuring that working conditions and terms of employment meet or exceed legal requirements. • respects the right to freedom of association	The VPA follows the national and international labour laws and policies. HR policy and has been reviewed and is found to be appropriate. VPA employment contracts will be provided at the time of verification.

insufficient processes and measures in place to ensure the safety and health of project workers? 7. Does the project have insufficient measures to safeguard and support vulnerable project workers, such as women, people with disabilities, migrant workers, and young workers, and to prevent any kind of harassment, abuse, bullying, or exploitation, including gender-based violence (GBV)? 8. Does the project have no grievance mechanism available for workers to voice workplace concerns? Is information about this mechanism not provided to workers at the time of recruitment, or is it not easily accessible?		and collective bargaining, enabling workers to voice their concerns and negotiate collectively promoting effective labor rights and empowering workers. • ensures that documented working agreements are in place for all workers, which comprehensively address working conditions and terms of employment promoting decent work and fair treatment. • implements policies to provide quality accommodation and basic services, ensuring non-discrimination and equal opportunity promoting safe and inclusive working environments. • strictly prohibits discrimination or harassment based on any factors unrelated to job requirements, fostering a respectful and inclusive workplace. • has a zero-tolerance policy for child labor, adhering to national and international standards. This aligns with SDG 8's commitment to eradicating child labor and protecting the rights of children. • places a strong emphasis on worker	

		safety and health, providing training, protective equipment, and maintaining thorough records of accidents and incidents. This approach supports SDG 8's goal of promoting safe and secure working environments. • takes measures to protect vulnerable workers, including women, people with disabilities, migrant workers, and young workers, from harassment, exploitation, and gender-based violence. This approach aligns with SDG 8's aspiration to promote inclusivity and equal treatment. • ensures due diligence in managing third-party employees, establishing clear policies and procedures to monitor their performance.	
Principle 6.2 Negative Economic Consequences			
1. Is there a risk of project failure during implementation or after project certification due to a lack of financial resources? 2. Is there a risk of project failure during implementation or after project certification due to a lack of financial resources? 3. Are there any potential risks or negative impacts this project may have on	No	The project design incorporates a robust financial framework that includes the utilization of carbon finance to support local partners engaged in the production, distribution, and maintenance of water purification systems (WPS) technologies. The involvement of Impact Water LLC as the VPA implementer and Impact	The VPA involves the dissemination of WPS technology to the targeted population in Nigeria. No Negative impacts or risks has been identified through the implementation of the project technology. The VPA provides job opportunity to the locals, which has been checked during the remote audit and employment

vulnerable or marginalised social groups, despite the benefits it may bring?		Carbon LLC as the CME provides a structured management system, reducing the risk of project failure due to financial constraints thus contributing positively to the local economy by creating opportunities for training and employment.	contracts.
Principle 7.1 GHG Emissions			
Does the project have a risk of increasing greenhouse gas emissions over the Baseline Scenario?	No	The project aims to replace the use of non-renewable biomass and fossil fuels for boiling water with clean water purification technologies with a clear emphasis on reducing greenhouse gas (GHG) emissions compared to the baseline scenario.	The VPA minimises GHG emissions in comparison to the baseline scenario.
Principle 7.2 Energy Supply			
Does the project pose a risk to the availability and reliability of energy supply to other users?	No	The energy requirements of the water purification systems (WPS) distributed to schools and institutions are zero and therefore shall not exert any pressure on the overall energy supply available to other users.	The VPAs involves the dissemination of WPS technology, and the distributed technology doesn't utilize or consume any electricity.
Principle 8.1 Impact on Natural Water Patterns/Flows			
1. Does the project increase water usage to a level that will not allow for the maintenance of environmental flows? 2. Does the project result in the discharge of wastewater that does not meet the required standard for beneficial reuse and could therefore negatively impact the environmental flow? 3. Does the project have the potential risk to exceed the rate of	No	The project's core objective is to enhance the quality of drinking water by providing water purification technologies. It does not entail any significant alteration or manipulation of natural watercourses, as the activities are centered around improving water quality within schools and institutions, rather than modifying watercourses. Additionally, the project does not involve significant extraction or	Not Applicable

