Verification and certification report form for CDM programme of activities (Version 03.0)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	Impact Carbon Global Safe Water Programme of Activities (PoA) UNFCCC ID: PoA 9948	
Version number(s) of the PoA-DD(s) to which this report applies	7.0	
Version number of the verification and certification report	3.0	
Completion date of the verification and certification report	25/03/2021	
Monitoring period number and duration of this morning period	Second Monitoring Period 23/05/2017 – 22/05/2019 (both days inclusive)	
Number and version number of the monitoring report to which this report applies	Monitoring report version: 4.0	
Coordinating/managing entity (CME)	Impact Carbon	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Rwanda	No
	Uganda	Yes
	Nigeria	No
	Kenya	No
Applied methodologies and standardized baselines	Methodology: AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0) Standardized Baseline: Not applicable	
Mandatory sectoral scopes	3: Energy Demand	
Conditional sectoral scopes, if applicable	-	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	668,756 tCO_2e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	67,376 tCO_2e	
Name and UNFCCC reference number of the DOE	TÜV NORD CERT GmbH E-0022	
Name, position and signature of the approver of the verification and certification report	Final Approver Stefan Winter	

SECTION A. Executive summary

Impact Carbon has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the CDM Programme of Activities (CDM-PoA-9948):

"Impact Carbon Global Safe Water Programme of Activities (PoA)"

with regard to the relevant requirements for CDM PoAs.

This verification covers the monitoring period from 23/05/2017 – 22/05/2019 (including both days).

The PoA involves distribution of low greenhouse gas emitting, safe drinking water purification systems (WPS) across the identified host countries. The safe potable water is delivered to the end users after treatment from Ultraviolet or Chemical (Chlorination) disinfection technology. The CPAs under consideration (CPA 9948-P1-0002-CP1 and 9948-P1-0014-CP1 to CPA 9948-P1-0022-CP1, 10 CPAs) have been implemented in Uganda and result in reduction in consumption and/or replacement of the non-renewable biomass or fossil fuels which would have been used for boiling water to make it suitable for drinking, in the baseline. Thus, in absence of CPAs under the PoA, the usage of fuel wood and other fossil fuel would have continued for boiling water to make it suitable for drinking purposes and would have resulted in GHG emissions.

Details of the PoA location are given in table A-1 below:

Table A-1: **Project Location** CPA 9948-P1-0002-CP1 and 9948-P1-0014-CP1 to CPA 9948-P1-0022-CP1

No.	Project Location
Host Country	Uganda
Region:	Entire country
Latitude	4°N and 2°S
Longitude	29° and 35° E

This Programme of Activities consists of a total of 102 CPAs (at the end of the monitoring period) of which 10 are considered as part of this monitoring period. The CPA's are described briefly below:

Basic technical details of the PoA are summarized in table A-2.

Table - A-2: Technical data of CPA 9948-P1-0002-CP1 and 9948-P1-0014-CP1 to CPA 9948-P1-0022-CP1

CPAs	**CPA 9948-P1-0016-CP1 to CPA 9948-P1-0022-CP1**	**CPA 9948-P1-0002-CP1, CPA 9948-P1-0014-CP1, CPA 9948-P1-0015-CP1**
Name of models	UltraFLO	Multi-barrier UV
Water Source	Piped	Piped
Flow rate	20 L/min	Small UV: 2-4 L/min (1 GPM) Large UV: 6-8 L/min (2 GPM)
Capacity/lifespan	340,000 L / 5-year expiry	Small UV: 2,044,116 L / 7 years Large UV: 4,088,232 L / 7 years
Fixed or Portable	Fixed	Fixed
Removal of E. Coli	99 (2-log)	>99 (4-log)

As a result of this verification, the verifier confirms that:

- all operations of the CPAs assessed under this verification report (CPA 9948-P1-0002-CP1 and 9948-P1-0014-CP1 to CPA 9948-P1-0022-CP1) which are claiming CERs are implemented and installed as planned and described in the included component project activities design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-III.AV ver. 4.0
- the equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately (as applicable),
- the monitoring system is in place and functional. The CPAs have generated GHG emission reductions.

As the result of the 2nd periodic verification of the PoA, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as follows:

Emission reductions: **67,376 tCO_2e**

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader + Technical Expert	EI	Mishra	Prakash Kumar		x	x	x	x

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Stöhr	Christina	TÜV NORD CERT
2.	Technical reviewer/Approver	IR	Winter	Stefan	TÜV NORD CERT

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.
Various tools have been established in order to ensure an effective verification planning.

Materiality Threshold
The verification is based on the materiality threshold identified in table C-1 below:

Table C-1: Applied Materiality Threshold

	Threshold	Related to
☐	**0.5 %**	**Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year[1];**
☐	**1 %**	**Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;**
☐	**2 %**	**Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;**
☒	**5 %**	**Emission reductions or removals for registered small-scale CDM PoA other than registered CDM PoA covered under next category below;**
☐	**10 %**	**Emission reductions or removals for the type of registered small-scale CDM PoA referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).**

Strategic Analysis

At the beginning of the verification the verification team leader has assessed the nature, scale and complexity of the verification tasks, by carrying out a strategic analysis of all activities relevant to the project activity. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

Risk analysis and detailed audit testing planning

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the following table is used.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Analysis and transfer of data from: • Sales records (supported by Sales receipts, Installation forms), • Water Quality Testing Reports, • Sampling Surveys (for each technology type), international reports (with traceability) which are utilized for determination of	Low	Human error during transfer of data from, Sales record, monitoring Sampling Survey records, Water Quality Testing, reports/sheet etc (manual operations) for BE, PE and ER	Thorough cross-check and assessment required on the generation and transfer of data to the ER spreadsheet. Assessment of data generation, collection and recording for all monitoring parameters and appropriateness of sampling plan etc. Assessment of information flow processes, data reporting, aggregation, management, and QA/QC procedures in place by CME to ensure the sales /

[1] A year refers to a period of 12 consecutive months.

	the parameter $f_{NRB,y}$, • Biennial/ Annual sampling results, • Sales invoices database, • Sampling surveys, • Surveys Records, • UNHS, Household Survey Report 2016/17 for Transcription of monitored values from monitoring records to MR and excel ER spreadsheet.		calculations	installation database is accurate

On the basis of the risk analysis, the verification has been planned. A detailed audit / verification plan (remote assessment) has been prepared and submitted to the project participant(s) in due time before the on-site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning, verification process is carried out. The concept of materiality considered during the verification process. A breakdown of the chosen approaches is included in the following table.

Parameter	***Approach+***	***Errors* detected***	***Findings reference***	***Corrected***	***Remaining verification risk***
QPW_y (Quantity of purified water in year *y*)	CDC	☒	CL 01, CAR 01, CAR 02, CAR 03, CAR 04	☒	Not material
$T_{y,i}$ (Total distributed water purification systems)	CDC	☒	CAR 01, CAR 02, CAR 03, CAR 04	☒	Not material
$N_{y,i}$ (The average population serviced by water purification systems)	CDC	☒	CL 01, CAR 03, CAR 04	☒	Not material
Water $Quality_i$ (Water quality measurement)	SPL	☒	CAR 04, FAR 01	☒	Not material
Operational $Units_i$ (percent of monitoring period in which the units are in use	SPL	☒	CAR 01, CAR 02, CAR 03, CAR 04, FAR 01	☒	Not material
$f_{NRB,y}$ (Fraction of woody biomass saved by project activity in year, y, that can be established as non-renewable biomass)	CDC	☒	CAR 02, CAR 03, CAR 04	☒	Not material
η_{wb} (Efficiency of water boiling system being replaced)	CDC	☐	NA	☐	Not material

Parameter	*Approach*[+]	*Errors* detected*	*Findings reference*	*Corrected*	*Remaining verification risk*
$EF_{projected_fossilfuel}$ (Emission factor as per AMS-I.E procedures when NRB is displaced or the emission factor of the fossil fuel substituted)	CDC	☐	NA	☐	Not material
Existence of public distribution network of safe drinking water (Existence of public distribution network of safe drinking water in year y)	SPL	☒	CAR 01, FAR 01	☒	Not material
$EC_{PJ,j,y}$ (Quantity of electricity consumed by the project electricity consumption source j in year y)	CDC	☒	CAR 02, CAR 04	☒	Not material
Aggregate					Materiality threshold not exceeded

**) incl. omissions and misstatements*

+) Verification Approaches:

CDC: Complete data check of data including all data aggregation steps
NDC: Non-complete data check – omissions not material
SPL: Sampling approach (all data available)
ASP: Acceptance Sampling
COM: Data check at higher data aggregation levels and sampling at original data levels

For above risk mentioned in section C.1, the verification team has conducted a thorough cross check and verification as follows:

Analysis and transfer of data from, sales records, usage Survey, water quality testing report to MR and excel ER spreadsheet:

Total sales record presented in ER calculation spreadsheet and MR were assessed and verified against the evidence submitted by CME during desk review and during remote audit assessment[2]. The CME conducted sampling surveys in accordance with the registered monitoring plan. Verification team assessed the monitored data collected by CME for different sampling-based monitoring parameters. This was to determine the parameters e.g. proportion of WPS units in use/ in operation over the monitoring period, proportion of WPS installed providing safe water quality and the Existence of public distribution network providing safe drinking water every year in accordance with registered monitoring plan (Annual monitoring) and found them to be acceptable. Other parameters used for determining QPW_y i.e. number of people served by the distributed water purification systems and the count of non-barding and boarding persons were verified by the Verification team against original sales records. The desk review assessment, remote audit assessment observations and subsequent closures of the raised findings (refer Appendix-4 and Appendix-5 of this report) confirm that the values presented in the ER calculation worksheet are accurate, appropriate and consistent with the MR.

In addition, verification team has assessed the value of different monitoring parameters in CME's records and verified /compared the same with observations and interview response by the project technology users during remote audit assessment. During the course of verification, CAR/ CLs were raised and were subsequently closed against appropriate justification provided by the PP and submission of revised MR and ER sheet. For more detail, please refer Appendix-4 of this report.

[2] Refer section D.2 for details of Remote audit assessment

SECTION D. Means of verification

D.1. Desk/document review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- The last revision of the PoA-DD including the monitoring plan/PoA-DD/
- PoA Validation Report/VAL/the last revisions of the CPA-DDs
- The last revision of the CPA validation reports/VAL/,
- The monitoring report, including the claimed emission reductions for the PoA/MR/,
- Sales Receipt/PO/
- Project/ Sales database in chronological order/PO/
- Questioner for undertaking the Sampling Survey Records and related work sheets/USAGE/
- Technical Specification of the Aquagenx Water Testing kit/TS/ELIG/
- Water Quality Testing Report
- The emission reduction calculation spreadsheet/XLS/.
- Sample size calculation spreadsheet for Project Survey
- Training Procedures/TRG/
- Survey report for determination of the fraction of the woody biomass saved by the project activity

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

D.2. On-site inspection

A remote audit was conducted using alternative means of verification due to Pandemic of COVID-19 and related lockdown in the host country of Uganda. Detailed explanation on remote audit is provided under D.4.2 below.

Duration of Remote-site Assessment: 11/05/2020, 12/05/2020				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	• Assessment of the installation database • Assessment of sample end-user/customer's agreements/receipt/installation record (Sales Force Enterprise Edition) • Comparison of end-user/customer's agreements / installation record/ School Installation Records with the Sales Database • PO (Tax Invoice with the name of the Institution, date of invoice, Type of technology) • Sales Force Enterprise Edition with information in the database (date of installation, technology implemented, School SF ID number, Contact number, name of the institution, type of institution (boarding, non-boarding, both), Unique Product ID number etc.) • Assessment of data management system, QA/QC procedures • Interviews with CME, CPA implementer, monitoring staff • Interviews with CME/CPA representative • Discussion of emission reductions and supporting documentation • Telephonic/ Skype based interviews with representatives of CME and enumerators • Video / Telephonic interview with randomly selected sampled users from total database and also to further cross verify if the samples	Remote/skype/ telephonic	11/05/2020 12/05/2020	Prakash Kumar Mishra (PKM)

Duration of Remote-site Assessment: 11/05/2020, 12/05/2020				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
	taken are representative of the entire population			
2.	Remote verification of randomly selected school Management representatives (Principal, Head Teacher)	Remote/skype/ telephonic	11/05/2020 12/05/2020	Prakash Kumar Mishra
3.	• Data collection, aggregation and processing • Discussion on MR and supporting documents and final closing meeting	CME/CPA Implementer/c onsultant	11/05/2020 12/05/2020	Prakash Kumar Mishra

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Brown	Julie	Impact Carbon, Director (Operations)	11/05/2020 - 12/05/2020	Implementation schedule, justification on not postponing onsite visit dates upto, delivery deadlines, schedules etc. Trainings, Information flow, data Management, record keeping, Financial Management, staff training, sales database CPA development, QM, Organisational structure, QA/QC, raw data, sales database	PKM
2.	Kalcic	Katrina	Impact Carbon Uganda, Country Director	11/05/2020 12/05/2020	CPA development, QM, Organisational structure, QA/QC, raw data, sales database	
3.	Lohia	Rohit	CSIPL (Carbon Consultant)	11/05/2020 12/05/2020	sales database, raw data, QA/QC MR development, ER calculation and monitoring aspects including Sampling & Survey analysis	
4.	Akankunda	Moreen	Impact Carbon Uganda, Operation Installation Manager	11/05/2020 12/05/2020	Data management, including data check/verification, transcription of data from survey form to excel file survey protocol, survey related trainings, experience etc.	
5	Neville	Timothy B.	Impact Carbon, COO	11/05/2020 12/05/2020	Survey designing, survey team trainings, appointment process, survey protocol, survey questions and appropriateness, survey related point check e.g., operation status verification, check and recording of the details through interview	
6	Kankwiine	Joan	Impact Carbon, Representative	11/05/2020 12/05/2020	Recording template, training, equipment used, calibration etc.	