recharge for the groundwater source? 4. Does the project involve any processes or activities that could contaminate the groundwater and render it unsuitable for use?		diversion of groundwater and the underlying activities do not involve large-scale developments like dams, reservoirs, or river basin alterations that could impact groundwater resources.	
Principle 8.2 Erosion and/or Water Body Instability			
Does the project have a risk of negatively impacting the catchment and has it been assessed and addressed?	No	The project's aim is to disseminate water purification systems (WPS) to schools and institutions thus contributing to the reduction in deforestation and therefore is not expected to adversely affect the catchment area.	Not applicable
Principle 9.1 Landscape Modification and Soil			
Is there any risk of soil resource degradation or loss of ecosystem services provided by soils in the project? If yes, the project shall maintain healthy soils by minimising negative impacts on soil health, productivity, structure, and water retention. Steps to minimise soil degradation include crop rotation, composting, using N-fixing plants, and reducing tillage and ecologically harmful substances.	No	The project is cantered around enhancing community health, safety, and well-being by improving access to clean drinking water and reducing indoor air pollution. This focus underscores its supportive role in positively impacting the communities' living conditions, health, and sustainability, without indicating any significant engagement in the management of living natural resources.	Not Applicable
Principle 9.2 Vulnerability to Natural Disaster			
Does the project have any risks associated with natural or man-made hazards that could result from land use changes due to the project?	No	The project involves distribution of water purification systems (WPS) within established settings like schools and institutions and is free from any possibility of large-scale and uncontrolled land use changes that could lead to hazards.	Not Applicable
Principle 9.3 Biosafety and Genetic Resources			

Does the project involve the transfer, handling, and use of genetically modified organisms/living modified organisms that may result in adverse effects on biological diversity?	No	The project's core objective is to distribute water purification systems (WPS) to schools and institutions in Nigeria, with a clear emphasis on low-GHG water purification technologies. The involvement of genetically modified organisms (GMOs) or living modified organisms (LMOs) is extremely unanticipated throughout the project cycle. Also, the project does not engage in the transfer, handling, or use of GMOs/LMOs resulting from modern biotechnology.	Not Applicable
Principle 9.4 Release of pollutants			
Does the project have a risk of releasing pollutants to air, water, and land in routine, non-routine, or accidental circumstances?	No	The project is designed to minimize the risk of releasing pollutants to air, water, and land in routine, non-routine, or accidental circumstances. The focus on distributing water purification systems (WPS) and promoting clean cooking practices reduces reliance on traditional solid biomass and fossil fuel-based methods, significantly lowering air pollutants. Additionally, by enhancing water safety, the project contributes to reducing waterborne pollutants.	Not Applicable
Principle 9.5 Hazardous and Non-hazardous Waste			
1. Does the project involve the generation of waste materials (both hazardous and non-hazardous)? 2. Does the project involve risk of release of hazardous materials resulting from their production, transportation, handling, storage, or use?	No	The project implementation centers on distributing and utilizing water purification systems (WPS) in schools and institutions. These technologies are intentionally designed to function without presenting risks of hazardous material release. Furthermore, any waste produced is subject	The VPA involves the dissemination of WPS technology to the schools and institutions in Nigeria and doesn't have any risk for the hazardous material. The VPA distributes a consumable based technology and doesn't produce any hazardous material as a waste.

3. Does the project involve the use of any chemicals or materials subject to international bans or phase-outs?		to diligent disposal practices, minimizing the potential for hazardous material release throughout the project's lifecycle – from production and transportation to handling, storage, and usage. Importantly, the project maintains strict adherence to international regulations, ensuring that no chemicals or materials subject to bans or phase-outs are utilized.	
Principle 9.6 Pesticide and Fertilizers			
1. Does the project involve the use of chemical pesticides? 2. Does the project involve purchase, store, manufacture, trade or use products that fall in Classes IA (extremely hazardous) and IB (highly hazardous) 3. Does the project use fertilisers, and if so, are measures being taken to minimise their use and nutrient losses to the environment?	No	• The project focuses on water purification technologies (WPS) and does not have a direct connection to pest management activities. • Its primary goal is to provide safe drinking water to schools and institutions, which does not require to involve pest control measures.	Not Applicable
Principle 9.7 Harvesting of Forests			
1. Does the project have a risk of unsustainable forest management, including timber harvesting? 2. Does the project pose a risk of depleting biodiversity and ecosystem functionality in areas where improved forest management is undertaken? 3. Does the project risk not meeting requirements for environment-	No	The project is supportive of sustainable forest management by promoting the use of water purification systems (WPS) and reducing the demand for non-renewable biomass and fossil fuels. This will rather mitigate the risk of unsustainable timber harvesting.	The VPAs involves the dissemination of WPS. There is no harvesting of forest involved.