7	Kumar	Nihar	CSIPL (Carbon Consultant)	11/05/2020 12/05/2020	MR development, ER calculation and monitoring aspects including Sampling & Survey analysis QA/QC, raw data, sales database	
8	Kumar	Ritesh	CSIPL (Carbon Consultant)	11/05/2020 12/05/2020	MR development, ER calculation and monitoring aspects including Sampling & Survey analysis QA/QC, raw data, sales database	
9	Faida	Jennifer	Cook (Bugolobi CDC), Technology-Multi Barrier UV	11/05/2020 12/05/2020	Usage of the water filtration devices, baseline water source for drinking purposes, date of installation, operation and maintenance survey, survey related verification.	
10	Bwire	Emmanuel	Administrator (Jordan Junior School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
11	Ndiwalana	Manisul	Director of Studies (KAVUMBA CHURCH OF UGANDA)-Technology-UltraFlo	11/05/2020 12/05/2020		
12.	Osiru	Patrick	Head teacher (Kireka Home for Mentally Handicapped), Technology-UltraFlo	11/05/2020 12/05/2020		
13.	Nakabazi	Lillian	Bursar (Linnet ps), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
14	Kasumba	Richard	Deputy Head Teacher (Lutembe International School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
15.	Napokoli	Evalyne	Head teacher (Mwana Primary), Technology-Multi Barrier UV	11/05/2020 12/05/2020		

16.	Mpaji Geofrey	Bakulu	System Attendant (Mbogo Mixed Secondary School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
17.	Busingye	Julius	Deputy Teacher (All Saints Junior School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
18.	S	Robert	Director (Blessed Parents ps), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
19.	Samanya	Bright	Deputy Head teacher (Brighton Junior School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
20.	Aropet	Moses	Head Teacher (Grapevine Nursery & Primary), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
21	Mugooda	Francis	Deputy Head Teacher (Mother Kevin), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
22.	Noah	Taika	Head teacher (Heritage School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
23.	Okurut	Joyce	Director (Nissi Education Services), Technology-Multi Barrier UV	11/05/2020 12/05/2020		
24.	Ssebale	Wilson	Head Teacher (Njovu P. School), Technology-Multi Barrier UV	11/05/2020 12/05/2020		

D.4. Sampling approach

D.4.1 Sampling during monitoring

The monitoring frequency followed is annual whereas the monitoring period is a two-year monitoring period. Thus, the CME has conducted two annual monitoring sessions (MS1 and MS2) representing one year each “23 May 2017 - 22 May 2018” and “23 May 2018 – 22 May 2019” respectively of complete two-year monitoring period. The following sections represent both the monitoring sessions (MS1 and MS2):

☐	No sampling approach has been used by the PP to determine the monitored parameters
☒	A sampling approach has been taken for the following monitored parameter(s):

Sr. No	Parameter	Sampling approach [1)]	Sampling Type [2)]	Population	Sample Size
(MS1): 23/05/2017 to 22/05/2018					
1.	Water quality (Multi barrier UV)	*StRS*	PS	693	42
2.	Operational units (Multi barrier UV)	*StRS*	PS	693	44
3.	Existence of public distribution network of safe drinking water (Multi barrier UV)	*StRS*	PS	693	42
(MS2): 23/05/2018 to 22/05/2019					
4.	Water quality (UF)	*StRS*	PS	78	(7 UF + 41 UV) = 48
5.	Water quality (Multi barrier UV)	*StRS*	PS	953	
6.	Operational units (UF)	*StRS*	PS	78	(7 UF + 43 UV) = 50
7.	Operational units (Multi barrier UV)	*StRS*	PS	953	
8.	Existence of public distribution network of safe drinking water (UF)	*StRS*	PS	78	(7 UF + 41 UV) = 48
9.	Existence of public distribution network of safe drinking water (Multi barrier UV)	*StRS*	PS	953	

[1)] Sampling Approaches:
SiRS: Simple Random Sampling
StRS: Stratified Random Sampling
SS: Systematic Sampling
CS: Cluster Sampling
MSS: Multi-stage Sampling
[2)] Sampling Types:
PS: Parameter Sampling

A stratified random sampling was carried out across all specific-case CPAs covered in this monitoring report.

i. Sampling overview

Representative sampling has been undertaken as part of SSC-PoA-wide Sampling Plan (by grouping and sampling across CPAs). The Sampling is based on 95/10 confidence/precision.

ii. Objectives and Reliability Requirements

The objective was to obtain an unbiased and reliable estimate of the proportion or mean value of the following parameters over the course of the monitoring period, and with 95/10 confidence/precision for sampling across CPAs.

1. Water quality
2. Operational units
3. Existence of public distribution network of safe drinking water

iii. Target Population

The target population for the three parameters stated above are all WPS units that were installed/ distributed in institutions and recorded in the project sales database.

iv. Sampling Frame

The target population are all the WPS units that were installed/ distributed in institutions and recorded in the project sales database for the corresponding monitoring session. Since all parameters under monitoring are homologous (i.e. implemented in institution), the application of the common sampling for all the parameters is justified.

v. Sampling Method

Stratified Random Sampling was applied across the WPS population. Random numbers were generated using online random number generator. The WPS distribution data was arranged by date of distribution, and the samples corresponding to the random numbers obtained via online random number generator were picked for sampling.

The required sample sizes were derived using below stated equation (1), (2), (3), (4) and (9) of Appendix 3 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 for proportion-based parameter as follows:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,

n = number of WPS to be sampled

N = Total number of WPS in the population

z = Constant referring to level of confidence (1.96 for 95 % confidence)

Precision = Required precision (e.g. 10% = 0.1)

$$V = \frac{SD^2}{\overline{p}^2}$$

Where:

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$\overline{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,

g_i = weight of strata i in the population

p_i = expected proportion of strata i in the population

k = total number of strata in the population

Stratified Random Sampling was applied by dividing the population into one stratum for MS1 (Multi-barrier UV) and two strata (UltraFLO and Multi-barrier UV) for MS2. The expected parameter values (proportion) were determined based on project developer's knowledge and experience as per para 13(b) and 13(c) of the "Standard: Sampling and surveys for CDM project activities and programmes of activities".

The CPA sub-group population was arranged chronologically for each stratum. The WPS were selected by randomly assigning, in corresponding stratum, a number to each WPS and sorting in increasing order from lower to higher number. Random numbers were generated using online random number generator for each stratum and the numbers obtained were used to identify the samples from the stratum population. A slightly higher number of samples were identified than that required to cover for outliers / non-response and ensure that the desired precision / confidence is achieved.

Based on the registered monitoring plan, 95/10 reliability level is selected for cross-CPA specific sampling for all the parameters listed above at annual monitoring frequency as prescribed in PoA - DD and CPA-DD. The target population for the parameters stated above are total and all Installed/distributed WPS as stated under the sales database covered under the monitoring period /DB/.

Sample size calculation is assessed to be in accordance with registered sampling plan in PoA-DD/CPA-DD and the guideline "Sampling and surveys for CDM project activities and programme of activities ", version 04.0.

CME/PP has submitted sample size calculation spreadsheet including reliability worksheet and random number generator where it was demonstrated that samples are drawn randomly using stratified random sampling technique. DOE further has crosschecked the sampling approach by CME as per MR section E.3 against related PoA-DD and CPA-DD requirements. Besides the related sample size have been checked with corresponding supporting documents. Input parameters for the sampling calculation have been checked whether consistent with the stated approach and against PoA-DD, CPA-DD and sampling guidance. Further, DOE has recalculated the required confidence/precision to be met.

D.4.2 Sampling approaches during verification

☐	No sampling approach has been used by the VT to verify the monitored parameters
☒	A sampling approach has been applied by the VT for the following monitored parameter(s):

Sr. No	Parameter	Sampling approach 1)	Sampling Type 2)	Population	Sample Size[3]
(MS1): 23/05/2017 to 22/05/2018					
1.	Water quality	*StRS*	PS	42	08 (02 Non-boarding schools and 06 both; boarding and non-boarding)
2.	Operational units	*StRS*	PS	44	08 (02 Non-boarding schools and 06 both; boarding and non-boarding)

[3] Please refer section D.3 of this report for technology and institution type (boarding/non-boarding/both)

3.	Existence of public distribution network of safe drinking water	*StRS*	PS	42	08 (02 Non-boarding schools and 06 both; boarding and non-boarding)
(MS2): 23/05/2018 to 22/05/2019					
4.	Water quality (UF)	*StRS*	PS	7	(2UF + 06 UV with mixed type schools i.e. Boarding/non-boarding/both) = 08
5.	Water quality (Multi barrier UV)	*StRS*	PS	41	
6.	Operational units (UF)	*StRS*	PS	7	(2UF + 06 UV with mixed type schools i.e. Boarding/non-boarding/both) = 08
7.	Operational units (Multi barrier UV)	*StRS*	PS	43	
8.	Existence of public distribution network of safe drinking water (UF)	*StRS*	PS	7	(2UF + 06 UV with mixed type schools i.e. Boarding/non-boarding/both) = 08
9.	Existence of public distribution network of safe drinking water (Multi barrier UV)	*StRS*	PS	41	

1) Sampling Approaches:
SiRS: Simple Random Sampling
StRS: Stratified Random Sampling
SS: Systematic Sampling
CS: Cluster Sampling
MSS: Multi-stage Sampling
2) Sampling Types:
PS: Parameter Sampling

Remote audit assessment:

Due to COVID-19 pandemic there was a complete lockdown in the Host Country of Uganda where movement in the field was not permitted and hence, Verification Team, in line with UNFCCC INQ-09667 (email reply from Secretary to The CDM Executive Board, dated 20/03/2020 where agreement to relax mandatory site visit by DOE for period of 03 months which is further extended up to December 2020[4]. The extension was conditionally permitted to apply alternative and credible means of verification). The Verification Team has presented the reasoning to demonstrate the fulfilment of conditions to initiate the Remove Audit Assessment:

No	Condition	Applicable (Y/N)	Justification
1	Para 321 of VVS-PS It is mandatory for the DOE to conduct an on-site inspection at verification for the included CPA if: (a) It is the first verification for the DOE with regard to this CPA; (b) More than three years have elapsed since the last on-site inspection conducted for verification for the CPA; or (c) The CPA has achieved more than 300,000 t CO_2 e.q. of GHG	Y	(a) The verification for the CPAs 14 to 22 is undergoing the first periodic verification. Thus, the site visit is mandatory as per § 321 (a). (b) The CME is not availing verification where more than three years have elapsed since the last on-site inspection conducted for verification. Thus, the site visit not is mandatory as per § 321 (b). (c) The CPA's have not achieved more than 300,000 t CO_2 e.q. of GHG

4 https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html

No	Condition	Applicable (Y/N)	Justification
	emission reductions or net anthropogenic GHG removals since the last verification when an on-site inspection was conducted.		emission reductions or net anthropogenic GHG removals since the last verification. Thus, the site visit not is mandatory as per § 321 (c). Justification of alternative, credible and sufficient means for the purpose of verification of on-ground information is provided in detail below under para "Applied Other Credible means of verification"
Justification to avail temporary measures as per agreement to relax mandatory site visit by DOE			
2	Can the site visits be postponed	N	Client has the delivery deadlines of CER's so postponing site visit will cause negative impact on CER delivery commitment by CME. Thus, site visit cannot be postponed.
3	Is it possible to travel to host country Uganda and undertake site visits	N	Global Travel Ban is not allowing the VT to visit to Host country Uganda.

Applied Other Credible means of verification:
The credible other means of verification is applied to cross check on-ground information as described below:

The Verification Team has assessed below evidence:

Photographs and other evidence: These include the photos of the water purification systems with clear depiction of type of system, unique serial number, name of school etc. to confirm the implementation of the project as described in the PoA-DD/CPA-DD. Other records e.g. usage survey records and water quality field test results/records, were assessed to verify their operational status and water quality tests performed over the applied monitoring period. The audit records (remote audit was audio/video recorded wherever possible) are stored in the QMS system of DOE; these records are retrievable and assessable.

Telephonic Call: Telephonic assessment was made by interviewing randomly selected samples to verify the information in the records submitted by PP. The telephonic calls are recorded, stored and maintained so that the assessments of the Verification Team are traceable and reproducible if required.

Skype Calls: This tool has allowed to connect multiple stakeholders such as CME, project developer/ consultant, relevant personnel from monitoring survey/test team, all other relevant persons as per the organogram of the PoA/ CPA including QA/ QC key personnel. The VT could virtually verify the implementation of the project against the requirements in the registered CPAs. The interviews with all the above-mentioned parties including sampled end users were conducted using this tool.

Furthermore, the data collected during the above steps are utilized for assessments which is described in relevant parts of the Verification Report.

The sampling approach conducted is in accordance with "Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities" version 04.0 and the "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities version 08.0". As the population is relatively homogeneous with respect to the object of the sampling effort, stratified random sampling method is adopted for verification of the parameters.

Since the CPAs included in the PoA implement technologies/measures with high degree of standardization and technological capacities i.e. Water Purification System in terms of emission reduction per year in the CPAs are smaller than 1% of small scale CDM thresholds, the verification team decided to draw samples mainly from the project samples selected by PP. i.e. the acceptance sampling approach has been applied.