friendly, socially beneficial, and economically viable plantations using native species whenever possible?			
Principle 9.8 Food Security			
Does the project involve the risk of negatively influencing access to and availability of food for people affected?	No	The project would not potentially involve or lead to modification of the quantity or nutritional quality of food available. Instead, it is focused on improving access to safe drinking water through water purification systems, thereby supporting community health without altering food crops, regimes, exports, or economic incentives.	Not Applicable
Principle 9.9 Animal Husbandry			
1. Does the project involve any risks to animal welfare? Animal welfare shall be ensured by providing access to water and food, appropriate environment, humane treatment, and staff training. Evidence of mistreatment will be treated as an immediate non-conformity. 2. Does the project involve any potential risk of excessive or inadequate use of veterinary medicines? 3. Does the project involve the risk of administering	No	The project's focus on distributing water purification systems (WPS) to schools and institutions in Nigeria is aimed at improving access to safe drinking water for human consumption. This effort does not directly involve or lead to limitations on animals' access to basic needs. Instead, the project's goal to enhance water purification primarily benefits human communities, ensuring better access to clean water. It does not negatively impact animals' access to water, food, shelter, or other essential resources, as its scope is primarily centered on human welfare and environmental sustainability.	Not Applicable

synthetic growth promoters, including hormones?			
Principle 9.10 High Conservation Value Areas and Critical Habitats			
1. Does the project have the risk of negatively impacting HCV areas and/or critical habitats? 2. Does the project in the project area or area of downstream impacts have risks to the following: native tree patches, individual native trees, freshwater resources (including rivers, lakes, swamps, temporary water bodies, and wells), habitats of rare, threatened, and endangered species, and biodiversity-enhancing areas?	No	The project's scope primarily involves the distribution of water purification systems to schools and institutions in Nigeria, focusing on safe water provision and reducing the use of non-renewable biomass for water boiling. Therefore, it is unlikely to have direct impacts on native tree patches, individual native trees, or habitats of rare, threatened, and endangered species. The project's indirect positive effects on reducing air pollution and greenhouse gas emissions can, instead, be supportive of native tree patches, freshwater resources, and biodiversity-enhancing areas. By decreasing the reliance on solid biomass fuel and fossil fuels, the project contributes to improved environmental conditions, which can benefit local ecosystems, water resources, and biodiversity.	Not Applicable
Principle 9.11 Endangered Species			
Does the project lead to the reduction or negative impact on any recognised Endangered, Vulnerable or Critically Endangered species?	No	The project focus is targeted only to the schools and institutions for distributing water purification systems (WPS) and does not involve direct habitat disturbance or distortion of habitats of endangered species.	Not Applicable
Principle 9.12 Invasive Alien Species			
Does project introduce		The project's scope is not	Not Applicable

any alien species (not currently established in the country or region of the project) into new environments?		expected to cause unintended Introductions/ spread of alien species or establishment of new ecosystems. The project focusses on water purification systems (WPS) primarily using chemical disinfection and does not involve the introduction of plant materials or organisms that could become invasive.	

E.2. Gender Sensitive requirements

Means of validation	Question	Justification provided by CME	VVB Assessment
	Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The VPA aims to be gender sensitive in design without excluding marginalized members of society. The VPA seeks to promote gender equality at all levels. The implemented activities including the stakeholder consultation as well as the future implementation of the project activities take into the account gender roles and the abilities of women and men to participate in the decision/designs of the project activities. For the majority of institutions in Nigeria, water fetching, fuel collection and purification activities are handled by women. In fact, the availability of clean water in a reasonable distance is foreseen to reduce women's workload related to water purification, collection of fuel needed for boiling water and caring activities as the risk for water borne diseases. It can be further expected that sexual harassment and violence happening	The VPAs involve implementation of clean drinking water. The VPAs will abide by the national gender strategy. The VPAs include women at every step and do not promote gender disparity in any manner. The WPS maintenance will reduce the time and effort required by women to fetch and purify the water for their families. The WPS are going to impact the overall health of both the gender. So, the VPAs do not involve and is not complicit in any form of discrimination based on gender difference and in line with the National Women Development Policy.

		during fuel collection and water fetching activities may be reduced. Hence, largely women will benefit from the project activity.	
	Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	Project activities are in line with the goals of Nigeria national policies. Nigeria has ratified an Equal Rights into their respective constitution (National Women's Development Policy), which guarantees equal gender rights. The project activities take into the account national policies, in fact the aim is to improve the conditions of the local women and girls by providing access to clean and safe water.	The VPAs align with the goals of Nigeria with respect to equal rights and they also align with the National Women Development Policy which eliminates gender disparity.
	Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Members of women organizations were invited to attend the stakeholder consultation including discussion on Safeguarding Principles & Requirements. No other expert is required for the Safeguarding Principles & Requirements.	It has been confirmed from the Stakeholder consultation report that several women from women organizations were invited to attend the stakeholder consultation meeting/42/.
	Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Members of women organizations were invited to attend the stakeholder consultation. No other expert is required to assist with Gender issues at the Stakeholder Consultation.	It was confirmed from the Stakeholder Consultation report/42/ that members of the women organizations were invited to the meeting and no other expert's opinion was needed.
Findings	No findings.		
Conclusion	The Validation team confirms that the VPAs comply with the GS4GG Gender Equality guidelines and requirements.		

SECTION F. Internal quality control

A draft inclusion report prepared by validation team is reviewed by an independent technical review team (one or more members) to confirm whether all the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion was reached in an objective manner that complies with the applicable

GS4GG 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 the technical review team are independent of the validation team.

During the technical review process, additional findings may be identified, or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to Gold Standard. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that need to be resolved by the validation team. The decision taken by the Technical Reviewer is final and is authorized by the Managing Director on behalf of Earthood Services Private Limited.

SECTION G. Validation opinion

Earthood Services Private Limited (Earthood) has performed a Gold Standard (GS4GG) validation and inclusion of the VPAs under PoA "GS11189- Improved Cookstove and Safe Water Programme". The validation and inclusion were performed on the basis of rules and requirements defined by Gold Standard and UNFCCC, as appropriate.

The review of the PoA-DD, VPA-DD, supporting documents and subsequent follow-up actions (independent research of information) has provided Earthood with sufficient evidence to determine the fulfilment of stated criteria.

The VPAs will lead to access of safe water to the people of Nigeria. The project results in reduction of CO_2e emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario and the emission reductions attributable to the project are, hence, additional to any that would occur in the absence of the proposed GS programme of activities.

The VPAs aims at reducing the GHG emissions over the selected 5 years of renewable crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achievable given that the underlying assumptions do not change.

The monitoring plan explained in VPA-DDs is in compliance with the registered PoA DD, Version 5.0 dated 25/05/2022. It adequately provides for the ex-post monitoring of the project's emission reductions and sustainable indicators as defined in GS PoA-DD. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is Earthood's opinion that Impact Carbon shall be able to implement the monitoring plan.

In summary, "Improved Cookstove and Safe Water Programme – Nigeria- VPA 74 to "Improved Cookstove and Safe Water Programme – Nigeria- VPA 104" as described in the VPA-DD – 74 to VPA-DD 104, meets all relevant GS requirements and correctly applies the baseline and monitoring methodology Emissions reduction from Safe Drinking Water Supply, Version 1.0. Therefore, Earthood requests the inclusion of the "Improved Cookstove and Safe Water Programme – Nigeria - VPA 74 to "Improved Cookstove and Safe Water Programme – Nigeria - VPA 104" under the registered PoA Improved Cookstove and Safe Water Programme as a GS PoA.

Appendix 1. Abbreviations

Abbreviations	Full Texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating / Managing Entity
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
VPA	Voluntary Project Activity
VPA DD	Voluntary Project Activity Design Document
DNA	Designated National Authority
DO	Distribution Organisation
DRB	Demonstrably renewable woody biomass
EB	CDM Executive Board
EIA	Environmental Impact Assessment
FAO	Food and Agriculture organization
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
LAF	Leakage Adjustment Factor
LSC	Local Stakeholder Consultation
NRB	Non-Renewable Biomass
PA	Project Activity
PoA	Programme of Activities
PoA DD	CDM Programme of Activities Design Document
UID	Unique Identification number
ISO	Indian Standard Organization

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Divij Varshney
Education	M.Tech. Renewable energy systems B.Tech. Electrical Engineering
Experience	1.5 years
Field	Climate Change & Environment / Industry
Approved Roles	
Team Leader	Yes (VM)
Validator	Yes (VM)
Verifier	Yes (VM)
Local expert	Yes (India)

Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	Yes (VM TA 1.2, 3.1)		
Reviewed by	Shifali Guleria, Quality Manager	**Date**	18/09/2023
Approved by	Deepika Mahala, Technical Manager	**Date**	18/09/2023

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

Appendix 3. Documents reviewed or referenced

S.No.	Author	Title	References to the document	Provider
1.	UNFCCC	Standard: CDM PS for PoA	Ver. 3.0	Others
2.	UNFCCC	Standard: CDM PCP for PoA	Ver. 3.0	Others
3.	UNFCCC	Standard: CDM VVS for PoA	Ver. 3.0	Others
4.	Impact Carbon	PoA-DD	Version 5.0 dated 25/05/2022	CME

5.	Gold standard	Applied methodology: Emissions reduction from Safe Drinking Water Supply	Version 1.0	Others
6.	GS4GG	GS4GG Stakeholder consultation and engagement requirements	Version 1.2 Dated Oct 2019	Others
7.	GS4GG	Community Services Activity Requirements	Version 1.2 Dated Oct 2019	Others
8.	GS4GG	GHG Product Requirements	Version 2.0	CME
9.	Impact Carbon	VPA-DDs GS12390 (VPA 74) to GS 12420 (VPA 104)	Version 5.0 Dated: 09/04/2024	CME
10.	GS4GG	GS4GG VPA-DD Template	Version 2.3	Others
11.	GS4GG	Gold Standard Programme of Activities Requirements,	Version 2	Others
12.	Government of Nigeria	National Action Plan (NAP)	-	Others
13.	UNFCCC	Standard for Sampling and surveys for CDM project Activities and programmes of activities	Version: 9.0	CME
14.	GS4GG	Principles and requirements for GS4GG	Version 1.2	Others
15.	Impact Carbon	ODA Declaration	-	CME
16.	UNFCCC	Standard for Sampling and surveys for CDM project Activities	Version: 9.0	Others
17.	Impact Carbon	CME approval Letter	-	CME
18.	Impact Carbon	Sample carbon transfer agreement	-	CME
19.	Impact Carbon	Baseline survey sheet	-	CME
20.	IPCC	2006 IPCC default values	2006	Others
21.	ESPL	Remote audit files	04/12/2023 and 17/11/2023	Others
22.	Impact Carbon	Double counting Declaration	-	CME
23.	Impact Carbon	Declaration showing this project as no new registration	-	CME
24.	Impact	Declaration showing this project is	-	CME

	Carbon	implemented independently.		
25.	Impact Carbon	Confirmation letter for performance level of the technologies	-	CME
26.	Government of Nigeria	National Water Resources Bill-2020	2020	Others
27.	Gold Standard	GHG emissions reductions sequestration and product requirements	Version 2.0 Dated April 2021	Others
28.	Impact Carbon	Ex-ante ER sheets	Pertaining to the latest VPA-DDs	CME
29.	Impact Carbon	Data recording sheet for baseline survey	-	CME
30.	Impact Carbon	Baseline survey Forms	Several	CME
31.	WHO	WHO Water Standard	2017	CME
32.	UNFCCC	Guidelines for Sampling and surveys for CDM project activities and programmes of activities	Version 4.0	Others
33.	Impact Carbon	Manufacturer's specifications	Several	CME
34.	Impact Carbon	fNRB calculation sheet	-	CME
35.	IPCC	IPCC 2006 Guidelines for National Greenhouse gas for inventories	2006	Other
36.	GS4GG	GS4GG Template guidelines	V2.2	Others
37.	ESPL	VVB Remote survey check list	-	Others
38.	ILO	Nigeria Labor Act	2006	Others
39.	UN	UN Convention against corruption	2003	Others
40.	UN	UN Declaration on the rights of Indigenous people	2001	Others
41.	Government of Nigeria	National Gender Policy	-	Others
42.	Impact Carbon	Stakeholder Consultation report	V2.0, dated 31/10/2023	CME
43.	UN	UN Human Rights Conventions	2006	Others
44.	Standards Organisation of Nigeria	Nigerian Standard for Drinking Water Quality	-	Others
45.	-	Nigeria Environmental Impact Assessment (EIA) Decree 1992	2012	Others
46.	-	School Academic calendar	-	CME
47.	CME	Employment Records	-	CME