The verification team followed the "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" version 08, para 29 to 32 and 39, esp. for taking sample out of the CME's sample. Verification team has adopted the acceptance sampling approach (AS) in accordance with § 29, 30, 31 to 32 and 39 of the Sampling Standard. The verification Team checked provisions of the para 39 of the applied standard to apply the producer risk and consumer risk following the provision of para 39 as assessed below:

Statement of para 39: A DOE may select a different sample size other than the one indicated in paragraph 32 above, either by choosing a different value for the consumer risk and producer risk (e.g. 20 per cent for the consumer risk) when applying acceptance sampling or by using another approach, if any of the following conditions apply:)		
No.	Requirement of para	DOE Assessment
1	The estimated volume of annual GHG emission reductions of the project activity or the PoA being verified is equal to or less than 100,000 t CO_2 eq.;	Not Applicable. The verified emission reductions amount to 67,376 tCO_2.
2	The security conditions in the project region prevents inspection of many samples (e.g. conflict zones); or	The COVID-19 was declared pandemic WHO which has created a health situation which was tangible and globally apparent. Thus, the DOE has availed the sampling size accordingly.
3	The project activity or the PoA is located in a least developed country or a host Party with 10 or fewer registered CDM project activities at the end of the monitoring period being verified	The CPA under PoA are located in the LDC i.e. Host Country Uganda as per https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/ldc-country-information

Thus, Verification team has adopted the acceptance sampling approach in accordance with § 29, 30, 31 and 32 of the Sampling Standard by considering AQL 0.5% and UQL 20%). Producer risk of 10% and consumer risk of 10%. Considering the above § under applied sampling standard, DOE has verified 08 samples for each monitoring sessions (the current monitoring period is from 23-05-2017 to 22-05-2019 where monitoring frequency stipulated under PoA is annual, thus this MP constitute 02 monitoring sessions) applying the acceptance sampling approach with acceptance (c) number 0 (randomly picked from CME's samples covering usage related surveys and water quality test results). Therefore, a total of 16 samples from all technology and population type (boarding/non-boarding and both) have been verified remotely by verification team. These samples were randomly selected (from PP's samples) by verification team. The list of these samples verified using remote assessment techniques are presented under section D.3 of this report above.

Table 7: Applied sampling standard

AQL	0.5%
UQL	20%
Producer risk	10%
Consumer risk	20%
Sample size	16 (08 for each monitoring event under current MP which is for 02 years)
Acceptance Number	0

No CME sampling-based monitoring records/data results were found discrepant during the DOE verification remote site audit. All the 16 samples (08 from each monitoring session under MP) were found to be operational during remote onsite audit interview/verification and in line with PP monitoring results.

Further Verification team could also interview the representatives of schools (sampled) and confirm the presence of public distribution network providing safe drinking water, if any. Details on each sample verified through remote assessment are presented under Section D.3 above. Based on the assessment of 16 remotely assessed samples, observing photos and other records of each sample prepared and submitted by CME before onsite remote assessment, together with telephonic interview of end users, it could be confirmed that the result presented for all the monitored parameters are reproducible and thus, sampling/monitoring results are deemed acceptable. Further, the verification team reviewed all the primary monitoring records before and during remote audit assessment to assess the consistency of information with ER calculation spreadsheet and found the monitoring data to be correctly transcribed into the ER sheet and MR. Therefore, verification team concludes that sampling results and values presented by CME in the MR and ER calculation spread sheet and results of survey and WQT records are consistent with the remote onsite observation and interview with the end users.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General	-	-	-
Compliance of the monitoring report with the monitoring report form	0	1	0
Remaining forward action requests from validation and/or previous verifications	0	0	0
CPAs considered for verification and covered in this report	0	0	0
Programme of activities	-	-	-
Compliance of the programme implementation with the registered PoA-DD	0	0	0
Implementation and operation of the management system	0	0	0
Post-registration changes	-	-	-
• Corrections	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents[5]	0	0	0
• Changes to the programme design	0	0	0
• Addition of CPA inclusion template	0	0	0
• Change of coordinating/managing entity			
• Changes specific to afforestation and reforestation activities	0	0	0
Component project activities	-	-	-
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	0	0	0
• Corrections	0	0	0
• Changes to the start date-of the crediting period	0	0	0

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

• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	0	0	0
• Changes to the project design	0	0	0
• Changes specific to afforestation and reforestation activities	0	0	0
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	0	0	0
Compliance of monitoring activities with the registered monitoring plan	-	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	0	0	0
• Data and parameters monitored	0	1	1
• Implementation of sampling plan	0	0	0
Compliance with the calibration frequency requirements for measuring instruments	1	0	0
Assessment of data and calculation of emission reductions or net removals	0	0	0
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	1	1	0
• Calculation of project GHG emissions or actual net GHG removals by sinks	0	0	0
• Calculation of leakage GHG emissions	0	0	0
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	0	0	0
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	0	0	0
• Remarks on difference from estimated value in included CPA	0	0	0
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	0	0	0
Others (please specify) pending documents	0	1	0
Total	**01**	**04**	**01**

SECTION E. Verification findings

E.1. General

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

Means of verification	An initial monitoring report was submitted to the verification team by the CME. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received. By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-PoA-MR-FORM has been used. Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance. The following sources of information have been used in this context: • /MR/ • /MRT/ • /unfccc/	
Findings	☒	The latest reporting template CDM-PoA-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.

	☒	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR 01 has been raised
Conclusion	☐	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☒	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4.
	During the verification, a Remote assessment using video/ skype/ telephonic modes were utilized to verify onsite information, considering travel restrictions due to COVID-19 Pandemic. On the basis of observations made during remote assessment and the project documentation reviewed, it can be confirmed that the project has been implemented as described in the registered CPA-DDs and the latest instructions for filling out the MR template have been followed adequately in the MR.	

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

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose, FARs might have been raised. Likewise, FARs might have been raised in the course of previous verifications.

In the course of this verification the latest version of the last issued MR[/MR/] and the PoA Verification report[/VER/], have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) <u>Open issues from validation:</u>

☒	There were no open issues which have been addressed in the latest version of the validation report.
☐	All open issues from the validation have been appropriately addressed in the context of previous verifications.
☐	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
☐	The following issues related to the validation have **not** yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

(ii) <u>Open issues from previous verifications:</u>

☐	N/A – as this is the first monitoring period for this CDM project activity.
☒	There were no open issues which have been addressed in the previous verification report
☐	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
☐	The following issues related to the previous verification have **not** yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

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

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period[6]	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 1, Version: 3.0, 9948-P1-0001-CP1	No	01/05/2014	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 2, Version: 3.0, 9948-P1-0002-CP1	Yes	01/05/2014	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 3, Version: 1.3, 9948-P1-0003-CP1	No	08/05/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 4, Version: 01.2, 9948-P1-0004-CP1	No	02/07/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 5, Version: 5.0, 9948-P1-0005-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 6, Version: 5.0, 9948-P1-0006-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 7, Version: 5.0, 9948-P1-0007-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 8, Version: 5.0, 9948-P1-0008-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 9, Version: 5.0, 9948-P1-0009-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 10, Version: 5.0, 9948-P1-0010-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 11, Version: 5.0, 9948-P1-0011-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 12, Version: 5.0, 9948-P1-0012-CP1	No	04/10/2017	7.0	N

[6] CPA 103 to 105 are included after the submission of MR

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 13, Version: 5.0, 9948-P1-0013-CP1	No	04/10/2017	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 14, Version: 1.0, 9948-P1-0014-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 15, Version: 1.0, 9948-P1-0015-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 16, Version: 5.0, 9948-P1-0016-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 17, Version: 5.0, 9948-P1-0017-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18, Version: 5.0, 9948-P1-0018-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 19, Version: 5.0, 9948-P1-0019-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 20, Version: 5.0, 9948-P1-0020-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 21, Version: 5.0, 9948-P1-0021-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 22, Version: 5.0, 9948-P1-0022-CP1	Yes	21/11/2017	7.0	Y
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 23, Version: 4.0, 9948-P1-0023-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 24, Version: 4.0, 9948-P1-0024-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 25, Version: 4.0, 9948-P1-0025-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 26, Version: 4.0, 9948-P1-0026-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 27, Version: 4.0, 9948-P1-0027-CP1	No	18/11/2018	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 28, Version: 4.0, 9948-P1-0028-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 29, Version: 4.0, 9948-P1-0029-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 30, Version: 4.0, 9948-P1-0030-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 31, Version: 4.0, 9948-P1-0031-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 32, Version: 4.0, 9948-P1-0032-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 33, Version: 4.0, 9948-P1-0033-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 34, Version: 4.0, 9948-P1-0034-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 35, Version: 4.0, 9948-P1-0035-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 36, Version: 4.0, 9948-P1-0036-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 37, Version: 4.0, 9948-P1-0037-CP1	No	18/11/2018	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 38 supported by Republic of Korea, Version: 2.0, 9948-P1-0038-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 39 supported by Republic of Korea, Version: 2.0, 9948-P1-0039-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 40 supported by Republic of Korea, Version: 2.0, 9948-P1-0040-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 41 supported by Republic of Korea, Version: 2.0, 9948-P1-0041-CP1	No	26/04/2019	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 42 supported by Republic of Korea, Version: 2.0, 9948-P1-0042-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 43 supported by Republic of Korea, Version: 1.0, 9948-P1-0043-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 44 supported by Republic of Korea, Version: 1.0, 9948-P1-0044-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 45 supported by Republic of Korea, Version: 1.0, 9948-P1-0045-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 46 supported by Republic of Korea, Version: 1.0, 9948-P1-0046-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 47 supported by Republic of Korea, Version: 1.0, 9948-P1-0047-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 48 supported by Republic of Korea, Version: 1.0, 9948-P1-0048-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 49 supported by Republic of Korea, Version: 1.0, 9948-P1-0049-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 50 supported by Republic of Korea, Version: 1.0, 9948-P1-0050-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 51 supported by Republic of Korea, Version: 1.0, 9948-P1-0051-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 52 supported by Republic of Korea, Version: 1.0, 9948-P1-0052-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 53 supported by Republic of Korea, Version: 1.0, 9948-P1-0053-CP1	No	26/04/2019	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 54 supported by Republic of Korea, Version: 1.0, 9948-P1-0054-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 55 supported by Republic of Korea, Version: 1.0, 9948-P1-0055-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 56 supported by Republic of Korea, Version: 1.0, 9948-P1-0056-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 57 supported by Republic of Korea, Version: 1.0, 9948-P1-0057-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 58 supported by Republic of Korea, Version: 1.0, 9948-P1-0058-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 59 supported by Republic of Korea, Version: 1.0, 9948-P1-0059-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 60 supported by Republic of Korea, Version: 1.0, 9948-P1-0060-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 61 supported by Republic of Korea, Version: 1.0, 9948-P1-0061-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 62 supported by Republic of Korea, Version: 1.0, 9948-P1-0062-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 63 supported by Republic of Korea, Version: 1.0, 9948-P1-0063-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 64 supported by Republic of Korea, Version: 1.0, 9948-P1-0064-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 65 supported by Republic of Korea, Version: 1.0, 9948-P1-0065-CP1	No	26/04/2019	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 66 supported by Republic of Korea, Version: 1.0, 9948-P1-0066-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 67 supported by Republic of Korea, Version: 1.0, 9948-P1-0067-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 68 supported by Republic of Korea, Version: 1.0, 9948-P1-0068-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 69 supported by Republic of Korea, Version: 1.0, 9948-P1-0069-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 70 supported by Republic of Korea, Version: 1.0, 9948-P1-0070-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 71 supported by Republic of Korea, Version: 1.0, 9948-P1-0071-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 72 supported by Republic of Korea, Version: 1.0, 9948-P1-0072-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 73 supported by Republic of Korea, Version: 1.0, 9948-P1-0073-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 74 supported by Republic of Korea, Version: 1.0, 9948-P1-0074-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 75 supported by Republic of Korea, Version: 1.0, 9948-P1-0075-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 76 supported by Republic of Korea, Version: 1.0, 9948-P1-0076-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 77 supported by Republic of Korea, Version: 1.0, 9948-P1-0077-CP1	No	26/04/2019	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 78 supported by Republic of Korea, Version: 1.0, 9948-P1-0078-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 79 supported by Republic of Korea, Version: 1.0, 9948-P1-0079-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 80 supported by Republic of Korea, Version: 1.0, 9948-P1-0080-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 81 supported by Republic of Korea, Version: 1.0, 9948-P1-0081-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 82 supported by Republic of Korea, Version: 1.0, 9948-P1-0082-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 83 supported by Republic of Korea, Version: 1.0, 9948-P1-0083-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 84 supported by Republic of Korea, Version: 1.0, 9948-P1-0084-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 85 supported by Republic of Korea, Version: 1.0, 9948-P1-0085-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 86 supported by Republic of Korea, Version: 1.0, 9948-P1-0086-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 87 supported by Republic of Korea, Version: 1.0, 9948-P1-0087-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 88 supported by Republic of Korea, Version: 1.0, 9948-P1-0088-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 89 supported by Republic of Korea, Version: 1.0, 9948-P1-0089-CP1	No	26/04/2019	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 90 supported by Republic of Korea, Version: 1.0, 9948-P1-0090-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 91 supported by Republic of Korea, Version: 1.0, 9948-P1-0091-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 92 supported by Republic of Korea, Version: 1.0, 9948-P1-0092-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 93 supported by Republic of Korea, Version: 1.0, 9948-P1-0093-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 94 supported by Republic of Korea, Version: 1.0, 9948-P1-0094-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 95 supported by Republic of Korea, Version: 1.0, 9948-P1-0095-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 96 supported by Republic of Korea, Version: 1.0, 9948-P1-0096-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 97 supported by Republic of Korea, Version: 1.0, 9948-P1-0097-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 98 supported by Republic of Korea, Version: 1.0, 9948-P1-0098-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 99 supported by Republic of Korea, Version: 1.0, 9948-P1-0099-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 100 supported By Republic of Korea, Version: 1.0, 9948-P1-0100-CP1	No	26/04/2019	7.0	N
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 101 supported By Republic of Korea, Version: 1.0, 9948-P1-0101-CP1	No	26/04/2019	7.0	N