48.	CDM	Tool 30	Version 4.0	Others
49.	-	UN data for the year 2020 and 2021	-	Others
50.	-	Forest Resources Assessment 2020, Country Report Nigeria	2020	Others
51.	GS4GG	GS4GG VPA-DD Guidelines	-	Others
52.	-	Bailies Report 'The carbon footprint of traditional woodfuels. Nature Climate Change'	2015	Others

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

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

FAR ID	01	**Section no.**	D.8	**Date :** 04-12-2023
Description of FAR				
FARs Raised during the Preliminary review of VPAs: 1. As per section 3.4.2 of Programme of Activity requirements and procedures v.2.0, the title of the submitted VPA is inconsistent. Refer Table 2 for examples. 2. As per section 3.6.10 and 3.6.11 of STAKEHOLDER CONSULTATION AND ENGAGEMENT REQUIREMENTS V2.1, PD to share updated documentation with stakeholders through publicly accessible means. The accessibility means is missing in the submitted Consultation report. Also, PD to submit revised report during the design certification process that includes a completed section E. 3. PD to justify how a single local stakeholder meeting dated 29/08/2023 is evident to meaningfully engage, inform about the project impacts, and establish ongoing engagement process with stakeholder groups particularly local people engaged in VPA 74-104.				
Project participant response				**Date :** 18/12/2023
1. Programme of Activity requirements and procedures v.2.0 was published on 05/05/2022 whereas the date of design certification for the master PoA (GS11189), under which the concerned VPAs are being included, is 16/02/2022. Therefore, there are no real case VPAs under the PoA hence section 3.4.2 of the Programme of Activity requirements and procedures v.2.0 is not deemed applicable. 2. There were no negative comments received from the stakeholders at the time of the stakeholder meeting hence no update was required in the project documentation. However, PD shared the non-technical summary of the project activity along with the link of GS registry to access the design certified PoA-DD and provided link of draft VPA-DDs via email. The link of the documents was active for 30 days from the date of invitation. Updated SCR report with detail of shareholder feedback round (SFR) in Section E is being submitted. 3. PP organized a physical meeting in Lagos on August 29, 2023, with provisions for inclusive and comprehensive stakeholder participation. The meeting was designed to accommodate both in-person and virtual attendance. The stakeholders were invited through various means such as email invitations, newspaper advertisement, posters advertisement at public places, etc. to maximize the stakeholder's participation and to collect their feedback on the project activity. The stakeholders were provided the option to either participate in the event physically or virtually. Thus, all stakeholders were provided equal opportunity to participate in the local stakeholder consultation event, not constrained by logistics or location. Public notices were hosted physically at places of public interest (bus stops, shopping centres etc.) to inform the local communities and people about the stakeholder meeting. Additionally, notices were published in leading newspapers in English and local language. The notices provided information on the physical location of the stakeholder consultation process as well as virtual				

meeting link for the stakeholder meeting, should a physical participation be constrained by time/logistics.
Lastly, invitation notices were also broadcasted on the website of the project implementer for a wider reach to various interested stakeholders.

Recognizing the geographical expanse of the project, PP leveraged technology to simultaneously host the stakeholder meeting virtually. Stakeholders' invitations included a free virtual meeting link to allow participation in the meeting if physical participation was constrained by time / logistics. This approach resulted in a broader and seamless inclusion of a wide variety of stakeholders in the event.

Lastly, those who could not attend either physically / virtually, were also offered an option of sharing their feedback via email / letter. In addition, contact details of the regional office were shared in the invitations and the non-technical summary, facilitating stakeholders to provide feedback in person or over the phone, in case of offline communication.

Thus, by offering the aforesaid multiple channels for engagement, PD ensured inclusivity of a wider range of stakeholders from different part of Nigeria in the stakeholder consultation and provide their valuable feedback.

Documentation provided by project participant

DOE assessment	**Date:** 30/12/2023

1. It has been confirmed through the registered PoA and VPA that the date of design certification PoA (GS11189) is 16/02/2022. Hence, the PoA requirements version 2.0 is not deemed applicable for the VPA to be included, which is found to be appropriate. Hence, there are no real case VPAs to be included under the master PoA (GS11189). CLOSED
2. The updated SCR has been checked and the details of the feedback round has now been filled by the CME in section E of the VPA-DD. The details has been checked and is found to be appropriate. The accessibility means has now also been provided by the CME in the updated SCR Report. CLOSED
3. The information provided has been reviewed. CME has conducted the physical meeting in Lagos along with the option for the participants to join remotely, via Teams, which is evident from the invitation evidence where the link to the teams meeting was also shared by the CME. The approach taken by the CME has resulted in a broader participation, throughout the geographical boundary of Nigeria even though the physical meeting was only conducted in Lagos. The participation in both physical and online meeting was confirmed through photographs and attendance sheets. CLOSED

Thus, FAR#01 is CLOSED.