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 102 supported By Republic of Korea, Version: 1.0, 9948-P1-0102-CP1	No	26/04/2019	7.0	N

E.2. Programme of activities

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

Means of verification	By means of an in-depth review of the latest PoA-DD – as downloaded from the UNFCCC project site - and checks carried out during the remote audit assessment, it has been assessed if the project has been implemented and operated in line with the latest approved version of the PoA-DD and whether all physical features of the project are in place. The following has been checked against the PoA-DD and corresponding CPA-DDs and found appropriate: • implemented technology i.e. low GHG emitting water purification technologies • implemented monitoring plan in line with approved monitoring plan. • Exchange or modification of the relevant technical equipment of the project activity, if any. • consistent notations of key equipment (product IDs etc.) in PoA-DD, MR and calculation spreadsheet. Interviews with, CME, CPA implementer and operational personnel have been carried out. QMS records, maintenance records, instruments specifications were also checked in this context. Special focus has further been laid to determine whether a potential phase wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred. Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRC. In absence of the project activity, the water would have been boiled using non-renewable biomass/fossil fuels leading to release of GHG emissions in the baseline. The implementation of the project replaces boiling (using non-renewable biomass / fossil fuel) with the Water Purification Systems reducing equivalent amount of GHG emissions. The Verification Team assessed that the CPAs covered in this MR involve dissemination of two types of water purification/ER/, /PO/, /TS/ Systems: 1. Ultra FLO 2. Multi-Barrier UV The Verification Team checked and confirms that all the deployed systems meet the eligibility requirements/ELIG/ of the PoA DD, Version 7/PoA-DD/, /CPA-DD/. The technical specifications of the products/TS/ (refer section A of this FVR) along with the interview with the end users (refer section C of this FVR) allowed the VT to confirm that all inclusion eligibility conditions were met. The project location was compared from the sales database/PO/ and compared with the boundaries of the host country/BOUND/ and found acceptable. The Verification checked the data management and date coverage as per requirements. The below information was verified/USAGE/, /XLS/: 1. Type of system (UltraFLO / Multi-Barrier UV) 2. Unique serial number of the units 3. Date of installation / distribution 4. Address and details of school and contact detail (if available) of representative

	5. Type of School (Boarding / Non-boarding) 6. School population count (number of students / staff in boarding / non-boarding/both category) The training requirements were also verified and deemed as in line with the registered PoA-DD and CPA-DD/TRG/. The section F.7 of the MR/MR/ and the ER/XLS/ worksheet were checked and the Verification Team confirms that the emission reduction achieved were with the threshold of the small scale limits. The following sources of information have been used in this context: • /PoA-DD/ • /CPA-DD/ • /MR/ • /VVS/ • /XLS/ • /unfccc/	
Findings	☒	The project has been implemented as described in the latest version of the PoA-DD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.
	☐	The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): -N/A
	☐	In this context the following CARs, CLs have been raised:
		-
	In case of phased implementation:	
	☒	N/A
	☐	The phased implementation has correctly and in sufficient detail been described in the latest version of the PoA-DD.
	☐	The description in section B.1 of the MR differs in content or the level of detail from the latest version of the PoA-DD. However, the description in the MR is correct and reflects the situation during the site inspection.
	☐	The project description in the PoA-DD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A or add as appropriate
Conclusion	☒	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☐	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.2.2. Implementation and operation of the management system

Means of verification	The verification team carried out remote audit assessment for all the CPAs covered in the monitoring report for this monitoring period i.e. CPA 9948-P1-0002-CP1 and CPA 9948-P1-0014-CP1 to 9948-P1-0022-CP1 and interviewed key personnel to assess the implementation of the management system. The water purification systems included in the CPAs include 02 technologies i.e. Multi-barrier UV and UltraFLO. The sampled school representatives were interviewed to check the physical implementation of the project. Interviewees also included the CME and project developer. It was established that the programme management system has been implemented and operated as described. • /POA-DD/ • /PO/ • /QA/ • /IM/

	• /VAL/ • /CPA-DD/
Findings	N/A
Conclusion	The CDM PoA is managed by Impact Carbon as the CME. The management structure is comprised of operational staff, monitoring officer and CDM advisor. The entities responsible for monitoring are: • Project Development Director • Programme Manager • CPA Implementer • Programme Associate • Field measurement personnel • External QA/QC Below important functions are undertaken • Arrangements for training and capacity development for local sales and distribution partner personnel by CME and CPA implementer, • System/procedure to avoid double counting (by aggregating the unique database like Product Serial numbers, date of installation, address, contact details, type of institution, population (students, staff [boarding/non-boarding]) • Provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA (Informational material, training social media and contractual agreements as applicable) • Measures for continuous improvement of the PoA management • Ex-post monitoring and maintaining record system for each CPA under the PoA (currently 102 at time of end of monitoring period) • Conduct on the ground monitoring of end users. Sample size determination, monitoring of samples, development of suitable template to capture the data, develop the working sheets to analyze the results of monitoring (Operational status, output water quality, presence of safe public water distribution network) • Verify the monitoring work done to ensure accuracy before submission; review protocols, interview enumerators, spot check data • Assist with the completion of monitoring reports with input • Coordination and communication with the verifier and the UNFCCC Below data checks were undertaken by the Verification Team: • The Sales Force Edition Report was verified to check the details of the institution, the time of installation (which captured the name of the institution, type, population, SF ID and other details) /DB/, /REC/ • Consistency check was performed between the sales database and sample purchase order, installation log and Salesforce data to confirm that information for any system installed (SF ID, type of technology, unique serial number, name of institution etc) were internally consistent • Check on the avoidance of double counting was initiated by checking the unique IDs of the installed water purification devices and it is confirmed that the all the numbers are unique. • The Verification Team checked and confirms that School's SF ID are rightly defined for each water purification device (for example U140381) which is covering system type code, year code, country code and a serial number. • The training requirements were verified and deemed as acceptable and in line with the requirements of PoA-DD and CPA-DD/TRG/. • The Organogram was checked and it is noted that Programme Manager at the CME is responsible for QA/QC of the data/IM01/, analysis and subsequent reporting in the monitoring report. The Verification Team confirms that QA/QC procedures were found being followed. • The Verification Team interviewed the CME team responsible for monitoring for sampling techniques, data formats, trainings, competence, application of the water quality testing kits and undertaking the surveys/USAGE/, /TRG/, /ELIG/, /CBT/. The Verification Team confirms that appropriate provisions in line with the requirement for the PoA-DD and

	CPA-DD are being followed. Based on and Remote Assessments and desk review and web-based and telephonic interviews; DOE has found that the system is in place, appropriate and effective/PO/. The management system is implemented as per the registered PoA-DD & CPA-DDs.

E.2.3. Post-registration changes

E.2.3.1. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	During this verification of the current MP no need for corrections has been identified.
☐	The following corrections have been applied:
	Corrections in the PoA-DD and CPA-DD were made and approved by the CDM EB.
	☐ A related post registration change has been submitted prior to the issuance request. ☐ No related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.

E.2.3.2. Inclusion of a monitoring plan

☒	N/A - as this monitoring plan was part of the registered PoA-DD /CPA-DD
☐	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.
☐	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number

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

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
☐	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐ under approval; ☐ approved
		Approval	
		Ref. No.	

☒	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.2.3.4. Changes to the programme design

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☐	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
☒	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐ approved
		Appr.date	
		Ref. No.	
	2	Title	Expansion of PoA Boundary to include Host Country Nigeria
		Status	☐under approval; ☒ approved
		Appr.date	03/07/2017
		Ref.No.	PRC-9948-002
	3	Title	Changes have an impact on: Include additional host Parties
		Status	☐under approval; ☒ approved
		Appr.date	08/05/2017
		Ref.No.	PRC-9948-001
☒	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.2.3.5. Addition of CPA inclusion template

N/A

E.2.3.6. Change of coordination/managing entity

N/A

E.2.3.7. Changes specific to afforestation and reforestation activities

☒	N/A - as this monitoring plan was part of the registered CPA-DD

E.3. Component project activities

E.3.1. Compliance of the CPA implementation with the included CPA design document

Means of verification	By means of an in-depth review of the latest CPA-DDs – as downloaded from the UNFCCC project site - and checks carried out during the remote audit assessment, it has been assessed if the project has been implemented and operated in line with the latest approved version of the CPA-DDs and whether all physical features of the project are in place. The following has been checked against the PoA-DD and corresponding CPA-DDs and found appropriate: • implemented technology i.e. low GHG emitting water purification technologies (CPAs 9948-0002, 9948-0014, 9948-0015 for Multi Barrier UV and CPAs 9948-0016 to 9948-0022 for UltraFLO) • implemented monitoring plan in line with approved monitoring plan. • Exchange or modification of the relevant technical equipment of the project activity, if any. • consistent notations of key equipment (product IDs etc.) in PoA-DD, MR and calculation spreadsheet. Interviews with, CME, CPA implementer and operational personnel have been carried out. QMS records, maintenance records, instruments specifications were also checked in this context. Special focus has further been laid to determine whether a potential phase wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred. The CPA's covered in the MR involve dissemination of low greenhouse gas emitting safe drinking water production systems across Uganda. The CPAs under the PoA result in reduction and/or replacement of non-renewable biomass or fossil fuels used for boiling water to make it suitable for drinking purposes. All monitoring parameters are assessed to be monitored as per the registered monitoring plan included in the CPA-DD and registered PoA-DD version 7. Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs. The following sources of information have been used in this context: • /CPA-DD/ • /MR/ • /VVS/ • /XLS/ • /ELIG/ • /IPCC/ • /unfccc/
Findings	-
Conclusion	The verification team confirms that the CPAs under this MP are implemented and operated in line with the provisions of the PoA-DD and the latest approved versions of CPA-DDs. And all physical features of the component project activities are in place. However, during course of verification findings were raised and closed successfully. Please refer Appendix-4 of this report.

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

☒	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.		
☐	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐ approved (approval No.:)
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐under approval; ☐ approved (approval No.:)
		Appr.date	
		Ref.No.	
☒	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		
	1	Issue:	
	2	Issue:	
☐	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.3.2.2. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	During the verification of the current MP no need for corrections has been identified.		
☐	The following corrections have been applied:		
	1	Issue:	
	2	Issue:	
	☐ A related post registration change has been submitted prior to the issuance request. ☐ A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

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

N/A

E.3.2.4. Inclusion of a monitoring plan

☒	N/A - as this monitoring plan was part of the included CPA-DD
☐	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.
☐	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z.

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

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
☐	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref. No.	
☒	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.3.2.6. Changes to the project design

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☐	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
☒	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	Addition or change of technologies/measures with or without addition or change of applied methodologies (Change in the water0 purification technology from Ultraviolet disinfection devices to Chemical disinfection). CPA05-CPA13 and CPA16-CPA22 are included under this PRC.
		Status	☐under approval; ☒approved
		Appr.date	02/05/2019
		Ref. No.	PRC-9948-003
	2	Title	
		Status	☐under approval; ☐approved
		Appr.date	
		Ref.No.	
☒	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
☐	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.3.2.7. Changes specific to afforestation and reforestation activities

☒	N/A - as this registered PoA is not an afforestation and reforestation activity

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

Means of verification	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: • /MR/ • /AMS-III.AV./ • /IPCC/ • /unfccc/	
Findings	☒	The MP is completely in accordance with the approved methodology applied by the CDM PoA project (last registered/approved version of the PoA-DD)
	☒	The breakdown of MP accordance of the referenced guidelines is as follows:

		1	Title (of the guideline)	Guidelines for Sampling and Survey for CDM Project activities and Programme of activity, version 04
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A (for MP)
		2	Title (of the tool)	Tool 05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation
			Version	Version 01
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A
	☐	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	n.a.
			Version	-
			MP compliance	-
	☐	In this context the following CARs, CLs, FARs have been raised:		
		-		
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		
	-			

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

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

Means of verification

By means of comparison of the MR and the ER calculation with the latest version of the registered PoA-DD, the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly.

Parameters which are fixed ex-ante are listed as below have been found to be adequately provided in the section E.1 of the MR. Corresponding values in the ER sheet are also verified to be correct.

No	Parameter	Description	Applied Value
1.	Case1 or Case 2	Case 1 or Case 2: Project activities implemented in rural or urban areas of countries with proportion of rural or urban population using an improved drinking-water source equal to or less than 60 % (Case1) or above 60% (Case2).	Case 1
2.	WH	Specific Heat of Water	4.186 kJ/l°C
3.	T_f	Final Temperature	100 °C
4.	T_i	Initial Temperature	20 °C
5.	WHE	Latent Heat of Water Evaporation	2,260 kJ/l
6.	L	Leakage	0.95
7.	$R_{y,i}$	Average volume of drinking water per person per day	3.5 (for boarding schools, prisons) and 2 (for day schools). (l/ person / day)
8.	$EF_{EL,j,y}$	Emission factor for electricity generation for source j in year	1.3 tCO_2/MWh

		y (tCO_2/MWh)	
9.	$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y	20%

The following sources of information have been used in this context:

- /MR/
- /XLS/
- /PoA-DD/
- /CPA-DD/
- /PS/
- /VVS/
- /unfccc/
- /TOOL/

Findings	☐	The MR and the ER calculation have considered the parameters fixed ex-ante or at the renewal of the crediting period correctly, no deviations have been observed.
	☐	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: - N/A
	☒	In this context the following CARs, CLs, FARs have been raised: - CL 01 and CAR 03 has been raised
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out.
	The fixed ex-ante parameters corresponding with the provisions of CPA-DD are appropriately applied for the ER calculation.	

E.3.4.2. Data and parameters monitored

Means of verification	During the verification all relevant monitoring parameters (as listed in the PoA-DD) have been verified with regard to the (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).	
Findings	CL 01, CAR 02, CAR 03, CAR 04 and FAR 01	
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4.
	During the verification all relevant monitoring parameters (as listed in chapter B.5.1 of the registered CPA-DDs) have been assessed with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy/precision achieved, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5). After appropriate corrections were carried out by the project participant, it is confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.	

E.3.4.3. Implementation of sampling plan

Means of verification

The verification team checked whether the PP applied a sampling approach to determine the monitored values. Further it has been checked whether the PP correctly applied the implemented sampling plan including:

(i) description of the implemented sampling design
(ii) collected data
(iii) analysis of collected data
(iv) demonstration on whether the required confidence/precision has been met.

The following sources of information have been used in this context:

- /MR/
- /RC/
- /XLS/
- /PoA-DD/
- /CPA-DD/

Findings

☐

The PPs have applied sampling approaches for the following parameters monitored.

Parameter	
Name:	Water Quality$_i$
Description on how the sampling efforts and survey comply with the validated sampling plan:	A sample size was calculated based on estimated proportion values based on project developer's knowledge and experience in line with para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and programmes of activities.

A sample size was calculated from the installed Water Purification System as:

Particular	Total population (N)[7]	Reli-ability	Sample Size (n) required	Samples covered
MS1				
Water Quality (UV)	693	95/10	30	42
MS2				
Water quality (UF)	78	95/10	(3 UF + 28 UV) = 31	(7 UF + 41 UV) = 48
Water quality (Multi barrier UV)	953			

The sample size has been calculated according to the following equations:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,
n = number of WPS to be sampled
N = Total number of WPS in the population
z = Constant referring to level of confidence (1.96 for 95 % confidence)
Precision = Required precision (e.g. 10% = 0.1)

$$V = \frac{SD^2}{\overline{p}^2}$$

Where,

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

[7]These are rounded figures of total strata population for calculating sample size only.

$$\bar{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,
g_i = weight of strata i in the population
p_i = expected proportion of strata i in the population
k = total number of strata in the population

Procedures for sampling have been duly articulated in the field monitoring excel report and spreadsheet, and a sample of survey questionnaires has been furnished to verification team.

The samples (randomly selected, stratified sampling) were visited by surveyor/s on behalf of CME/CPA Implementer. During visit, the existence and functionality of the project WPS was confirmed through visual assessment of the appliance with the unique ID clearly visible and Water Quality Test was conducted using Aquagenx Test kit. The monitoring survey and WQTs were conducted in November 2018 for MS1 and November 2019 for MS2.

During remote audit assessment conducted by VVB, a total of 16 samples were surveyed covering entire monitoring period (02 years, 08 from each monitoring session) across all the models of the water purification system and Institution type (Boarding/ non-boarding/ Both schools) as illustrated above under section D.4 of this FVR.

During course of verification, relevant findings were raised and same can be referred in detail in Appendix 4 of this report.

Name	Operational units
Description on how the sampling efforts and survey comply with the validated sampling plan:	A sample size was calculated based on estimated proportion values based on project developer's knowledge and experience in line with para 12(b) and 12(c) of the Sampling and surveys for CDM project activities and programmes of activities.

A sample size was calculated from the installed Water Purification System as:

Particular	Total population (N)[8]	Reli-ability	Sample Size (n) required	Samples covered
MS1				
Operational units	693	95/10	30	44
MS2				
Operational units (UF)	78	95/10	(3 UF + 28 UV) = 31	(7 UF + 43 UV) = 50
Operational units (Multi barrier UV)	953			

The sample size has been calculated according to the following equations:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,
n = number of WPS to be sampled
N = Total number of WPS in the population
z = Constant referring to level of confidence (1.96 for 95 % confidence)

[8]These are rounded figures of total strata population for calculating sample size only.

		Precision = Required precision (e.g. 10% = 0.1) $$V = \frac{SD^2}{\bar{p}^2}$$ Where: $$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$ $$\bar{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$ Where, g_i = weight of strata i in the population p_i = expected proportion of strata i in the population k = total number of strata in the population The samples (randomly selected, stratified sampling) were visited by surveyor/s on behalf of CME/CPA Implementer. During visit, the existence and functionality of the project WPS was confirmed through visual assessment of the appliance with the unique ID clearly visible and Usage Surveys were conducted. The monitoring survey and WQTs were conducted in November 2018 for MS1 and November 2019 for MS2. The monitoring survey were conducted in November 2018 for MS1 and November 2019 for MS2. During remote audit assessment conducted by VVB, a total of 16 samples were surveyed covering entire monitoring period (02 years monitoring and 08 from each vintage) across all the models of the water purification system and Institution type (Boarding/ non-boarding/ Both schools) as illustrated above under section D.4 of this FVR.
	Name	Existence of public distribution network of safe drinking water
	Description on how the sampling efforts and survey comply with the validated sampling plan:	The Assessment Team assessed the monitoring survey forms submitted by the CME. The Verification Team (during the remote audits) reconfirmed the below particulars with the end users to confirm the credibility of the monitoring data: • **Confirmation that all appliances are in continued operation based on traceable maintenance schedules confirming** continuous supply of cartridge/tablets, through the 'Question pertaining to continuity/Maintenance' and also check on the operational status through 'Question pertaining to usage'. The responses to these questions confirm that there were routine supply/ maintenance of filters / cartridges, as well as usage. Based on the review of the submitted monitoring survey forms, read with the observation during remote assessment and interviews with the representatives of sampled end users, it can be concluded that all appliances are in continued operation and delivering optimum level of services. • **Assessment of the continued availability of the drinking water-** The above questions pertaining to continuity /maintenance ensure that the institution is receiving continuous supplies and hence have remained under continued use during the monitoring period. The questions pertaining to usage confirm that these supplies are being uninterrupted. The responses to these questions confirm that the WT unit was used for the water treatment; the end users did not avail boiling/ unsafe drinking water during the applied

monitoring period. Based on the review of the submitted monitoring survey forms read with the observation during remote assessment with the representatives of sampled end users, it can be concluded that there was continued availability of the safe drinking water.

Additional checks by the VT:
All the interviewed institution heads of "randomly sampled systems" were interviewed by the VT to confirm that

- the product installed in the school was currently in operational condition and
- they have been receiving continuous supply of cartridge/tablets thus, getting continuous supply of safe drinking water. Any institution reporting the product as being functional cannot be out of supplies.

The Verification Team has assessed all the above data points while interviewing, the sampled school representatives. As stated above this data is already part of the submitted ER worksheet

Additionally, during the remote assessment the VT checked if there are provisions in place to ensure continuous supply of safe drinking water

- **Call Centres:** The CME representatives confirmed that follow up calls with the institutions regarding usage, users are performed to gauge the expected date of next supply next supply of (cartridge/tablets). This fact was also confirmed by the verification team with the school representatives.
- **Other Evidence (Purchase Order, delivery notes etc):** The objective evidence delivery notes, delivery notes, installation records, maintenance records and the traceability of customer care number/email for supply / repair on the system's tank or school wall in form of sticker were checked to confirm that the CME country office contact detail is available to the institution staff and that they can contact the CME in case they find any issue with the performance, breakdown, problem with the product or need of additional tablets / cartridge. During the remote assessment (telephone call and video calls) with the institution heads VT confirmed the availability and use of contact numbers to register their complaints regarding the product or their request for supplies.
- The VT is already in receipt of the sales database which captures the supplies with their product IDs for each institution, which is presented in the ER sheet (refer ER calculator, worksheet tabs "Monitored samples-MS1" and "Sales Databse-MS2"). The VT has also assessed the scanned copies of delivery notes made available for cross verification of the subsequent supplies made to an institution. The verification team had checked it for the sampled institutions. The evidence reviewed confirmed the quantities of supplies mentioned in the ER sheet.

Thus, the above monitoring provisions ensure as uninterrupted supply of safe drinking water in the institution.

A sample size was calculated based on estimated proportion values based on project developer's knowledge and experience in line with para 13(b) and 13(c) of the Sampling and surveys for CDM project activities and programmes of activities.

A sample size was calculated from the installed Water Purification

System as:

Particular	Total popula-tion (N)[9]	Reli-ability	Sample Size (n) required	Samples covered
MS1				
Existence of public distribution network of safe drinking water	693	95/10	30	42
MS2				
Existence of public distribution network of safe drinking water (UF)	78	95/10	(3 UF + 28 UV) = 31	(7 UF + 41 UV) = 48
Existence of public distribution network of safe drinking water (Multi barrier UV)	953			

The sample size has been calculated according to the following equations:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,
n = number of WPS to be sampled
N = Total number of WPS in the population
z = Constant referring to level of confidence (1.96 for 95 % confidence)
Precision = Required precision (e.g. 10% = 0.1)

$$V = \frac{SD^2}{\bar{p}^2}$$

Where:

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$\bar{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,
g_i = weight of strata i in the population
p_i = expected proportion of strata i in the population
k = total number of strata in the population

The samples (randomly selected, stratified sampling) were visited by surveyor/s on behalf of CME/CPA Implementer. During visit, the existence and functionality of the project WPS was confirmed through visual assessment of the appliance with the unique ID clearly visible. The CME's monitoring team checked the existence of any public distribution network with safe drinking water in sampled schools.

The monitoring survey was conducted in November 2018 for MS1 and November 2019 for MS2.

During remote audit assessment conducted by VVB, a total of 16 samples were surveyed covering entire monitoring period (02 years 08 from each vintage) across all the models of the water purification system and Institution type (Boarding/ non-boarding/

[9]These are rounded figures of total strata population for calculating sample size only.

		Both schools) as illustrated above under section D.4 of this FVR.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL 01, CAR 01, CAR 02, CAR 04 and FAR 01
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4.
	Based on the assessment of sampling records, monitoring survey records and WFT/CBT/ records, the data analysis sheets for the related parameters, it is concluded that all the parameters have been monitored correctly in accordance with registered monitoring plan and the applied methodology. The verification team concludes that all sampled parameters values have been calculated correctly in line with the registered corresponding CPA-DDs and the sampling standard. For all the parameters, the achieved relative precision of 10% and 95% confidence level is demonstrated to be met. Based on above, along with the Remote Assessment observations and interview and assessment of the project Water Purification System installations (via supporting documents for sampled Institutions with photographs showing product type, unique serial numbers verifiable against the sales database), the verification team concludes that the approach applied, and result achieved/accrued are deemed appropriate and acceptable. FAR 01 was raised.	

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

Means of verification	During the verification, the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the validated CPA-DD and/or the applicable calibration standards. The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6). The following sources of information have been used in this context: • /MR/ • /XLS/ • /PoA-DD/ • /CPA-DD/ • AMS. III. AV/	
Findings	☒	Calibration is not under the purview of the CME; however, third party WBT agency has provided the complete calibration detail of the equipment in the report which were also checked during onsite inspection by the verification team and found to be appropriate. Thus, the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.
	☐	Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration. From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions. For details, please refer to appendix 6
	☐	In this context the following CARs, CLs, FARs have been raised:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.

	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details, please refer to Appendix 4.
	The CPAs do not involve installation of monitoring equipment which requires calibration. Based on assessment of documents, sampling survey records, Aquagenx testing kit specifications, report and data maintenance and recording procedures, it can be concluded that the recording of all data related to monitoring is appropriate and accurate.	

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

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

Means of verification

During the verification, the calculation of baseline GHG emissions has been checked. The following has been verified in detail:

- *Transparency:* It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.
- *Parameter* consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.
- *Correctness*: It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.
- *Completeness*: It has been checked whether all calculations are complete and without omissions.

Note: As per the registered PoA-DD[/PoA-DD/] *"products deployed under the project activity are assumed be in operation as of the start of the next month following the date of sale"*. Thus, any installation in the month of May 2017 will be eligible for crediting only in the month of June 2017. Given, the current monitoring period MS1 is ending in 22/05/2018, therefore only the units installed till April 2018 (up to 30/04/2018) are eligible for crediting under MS1. Similar, the CME has considered 30/04/2019 as the cut-off date of installation for this monitoring period for MS2. Please also refer closure of CL 01.