Table 2. CL from this verification

CL ID	01	**Section no.**	D.5.3	**Date :** 04-12-2023
Description of CL				
In Section B.6.2, for parameters 'Water sources in the project boundary', 'Stove technologies used in the project boundary', 'Expected technical life of project technology', 'Percentage of fuel f use in target population', 'η_{wb}', 'C_b', CME has mentioned source of data as 'Design certified VPA-DDs of VPA 01 - 30'. However, as per the applied methodology, source of data could be: Baseline study, Credible published literature for project region, Studies by academia, NGOs or multilateral institutions, or Official government publications or statistics. CME is requested to justify how the adopted source is appropriate.				
Project participant response				**Date :** 18/12/2023

The source of data for 'Expected technical life of project technology' has been specified as manufacturer specifications in the concerned VPA-DDs. For other parameter referred above, the following substantiates the approach adopted in the concerned VPA-DDs.

The concerned VPAs (74-103) apply the same baseline parameter values as established in the design certified VPAs (VPA01-30) under master PoA GS11189. The values for referred parameters in VVB question above, were duly established in VPA 01-30, via comprehensive baseline study conducted in Aug-Sep 2021, in compliance with the applied methodology.

The concerned VPAs (74-103) have the same technology/measure, service level and project boundary as that of the design certified VPAs 01-30. Additionally, the baseline surveys having been conducted in Aug-Sep 2021 complies with methodological requirement of data source's vintage (not older than three years) used to establish parameter values.

Thus, based on aforesaid, given, the parameter values are being sourced directly from design certified VPA-DDs as a credible option, the concerned VPA-DDs refer to "Source of data" as "Design Certified VPA-DD of VPA01-30".

Documentation provided by project participant

DOE assessment	**Date:** 30/12/2023

The revised VPA-DDs has been reviewed. CME has conducted the baseline survey to determine the baseline scenario for the implementation of the improved water technology in schools and institutions in Nigeria in Aug – Sept 2021 (which is less than 3 years) for the concerned VPAs 01 – 30, which has been validated and accepted by GS for the GS design certified VPAs 01 – 30. The results of the same has been shared by the CME and is found to be appropriate. Hence, the source of data adopted for the same is found to be appropriate and valid for the inclusion of the concerned VPAs.

Thus, CL#01 is CLOSED.

CL ID	02	**Section no.**	ER Sheet	**Date :** 04-12-2023

Description of CL

In ER Sheet, Tab: Assumptions & ER Values, parameter '% full day premises', Cell E19: AC19, CME has considered the value to be 7%. Kindly clarify the basis of assumption of the assumed value.

Project participant response	**Date :** 18/12/2023

The "% full day premises" mentioned in Cell E19: AC19 of the tab "Assumption & ER Values" of ER sheet has been assumed for ex-ante calculation of parameter QPWp.

The value has been determined based on project developer's experience, knowledge and professional judgement, gained from having successfully implemented multiple identical VPAs in Nigeria (VPA 01-30).

Documentation provided by project participant

DOE assessment	**Date:** 30/12/2023

The information provided has been reviewed. The CME and VPA implementors has successfully implemented other VPAs with similar technologies under the same PoA and have gained experience and knowledge for the same. The CME has assumed the parameter based on the same experience. Also, the value applied has been reviewed through the ex-ante ER sheet of VPA 01 – 30, which has implemented same technology in Nigera, and is found to be the same.

Thus, CL#02 is CLOSED.

Table 3. CAR from this verification

CAR ID	01	**Section no.**	D.5.3	**Date :** 04-12-2023

Description of CAR

Section B.7.1 of VPA-DD, parameter '$DP_{p,y}$', the value of parameter is stated as '210', which is the average number of days per year on which schools or institutions in Nigeria will be in session. However, as per the school academic calendar submitted the number of days are 182 days. PP is requested to clarify the correct value for the parameter.