Baseline emission is determined using the following equation as per applied methodology:

$B_y = QPW_y \times SEC \times f_{NRB,y} \times EF_{projected_fossilfuel} \times 10^{-9}$

Where

BE_y	Baseline emissions during the year y in (tCO_2e)
QPW_y	Quantity of purified water in year y (Liters/yr).
SEC	Specific energy consumption required to boil one litre of water (kJ/L)
$f_{NRB,y}$	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable. For biomass, the default values of f_{NRB} shall be used from EB67. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of biomass and other fuels (e.g. fossil fuels) are used, a weighted average renewability factor shall be applied.
$EF_{projected_fossilfuel}$	Emission factor when NRB is displaced or the emission factor of the fossil fuel substituted Default emission factors from AMS-I.E as referenced in AMS-III.AV version 4 and IPCC shall be used. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of woody biomass and fossil fuels are used in the absence of the project activity a weighted average value shall be applied, as described in parameter box in section E.2

Calculation of emission reductions is performed during the applied monitoring period as follows:

Step 1: Calculation of quantity of purified water in year y (QPWy)

$QPW_y = \Sigma(T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 * l \times Water\ Quality_i \times Operational\ Units_i)$ *for* 9948-P1-0002-CP1, 9948-P1-0016-CP1 - 9948-P1-0022-CP1

$QPW_y = \Sigma(T_{y,i} \times N_{y,i} \times R_{y,i} \times 291.5^* \times \text{Water Quality}_i \times \text{Operational Units}_i)$ for 9948-P1-0014-CP1 - 9948-P1-0015-CP1

Where,

QPW_y	Quantity of purified water for drinking for all technologies type i in year y (Liters)
$N_{y,i}$	The average population serviced by water purification systems (person/equipment)
$T_{y,i}$	Number of Systems implemented
$R_{y,i}$	Average volume of drinking water per person per day (Liters/person/day)
Water Quality$_i$	Percent of units that meet water quality requirements
Operational Units$_i$	Percent of the monitoring period in which the units are in use
** days of school operation during the monitoring period*	Instead of 365 / 291.5 days as applicable, Days of operation of school as per the school academic calendar, as issued by the Ministry of Education and Sports, Uganda, has been used as a conservative measure

Step 2: Calculation of specific energy consumption [SEC] required to boil one litre of water.

$$SEC = (WH \times (T_f - T_i) + 0.01 \times WHE)/n_{wb}$$

Where,

WH	Specific heat of water (kJ/L ^oC)
T_f	Final temperature (^oC)
T_i	Initial temperature of water (^oC)
WHE	Latent heat of water evaporation (kJ/L)
n_{wb}	Efficiency of water boiling system being replaced (fraction)

MS 1 (data is reported for CPA which claimed ERs):

Data/ Parameter	Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1	Total
Ty,i	-	580	56	57	693
Operational Units$_i$	%	95.45%	95.45%	95.45%	95.45%
Ry,i	l /person /day	2.67	2.65	2.66	2.67
Ny,i	persons/equipment	593	496	523	579
Days	-	173	37	36	151
Water Qualityi	proportion	0.98	0.98	0.98	0.98
QPWy	l /yr	148,086,337	2,540,197	2,663,687	153,290,221
ηwb	fraction	0.1172	0.1172	0.1172	0.1172
Tf	^0C	100	100	100	100.00
Ti	^0C	20	20	20	20.00
WH	kJ/l^0C	4.186	4.186	4.186	4.1860
WHE	kJ/l	2260	2260	2260	2260.00
SEC	kJ/l	3050.17	3050.17	3050.17	3050.17
fNRB	fraction	0.8304	0.8304	0.8304	0.8304
EFprojected_fossilfuel	tCO_2e/TJ	80.12	80.12	80.12	80.12
Systems having access to public distribution system providing safe drinking water	fraction	0.00%	0.00%	0.00%	0.00%
BEy	**tCO_2e**	**30,053**	**515**	**540**	**31,108**

MS 2 (data is reported for CPA which claimed ERs):

Data/Parameter	Data Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1	9948-P1-0016-CP1	9948-P1-0017-CP1
Ty,i	-	580	184	189	12	11
Operational Unitsi	%	95.70%	95.70%	95.70%	95.70%	95.70%
Ry,i	l /person /day	2.67	2.67	2.64	2.12	2.12
Ny,i	persons/equipment	592	533	488	717	639
Days	-	160	119	119	87	96
Water Qualityi	fraction	0.95	0.95	0.95	0.95	0.95
QPWy	l /yr	133,858,199	28,539,710	26,506,677	1,455,823	1,308,241
ηwb	Fraction	0.1172	0.1172	0.1172	0.1172	0.1172
Tf	^0C	100	100	100	100	100
Ti	^0C	20	20	20	20	20

WH	kJ/l^{0}C	4.186	4.186	4.186	4.186	4.186
WHE	kJ/l	2260	2260	2260	2260	2260
SEC	kJ/l	3050.17	3050.17	3050.17	3050.17	3050.17
fNRB	Fraction	0.8304	0.8304	0.8304	0.8304	0.8304
EFprojected_fossilfuel	tCO2e/TJ	80.12	80.12	80.12	80.12	80.12
Systems having access to public distribution system providing safe drinking water	Fraction	0.00%	0.00%	0.00%	0.00%	0.00%
BEy	**tCO_2e**	**27,165**	**5,791**	**5,379**	**295**	**265**

Data/Parameter	Unit	9948-P1-0018-CP1	9948-P1-0019-CP1	9948-P1-0020-CP1	9948-P1-0021-CP1	9948-P1-0022-CP1	Total
Ty,i	-	11	11	11	11	11	1031
Operational Unitsi	%	95.70%	95.70%	95.70%	95.70%	95.70%	95.70%
Ry,i	l /person /day	2.14	2.05	2.15	2.26	2.30	2.63
Ny,i	persons/equipment	504	692	603	626	594	565
Days	-	101	96	93	92	90	140
Water Qualityi	fraction	0.95	0.95	0.95	0.95	0.95	0.95
QPWy	l/yr	10,98,463	13,61,881	12,09,427	13,01,769	12,42,201	19,78,82,390
ηwb	fraction	0.1172	0.1172	0.1172	0.1172	0.1172	0.1172
Tf	°C	100	100	100	100	100	100.00
Ti	°C	20	20	20	20	20	20.00
WH	kJ/l°C	4.186	4.186	4.186	4.186	4.186	4.1860
WHE	kJ/l	2260	2260	2260	2260	2260	2260.00
SEC	kJ/l	3050.17	3050.17	3050.17	3050.17	3050.17	3050.17
fNRB		0.8304	0.8304	0.8304	0.8304	0.8304	0.8304
EFprojected_fossilfuel	tCO2e/TJ	80.12	80.12	80.12	80.12	80.12	80.1210
Systems having access to public distribution system providing safe drinking water	fraction	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BEy	**tCO_2e**	**222**	**276**	**245**	**264**	**252**	**40,154**

The calculation of emission reductions is stated under section E.3.6.3 below.

The following sources of information have been used in this context:

- /MR/
- /PoA-DD/
- /CPA-DD/
- /XLS/
- /USAGE/
- / AMS-III.AV./

Findings	☐	The calculation of the baseline emissions was found to be fully compliant with the above stated principles. The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified.
	☒	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	☒	In this context the following CARs, CLs, FARs have been raised: CL 01, CAR 01, CAR 02, and CAR 03 has been raised
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.

	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 5.

Residual Life:

The "System's residual capacity at the end of monitoring period (Ltrs)" as calculated, under tabs: "Sales Database-MS1" and "Sales Database-MS2" of ER calculation spreadsheet are duly incorporating the residual capacity from previous MP and any additional capacity as follows:

1. Firstly, the "Treatment capacity of a unit (based on Residual Capacity from MP#1 (Liters) + Total Subsequent Supply to Schools has been calculated under tab "Sales Database-MS1" considering the residual capacity per unit at the end of previous monitoring period and any additional capacity added during the monitoring period. Same logic applies to the tab "Sales Database-MS2" for subsequent corresponding period.
2. Then "System's Continuous running end date" has been determined based on treatment capacity of a unit (calculated as explained above) divided by total water consumption per unit of worksheet "Sales Database-MS1". Same logic applies to the tab "Sales Database-MS2" for corresponding period.
3. This "System's continuous running end date" is then used to determine the residual capacity of the system after the end of monitoring period. If the "systems continuous running end date" is before the end date of the monitoring period, the residual capacity is calculated as 0. If the "system's continuous running end date" is after the end date of monitoring period, the residual capacity at the end of monitoring period is calculated as the number of running days remaining after end of monitoring period * Total Volume of drinking water per day per unit. Same logic applies to the tab "Sales Database-MS2" for corresponding period.

Thus, the aforesaid ensures that residual capacity at the end of monitoring period is appropriately calculated. Please refer to CL01.

Residual capacity from previous MP (Ltrs)

The monitoring period begins on 23 May 2017, and there are significant number of systems that remain in continued use from previous monitoring period. For such systems, the residual (un-utilized) capacity of the system (determined at the end of the previous monitoring period following the same approach as that is explained above) has been used as the starting capacity for the current monitoring period. This has been listed in tab "Sales Database-MS1". Same logic applies to the tab "Sales Database-MS2" for corresponding period.

In the revised MP2 ER Calculator, the MP1 Sales database has been added (Tab: 'MP1 Sales data – reference only') by the CME. The verification team has verified that the information in the revised ER Calculation spreadsheet, Tab: 'MP1 Sales data – reference only' is consistent with the tab: 'Sales database' in the MP1 ER calculator, available at:

https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss757932161/view .

Further, in the revised ER sheet, tab 'MP2 Sales database – MS1' column AQ, the residual capacity from previous MP has been found to be appropriately linked with 'MP1 Sales data – reference only', column BA, which is found to be completely traceable.

The verification team independently downloaded the MP1 ER Calculator from PoA page (9948-MP1-IRP1) and cross-verified the information in the revised ER Calculation spreadsheet, Tab: 'MP1 Sales data – reference only' and found it to be consistent.

For new systems installed in current monitoring period (hence not having any residual capacity carrying forwarded from the previous monitoring period), the residual capacity at the end of previous monitoring period has been marked as "new installation, not applicable". The approach is found appropriate and acceptable. Please refer to CL01.

Thus, 'residual capacity from previous MP' is confirmed to be calculated correctly in column AQ of MP2 Sales database-MS1 for all schools. Similar, the 'residual capacity from previous MP' for MP2 Sales database -MS2 is also found to be correctly calculated for all schools based on

	residual capacity at the end of MP2-MS1, as well as this is independently verified by the verification team. **Cumulative treatment capacity of the system based on # units installed / supplied (Ltrs)** The Verification Team accepts that case of multiple units of UltraFLO and Multi-Barrier UV systems installed in an institution, the same units will be used simultaneously (or in parallel) to service different persons and areas in that institution. Thus, in such cases, $N_{y,i}$ has been calculated as number of persons serviced / unit which is deemed logical and appropriate. Accordingly, the tabs "MP2 Sales Database-MS1" and "MP2 Sales Database-MS2" are evaluated. Furthermore, it is noted that the "Treatment capacity of a unit (based on installation + subsequent supplies) (Ltrs)" has been determined for a singular unit, which is also deemed appropriate as it ensures consistency w.r.t. application of $N_{y,i}$ calculated to determine the number of days the systems are expected to run continuously if used simultaneously (based on individual capacity of system and average number of person serviced per system). The verification team deems this approach as appropriate. The applied approach also ensures (Ny,i * Ry,i) per unit does not exceed the maximum output of unit system for cases where multiple systems are used simultaneously. This approach avoids overestimation of ER's as consideration of aggregate capacity of all systems, would over-calculate the maximum output/system and would result in over-estimation of emission reductions. Thus, the principles of appropriateness and avoidance of over-estimation are observed and also confirmed by the Verification Team. The Verification Team also noted that the "Sales Database" does focus on $N_{y,i}$ per unit, the tabs "MP2 Sales Database-MS1" and "MP2 Sales Database-MS2" therefore considers the total number of units to calculate $T_{y,i}$. In addition, please also refer to CL 01. **Capping to Maximum Output:** The Verification Team Noted that, the registered monitoring plan mandates to limit $N_{y,i}$ * $R_{y,i}$ at maximum output of unit [per unit]. The $N_{y,i}$ (per unit) * $R_{y,i}$ (Total Volume of drinking water per day per unit) has been calculated in under tabs Sales Database-MS1" and "Sales Database-MS2". The treatment capacity (per unit) has been calculated appropriately as stated above. The parameter continuous running end date of a system has been determined based on treatment capacity of a unit divided by ($N_{y,i}$ (per unit) * $R_{y,i}$). The Verification Team checked and confirms that the CME is utilizing this continuous running end date to determine the residual capacity of the system after the end of monitoring period. It is noteworthy that if the continuous running end date is before the end of monitoring period, the residual capacity is calculated as '0' as per the applied logic. If the continuous running end date is after the end date of monitoring period, the residual capacity is calculated as number of unutilized days * Total Volume of drinking water per day per unit. The Verification Team has verified and deems the applied logic as appropriate for calculation of emission reduction. A residual capacity of 0 indicates that the system was fully consumed before the end of monitoring period. This logic automatically ensures that $N_{y,i}$ * $R_{y,i}$ never exceeds the maximum output capacity of the system. Whereas, a non-zero residual capacity shows that the output capacity of the system is more than $N_{y,i}$ * $R_{y,i}$ leaving some un-utilized capacity at the end of monitoring period. Thus, it is ensured that $N_{y,i}$ * $R_{y,I}$ never exceeds the maximum output capacity of the unit [per unit]. The said approach is verified by the Verification Team and deems the same as appropriate. The lifetime of Multi Barrier UV system has been cross-verified from the manufacturer specifications by the DoE. Besides, please note that the earliest Multi-Barrier UV system in Uganda were installed in 2014 and hence will not expire before 2021. Besides, the UV bulb can be replaced to further extend the Multi-Barrier device lifetime further after 7 years. For UltraFLO the lifespan/expiry stated in MR is consistent with that specified in CPA 16-22 CPA-DDs page 4. In case of UltraFLO, the expiry is 5 years with the earliest UltraFLO device being installed in June 2018 in Uganda and hence no UltraFLO device shall expire before the end of the

monitoring period.. Besides, every-time a school receives a new supply UltraFLO cartridge, the lifetime of the UltraFLO system is automatically deemed renewed, the supplies being a consumable.

Please refer to CL01.

Determination of operating days:
Approach of determining operating days was verified by the verification team as the same has been already established (via a clarification request from CDM EB) and approved by CDM-EB during PRC-9948-003. Please refer document DOE clarification 8 – "FVR 599 CPA 16 to 22 PRC VR Uganda 25.03.19 clean", page 20 of 26, CAR 01 dated 21/01/2019. (https://cdm.unfccc.int/PRCContainer/DB/prcp52130222/view). Thus, the calculation of the operating days is deemed as appropriate. Further, it has been assessed that CPA-14 and CPA-15 refer to 291.5 days (in line with the estimations of respective CPA-DD's) and accordingly the ER calculations are updated. Refer to closure of CL 01.

However, following the UNFCCC review comments, the Verification Team has reopened CL 01 and requested justification of the operating days. In response, the CME's has applied the actual working days following the school academic calendar, as issued by the Federal Ministry of Education and Sports, Uganda. The number of working days were verified by the Verification Team from the evidence submitted by the CME[10]. The Verification Team also noted that the application of the actual number of days' lead to a reduction of the ER's. Please refer to CL01.

Based on above and verification of all input values (including fixed ex-ante), it can be concluded by verification team that, baseline GHG emissions calculation presented in the MR and corresponding ER sheet is deemed as appropriate.

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

Means of verification

During the verification the calculation of project GHG emissions has been checked. The following has been verified in detail:

- Transparency: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.
- Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.
- Correctness: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology.
- Completeness: It has been checked whether all calculations are complete and without omissions.

Project emissions are calculated as per the applied methodology for the registered PoA. PEy = 0, for type 2 CPAs

For type 3 CPA, it is calculated as follows:

$$PE_y = T_{y,i} \times EC_{PJ,j,y}\ x\ EF_{EL,j,y}\ x\ \left(1 + TDL_{j,y}\right)$$

MS1

Data/Parameter	Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1
Ty,i	-	580	56	57
$EC_{PJ,j,y}$	MWh/yr	0.1226	0.1226	0.1226
$EF_{EL,j,y}$	tCO_2/MWh	1.3	1.3	1.3
$TDL_{j,y}$	%	20	20	20
PE_y	**tCO_{2e}**	**111**	**11**	**11**

MS2

Data/ Parameter	Unit	9948-P1-	9948-P1-	9948-P1-	9948-P1-	9948-P1-	9948-P1-	9948-P1-	9948-P1-	9948-P1-	9948-P1-

[10] SCHOOL-CALENDAR-2017, 2018, 2019 Uganda.

		0002-CP1	0014-CP1	0015-CP1	0016-CP1	0017-CP1	0018-CP1	0019-CP1	0020-CP1	0021-CP1	0022-CP1
$T_{y,i}$	-	580	184	189	12	11	11	11	11	11	11
$EC_{PJ,j,y}$	MWh/yr	0.1226	0.1226	0.1226	-	-	-	-	-	-	-
$EF_{EL,j,y}$	tCO2/MWh	1.3	1.3	1.3	-	-	-	-	-	-	-
$TDL_{j,y}$	%	20	20	20	-	-	-	-	-	-	-
PEy	**tCO2e**	111	36	37	-	-	-	-	-	-	-

The following sources of information have been used in this context:

- /MR/
- /CPA-DD/
- /XLS/
- / AMS-III.AV./

Findings	☒	The calculation of the project emissions was found to be fully compliant with the above stated principles. The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☐	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☐	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	During the verification the calculation of leakage has been checked. The following has been verified in detail: • Transparency: It has been checked whether the calculation of leakage is fully traceable and, where used, the Excel calculation provides all calculation formulae. • Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • Correctness: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • Completeness: It has been checked whether all calculations are complete and without omissions. Leakage has been calculated using a default 95% leakage adjustment factor to baseline emissions as per applied methodology. PP has applied related default factor correctly to the baseline emissions. $Ly = BE_y * (1-0.95)$ The following sources of information have been used in this context: • /MR/ • /CPA-DD/ • /XLS/ • / AMS-III.AV./

Findings	☒	The calculation of the leakage was found to be fully compliant with the above stated principles. The calculations of leakage GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☐	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☐	In this context the following CARs, CLs, FARs have been raised:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	Therefore, no further leakage emission result is separately indicated in monitoring report or this report.	

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

Means of verification

The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately.

- Total baseline emissions,
- Total project emissions,
- Total leakage,
- Total emission reductions

The MR demonstrate the summary of GHG emission reductions for the monitoring period and calculated according to the applied methodology AMS-III.AV.as follows:

ERy = BEy - (PEy + Ly)

CPA	BEy (tCO_2e)	PEy (tCO_2e)	Ly (tCO_2e)	ERy (tCO_2e)
9948-P1-0002-CP1	57,218	222	2,862	54,134
9948-P1-0014-CP1	6,306	47	316	5,943
9948-P1-0015-CP1	5,919	48	296	5,575
9948-P1-0016-CP1	295	-	15	280
9948-P1-0017-CP1	265	-	14	251
9948-P1-0018-CP1	222	-	12	210
9948-P1-0019-CP1	276	-	14	262
9948-P1-0020-CP1	245	-	13	232
9948-P1-0021-CP1	264	-	14	250
9948-P1-0022-CP1	252	-	13	239
Total	**71,262**	**317**	**3,569**	**67,376**

It has been assessed whether the values are correct or need to be revised as a consequence of issues identified during the desktop reviews and onsite assessments. Findings have been raised and all monitored parameters have been duly verified.

The following sources of information have been used in this context:

- /MR/
- /XLS/
- /CPA-DD/
- /PoA-DD/

	• /AMS-III.AV./ • /USAGE/	
Findings	☒	Section F.4 of the MR includes in a summary table of the emission reductions calculation.
	☐	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.
	☐	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.
	☒	During the verification issues with impact on the ER calculation have been identified.
		CL 01, CAR 02 and CAR 03 has been raised
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The summary table in MR has been filled correctly and the values are in line with related emission reduction calculation spreadsheet.	

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO_2e)	Project emissions or actual net GHG removals by sinks (tCO_2e)	Leakage (tCO_2e)	GHG emission reductions or net GHG removals by sinks (tCO_2e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
9948-P1-0002-CP1	57,218	222	2,862	0	54,134	54,134
9948-P1-0014-CP1	6,306	47	316	0	5,943	5,943
9948-P1-0015-CP1	5,919	48	296	0	5,575	5,575
9948-P1-0016-CP1	295	-	15	0	280	280
9948-P1-0017-CP1	265	-	14	0	251	251
9948-P1-0018-CP1	222	-	12	0	210	210
9948-P1-0019-CP1	276	-	14	0	262	262
9948-P1-0020-CP1	245	-	13	0	232	232
9948-P1-0021-CP1	264	-	14	0	250	250
9948-P1-0022-CP1	252	-	13	0	239	239
Total	**71,262**	**317**	**3,569**	**0**	**67,376**	**67,376**

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

Means of verification	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the included CPA-DD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
Findings	☒	*Case 1:* The ex-ante estimated value was found to be proportionally higher than the ex-post determined value (except for CPA 002). No further action is deemed required.

	☐	*Case 2:* The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	☒	*Case 3:* The ex-ante estimated value was found to be proportionally lower than the ex-post determined value (for CPA 002).
	☐	In this context the following CARs, CLs, FARs have been raised:
		-
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	CAR 03 was raised by the Validation Team to provide the detailed assessment for the increase in the actual emission reduction compared to estimated emission reductions (limited to CPA 002). The CME has provided assessment for the variation in the data parameters and justified the change. CAR 03 has been CLOSED.	

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period (tCO_2e)	Value estimated in ex ante calculation in the included CPA-DD(s) (tCO_2e)
9948-P1-0002-CP1	54,134	30,728
9948-P1-0014-CP1	5,943	19,617
9948-P1-0015-CP1	5,575	19,617
9948-P1-0016-CP1	280	85,542
9948-P1-0017-CP1	251	85,542
9948-P1-0018-CP1	210	85,542
9948-P1-0019-CP1	262	85,542
9948-P1-0020-CP1	232	85,542
9948-P1-0021-CP1	250	85,542
9948-P1-0022-CP1	239	85,542
Total	**67,376**	**668,756**

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

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered CPA-DD (for CPA 02) and section F.5 of the MR, the verification team has checked whether (in case 3) an appropriate explanation is included in the MR.	
Findings	☐	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	☒	*For case 3:* The PP has provided a related justification in the MR. The reasons for the increase are as follows: The higher ex-poste emission reductions in the current monitoring period is due to higher value of the parameters $Ry_{,i}$, $Ny_{,i}$, $T_{y,i}$, Operational $rate_i$, water $quality_i$,etc (not in control of the CME) as well as other monitoring parameters (refer section F.6 of MR)
	☒	In this context the following CARs, CLs, FARs have been raised:
		CAR 03
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	Emissions reductions achieved during the monitoring period are higher (for CPA 0002) than the values estimated in the ex-ante calculation of registered CPA-DD. Appropriate explanation is furnished in the MR and assessed to be acceptable by verification team.	

E.3.7. Assessment of reported sustainable development co-benefits

Means of verification	☒	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	☐	The project participants have monitored the sustainable development co-benefits of the registered CDM project activity and requested the DOE to verify them. The following sources of information have been used in this context: • /MR/ • /PoA-DD/ • /CPA-DD/ • /unfccc/.
Findings	☒	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	☐	Therefore, the DOE has assessed and confirms that: (a) The monitoring has been carried out in accordance with the document for monitoring sustainable development co-benefits, if such document was developed and published on the UNFCCC CDM website in accordance with the "CDM project standard for project activities"; (b) The reported monitoring results correspond to the sustainable development co-benefits of the project activity as observed by the DOE.
	☐	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	☒	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	-	

E.3.8. Global stakeholder consultation

Means of verification	In accordance with the PCP the DOE has submitted the initial version of the monitoring report provided by the PP for this monitoring period to be published on the UNFCCC webpage. The monitoring report has been published for the period from 17/03/2020. The following sources of information have been used in this context: • /MR/ • /unfccc/.	
Findings	☒	No comments have been received on the published monitoring report for this monitoring period.
	☐	Comments have been received and the DOE has concluded that comments are related to issues outside the CDM rules and requirements. Please refer to the list provided under Conclusion of this Section below for related information.
	☐	Comments have been received. The DOE has - requested further information from the submitters of the comments - informed the project participants of the comments received, and requested their feedback within a specified timeframe, - considered the input received and has assessed whether such comments are relevant to the CDM project activity, - acknowledged receipt of all submitted comments on the MR of the proposed CDM project activity, - assessed whether the comments are related to the CDM rules and requirements (if so related findings have been raised as per below), - used all possible means to determine the authenticity of the name

		and contact details of the individual or organization on whose behalf the comments have been submitted, - contacted the secretariat to make them publicly available (if only addressed to the DOE), - determined whether authentic and relevant comments in the global stakeholder consultation were taken into due account in the PDD of the proposed CDM project activity.
	☐	In this context the following CARs, CLs, FARs have been raised, i.e. as the DOE concludes that the comments are related to the CDM rules and requirements:
		-
Conclusion	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	☒	No comments received during the stakeholder consultation process.

SECTION F. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors where at least one is being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may have been confirmed or revised. Furthermore, reporting improvements might have been achieved.

After the successful technical review an overall (esp. procedural) assessment of the complete verification has been carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the submission for requesting for issuance is conducted.