Project participant response	**Date :** 18/12/2023

The type of beneficiary school being included under a VPA may be boarding, non-boarding or both. The number of days mentioned in the calendar is applicable only to the non-boarding population of the school. In the case of boarding school, number of creditable days also includes weekends and short public holidays, however, excludes term breaks (mid-term and end term holidays). This is because the boarding population shall consume water during weekends and short public holidays. Thus, the number of creditable days in case of boarding is more compared to non-boarding schools. Therefore the number of days '$DP_{p,y}$' is a function of % of boarding/non-boarding population in the VPA installation database.

The parameter value of '$DP_{p,y}$' specified in the VPA-DDs is merely for ex-ante estimates. Being a monitoring parameter, it shall be calculated based on weighted mix of actual number of creditable days on boarding and non-boarding schools based on the academic calendar for the corresponding monitoring period.

Documentation provided by project participant

DOE assessment	**Date:** 30/12/2023

The information provided by the CME has been checked and it is conformed that database includes both boarding and non-boarding schools. The consumption of water in the boarding school will be higher as compared to non-boarding school. Being the monitoired parameter, CME will calculate the average number days based on the school type (boarding and non-boarding schools). The approach defined by the CME is found to be appropriate and hence, acceptable.

Thus, CAR#01 is CLOSED.

CAR ID	02	**Section no.**	D.8	**Date :** 04-12-2023

Description of CAR

In the Stakeholder consultation report, the details of the feedback round is found to be missing (Refer Section E). CME is requested to provide the details of feedback round in SCR and section E of the VPA-DD.

Project participant response	**Date :** 18/12/2023

Updated SCR report with detail of SFR is being submitted.

Documentation provided by project participant

DOE assessment	**Date:** 30/12/2023

The updated SCR has been checked and the details of the feedback round has now been filled by the CME in section E of the VPA-DD. The details has been checked and is found to be appropriate.

Thus, CAR#02 is CLOSED.

CAR ID	03	**Section no.**	D.5.3	**Date :** 04-12-2023

Description of CAR

It has been observed that Tool 30 version 2.0 has been used to calculate the value of f_{NRB}. However, latest version available is v4.0. CME is requested to justify the use of older version of Tool 30 for the calculation of f_{NRB} and make changes in VPA-DD as required.

Project participant response	**Date :** 18/12/2023

In the host country, there are a total of 31 VPAs (VPA01-30 utilizing WPS technology and VPA48 using ICS technology) that have been design certified under the PoA GS11189. The fNRB value (fixed ex-ante) for Nigeria in the certified VPAs 01-30, determined as per ver 2.0 of CDM Tool 30, stands at 96%. The fNRB value (fixed ex-ante) for Nigeria in the certified VPA 48, determined as per ver 3.0 of CDM Tool 30, stands at 91%.

Please note that PoA was registered under older regime of PoA structuring in GS. At the time of PoA registration, the concept of real and regular VPAs did not exist. However, given the PoA-DD does not have any section for defining the ex-ante fixed values, hence it is deemed that the first VPA design certified under the PoA (for a given technology/measure) shall govern the values of the ex-ante parameters for subsequent VPAs (of same technology/measure), till the time of renewal of crediting period of first VPA. Therefore, for WPS technology/measure, VPA 01-30 having the ex-ante fNRB value of 96% design certified, can be used in subsequent VPAs being included in the PoA before its renewal of the crediting period.

Despite the above, the CME has now adopted a conservative value of 91% for fNRB for the concerned VPA, taking reference from VPA 48 (being the most recently registered VPA in Nigeria) instead.

Thus, the latest version of CDM Tool 30 shall be applied at the time of VPA crediting period renewal, to be followed for all subsequent VPAs being included in the second crediting period.

Documentation provided by project participant

DOE assessment	Date: 30/12/2023
The revised VPA-DDs has been reviewed. The CME has now updated the value of f_{NRB} to be 91%. The value has taken from the registered VPA (VPA 48) under the same PoA (GS11189) in the host country Nigeria. The information provided by the VPA has been reviewed and is found to be appropriate with regards to the calculation for the value of f_{NRB}. Thus, CAR#03 is CLOSED.	

Table 4. FAR from this verification

FAR ID	XX	Section No.		Date : DD/MM/YYYY
Description of FAR				
XX				
Project participant response				**Date :** DD/MM/YYYY
XX				
Documentation provided by project participant				
XX				
DOE assessment				**Date:** DD/MM/YYYY
XX				

e.g., there is no FAR from this verification.