SECTION G. Verification opinion

Impact Carbon has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the CDM PoA: "***Impact Carbon Global Safe Water Programme of Activities (PoA)***", with regard to the relevant requirements for CDM Programme of Activities. The PoA reduces GHG emissions by avoiding usage of fuel wood and other fossil fuel for boiling water to make it safe for drinking purpose. This verification covers the period from 23/05/2017 – 22/05/2019 (both days included)

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design documents,
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-III.AV. ver. 4.0,
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately (as applicable),
- the monitoring system is in place and functional. The project has generated GHG emission reductions,
- the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

TÜV NORD JI/CDM CP further confirms that the project has achieved emission reductions in the above-mentioned reporting period as follows:

Emission reductions: **67,376 tCO_2e**

SECTION H. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the CDM PoA

"Impact Carbon Global Safe Water Programme of Activities (PoA)"

registered under

UNFCCC-No.: 9948

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities during the current monitoring period

MP-No.:	2
from:	23/05/2017
to:	22/05/2019

(including both days) as follows:

Emission reductions: **67,376 tCO_2e**

New Delhi, 25/03/2021

Prakash

Prakash Kumar Mishra
Team Leader
TÜV NORD JI/CDM Certification Program

Appendix 1. Abbreviations

Abbreviations	Full texts
CAF	Customer Agreement Forms
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating/Managing Entity
CO_2	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CPA-DD	Component Project Activities Design Document
DOE	Designated Operational Entity
DVerR	Draft Verification Report
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IM	Interview Memo
MP	Monitoring Plan
MS1	Monitoring Survey for period 23 May 2017 to 22 May 2018
MS2	Monitoring Survey for period 23 May 2018 to 22 May 2019
MR	Monitoring Report
OSVEJ	On-site Visit Exemption Justification
PA	Project Activity
POA-DD	Project of Activities Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
RC	Reliability check work sheets for WPS
SD	Standard deviation
UNFCCC	United Nations Framework Convention on Climate Change
VT	Verification Team
VVS	Validation and Verification Standard
WFT	Water Quality Field Test
WPS	Water Purification System
XLS	Emission Reduction Calculation Spread Sheet

Appendix 2. Competence of team members and technical reviewers

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Prakash Kumar Mishra

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2023-12-16
VCS / ISO 14064-2	Senior Assessor	2023-12-16

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand

146 - Rev. 7, Date: 2020-12-17

146_S01-VA060-F20_2020-12-17_rev7 S01-VA060-F20 rev3 / 2012-10-25

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Ms. Christina Stöhr

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification) Technical Reviewer	2023-05-05
VCS / ISO 14064-2	Assessor/ Technical Reviewer	2023-05-05

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
13.1	Solid waste and wastewater

200 - Rev. 6 Date: 2020-04-08

200_S01-VA060-F20_2020-04-08_rev.6 S01-VA060-F20 rev3 / 2012-10-25

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2023-07-27
VCS / ISO14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2023-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
10.1	Fugitive emissions from oil and gas
13.1	Solid waste and wastewater
13.2	Manure

163 – Rev. 7, Date: 2020-07-22

163_S01-VA060-F20_2020-07-22_rev7 S01-VA060-F20 rev3 / 2012-10-25

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1.	UNFCCC	**/AMS-III.AV**	• AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0)		Other
2.	PP	**/CPA-DD/**	• CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 2', Version 3.0, dated 24/03/2014 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 14', Version 1, dated 26/10/2017 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 15', Version 1, dated 26/10/2017 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 16', Version 5, dated 22/03/2019 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 17', Version 5, dated 22/03/2019 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18', Version 5, dated 22/03/2019 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 19', Version 5, dated 22/03/2019 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 20', Version 5, dated 22/03/2019 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 21', Version 5, dated 22/03/2019 • CPA-DD titled 'Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 22', Version 5, dated 22/03/2019		Other
3.	PP	**/DB/, /REC/**	• Sales Force Edition report • Installation Records by Impact water • Photographs and video clips of remotely assessed samples • Telephonic/ skype call records • School Academic Calendar 2017 Ministry of Education and Sports, Uganda for determining actual number of operational school days • School Academic Calendar 2018 Ministry of Education and Sports, Uganda for determining actual		Other

No.	Author	Reference	Title	References to the document	Provider
			number of operational school days • School Academic Calendar 2019 Ministry of Education and Sports, Uganda for determining actual number of operational school days		
4.	DOE	**/CPM/**	• TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		Other
5.	PP	**/USAGE/**	• Monitoring forms by Impact Water for survey carried out at different institutions (Scanned copies) • MP2_MS1_DoE Site Visit Samples • PoA 9948_MP2_MS1_Sampling database.xlsx • PoA 9948_MP2_MS2_Sampling database.xlsx • Citizens-Survey-on-Uganda-Vision-2040.pdf		Other
6.	IPCC	**/IPCC/**	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: workbook 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp	Other
7.	UNFCCC	**/KP/**	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Other
8.	UNFCCC	**/MA/**	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Other
9.	UNFCCC	**/MR/**	Monitoring Report titled `Impact Carbon Global Safe Water Programme of Activities (PoA)', • Version 1.0, dated 13/03/2020 • Version 2.0, dated 29/06/2020 • Version 2.2, dated 21/08/2020 • Version 3.0, dated 08/12/2020 • Version 4.0, dated 19/03/2021	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
10.	UNFCCC	**/MRT/**	• Monitoring Report Form (CDM-PoA-MR-FORM), Version 03.0	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
11.	UNFCCC	**/PoA-DD/**	• Registered Project Design Document for CDM PoA: "Impact Carbon Global Safe Water Programme of Activities (PoA)" version 03, dated 24/03/2014 • Revised Project Design Document for CDM PoA: "Impact Carbon Global Safe Water Programme of Activities (PoA)" version 6.1, dated 15/02/2017 • Revised Project Design Document for CDM PoA: "Impact Carbon Global Safe Water Programme of Activities (PoA)" version 7.0, dated 18/04/2017	https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/YNXCPIJ5ZO7DTRGMV0F2AKEU486LQS	Other

No.	Author	Reference	Title	References to the document	Provider
12.	PP	**/PRC/**	• PRC-9948-003 Impact Carbon Global Safe Water Programme of Activities (PoA) approved on date 03 May 19 • PRC-9948-002 Impact Carbon Global Safe Water Programme of Activities (PoA) approved on date 03 Jul 17 • PRC-9948-001 Impact Carbon Global Safe Water Programme of Activities (PoA) approved on date 08 May 17	-	Other
13.	UNFCCC	**/PS/**	CDM Project Standard for Programme of activities (Version 2.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
14.	PP	**/PO/**	• Sales database included as part of the PoA 9948_MP2_Uganda ER Sheet_ver 2.0_10072020 • Sales Receipt in the form of Purchase order including SF ID		Other
15.	PP	**/VAL/**	Validation Report for CDM PoA project "Impact Carbon Global Safe Water Programme of Activities (PoA)" version 02, dated 30 April 2014		Other
16.	UNFCCC	**/VVS/**	CDM validation and verification standard for programmes of activities (Version 2.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
17.	PP	**/CBT/**	**Water Quality Test** • CBT Instructions for_DrinkingWater_Sobsey • IP Water Testing Certificate • Aquagenx New Test Kits		Other
18.	PP	**/ELIG/**	Applied Technology: • Technical Specification of Multi-barrier UV System • Technical specification of UltraFlo and Ultra Tab System Location of CPA • Verifiable evidence – Address to confirm that the CPA is not located in regions of Uganda where a public distribution network supplying safe drinking water exists. Operations Manual from Impact Water		Other
19.	PP	**/TS/**	• Certificate from Multi-Barrier UV Supplier (Rotek) on WHO compliance • Technical Specification of Multi-barrier UV System from Supplier (Rotek) for Large and Small UV • Technical specification / expiry of UltraFlo by Medentech • Ultra Flo Dimensions DeclarationUV Lifespan confirmation from Mult-Barrier UV Supplier (Rotek)		Other

No.	Author	Reference	Title	References to the document	Provider
20.	UNFCCC	**/SAMPLE/**	• "Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities" (Version 04.0) • "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" (version 08.0)	https://cdm.unfccc.int/Reference/Guidclarif/index.html http://cdm.unfccc.int/Reference/Standards/index.html	Other
21.	UNFCCC	**/GOT/**	• Glossary "CDM terms" (version 10.0)	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20150226124447549-glos_CDM.pdf/glos_CDM.pdf?t=UmZ8bnFjODI3fDCW9A3vJwR03kQQh4sbLiYu	Other
22.	PP	**/XLS/**	• 01 - PoA 9948_MP2_Uganda ER Sheet_ver 1.0_13032020 • 02 - PoA 9948_MP2_Uganda ER Sheet_ver 2.0_29062020 • 2.2 - PoA 9948_MP2_Uganda ER Sheet_ver 2.2_21/08/2020 • PoA 9948_MP2_Uganda ER Sheet_ver 3.0_08122020 • PoA 9948_MP2_Uganda ER Sheet_ver 4.0_19032021	-	PP
23.	PP	**/RC/**	Reliability Check integrated into ER sheet • Random number generator for selection of samples from the population • Sample size and Reliability check for Operational Units, Water quality and Safe water distribution network	-	PP
24.	UNFCCC	**/unfccc/**	UNFCCC	http://cdm.unfccc.int	Other
25.	IPCC	**/ipcc/**	IPCC publications	www.ipcc-nggip.iges.or.jp	Other
26.	PP	**/TRG/**	• Certificate of Training for Surveys • Certificate of Training for Tests • Survey Training Module • Aquagenx Test Training Module		Other
27.	PP	**/OSVEJ/**	Justification to UN interim exemption clause by CME for not postponing mandatory onsite visit: 1. Letter/declaration for the reason 2. Delivery deadline related justification evidence inter alia ERPA/Term sheets 3. Contractual obligation on timeline with DOE (if any) 4. Undertaking that CME and on ground preparation is compatible and equipped with infrastructure to conduct remote assessment		

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

Table 3. Remaining FARs from validation and/or previous verification

FAR ID	-	**Section no.**	-	**Date:** DD/MM/YYYY
Description of FAR				
n.a.				
CME response				**Date:** DD/MM/YYYY
Documentation provided by the CME				
DOE assessment				**Date:** DD/MM/YYYY

Table 4. CLs from this verification

CL ID	01	**Section no.**	ER worksheet	**Date:** 15/05/2020
Description of CL				
Tab: Sales Database -MS1 and Sales Databse-MS2 1. Clarification is requested on calculation of "Residual capacity from previous MP" under tab: Sales Databse-MS1 and Sales Databse-MS2. 2. Clarification is requested on the calculation of "Person / Equipment ($N_{y,i}$)" under tab: Sales Database-Sales Database and application of values 3475 and 4372. 3. A further clarification is required on the cutoff date stated as 30-04-2017 for calculations under column 'System's Continuous running end date' under tab: Sales Databse-MS1; and 30-04-2018 under Sales Databse-MS2. 4. The f_{NRB} value for CPA 14, 15, 16, 17, 18, 19, 20 and 21 are 0.7867. Clarification is requested how the applied value of 0.82 is deemed appropriate.				
CME response				**Date:** 29/06/2020
1. The monitoring period begins on 23 May 2017, however there are significant number of units that are in continued use from previous monitoring period. For such systems, the residual (un-utilized) capacity of the system (at the end of the previous monitoring period) has been determined and has been used as the starting capacity at the beginning of the current monitoring period. For new systems installed in current monitoring period and not getting carry forwarded from previous monitoring period, the residual capacity has been considered as 0. 2. As per registered PoA-DD, each water purification system in the CPA is limited to generate an emission reduction of 600 tCO_2e or less. The following texts are mentioned in respective CPA-DDs to ensure compliance with this cap. *For CPA 2 in order to ensure this cap is met, one unit of any technology type shall not purify more than 3,191,560 L/year. This is the maximum value for QPWy, to ensure that ERs per unit do not exceed 600 tCO_2equivalent/year. For these CPA, where Ry,i is 2 L/person/day (for day schools) and 3.5L/person/day(for boarding schools and prisons), the maximum value for Ny,i is 4,372 persons/institution.* *For CPA 14 and 15 in order to ensure this cap is met, one unit of any technology type shall not purify more than 2,226,500 L/year. This is the maximum value for QPWy, to ensure that ERs per unit do not exceed 600 tCO_2equivalent/year. For these CPA, where Ry,i is 2 L/person/day (for day schools) and 3.5L/person/day(for boarding schools and prisons), the maximum value for Ny,i is 3,050 persons/institution.* *For CPA 16 to CPA 22 in order to ensure this cap is met, one unit of any technology type shall not purify more than 2,796,767 L/year. This is the maximum value for QPWy, to ensure that ERs per unit do not exceed 600 tCO_2 equivalent/year, For these CPA where Ry,i is 2 L/person/day (for day*				

schools) and 3.5L/person/day(for boarding schools and prisons), the maximum value for Ny,i is 3,475 persons/institution.

Hence the person/ equipment capping in the ER Sheet is in line with registered CPA-DDs as stated above.

3. The effective monitoring period is starting from 23 May 2017 for MP2-MS1. As per registered PoA-DD, for any system installed, credit accrual will start from first date of next month. Thus, a WPS installed before 30-04-2017, would have been covered in the previous MP and hence would have some residual capacity from previous MP. On the other hand, a WPS system installed after 30-04-2017, would have not been covered in previous MP for crediting and hence will not have any residual capacity from previous MP. Such system's continuous running end date will be calculated considering the start date of the monitoring period or date of installation, whichever is later. Thus, the cut-off date of 30 April 2017 has been applied accordingly.

   Similarly, the effective monitoring period is starting from 23 May 2018 for MP2-MS2. As per registered PoA-DD, for any system installed, credit accrual will start from first date of next month. Thus, a WPS installed before 30-04-2018, would have been covered in the previous MP and hence would have some residual capacity from previous MP. On the other hand, a WPS system installed after 30-04-2018, would have not been covered in previous MP for crediting and hence will not have any residual capacity from previous MP. Such system's continuous running end date will be calculated considering the start date of the monitoring period or date of installation, whichever is later. Thus, the cut-off date of 30 April 2018 has been applied accordingly.

4. The monitoring parameter $f_{NRB,y,}$ is a monitoring parameter that is determined using "EB 67 Annex 22" Default Values for f_{NRB} for LDCs and SIDS combined with survey, national, or regional data to determine the % of users using given fuel type (biomass / fossil fuels) as per the PoA-DD. The CME has used national data to determine the % users using biomass/ fossil fuel can be used for the next monitoring period, in case more recent data is not available. The data source used for determining $f_{NRB,y}$ is UNHS report dated 2018. No more recent national study, providing information on % population using different fuel types, is available applied value 0.82 is deemed appropriate.

Documentation provided by the CME

NA

DOE assessment	**Date:** 07/07/2020

1. The explanation is accepted. The Verification Team has also added note in the FVR section E.3.6.1.
2. The Verification Team has verified the CPA-DD, technical specifications and the explanation provided by the CME. The explanation is accepted. CL has been CLOSED.
3. Explanation is accepted. CL has been CLOSED.
4. The CME is following the provisions of the registered monitoring plan. The explanation is accepted.

However below additional issues are identified:

a. The formula to calculate the reliability/achieved precision is found not traceable.(refer tabs: Sample size calculation-MS1" and "Sample size calculation-MS2")
b. The " Cumulative treatment capacity of the system based on # units installed / supplied (l)" shown in column AW of tab "Sales Database-MS1" and "Sales Database-MS2". The values do not reflect the actual installed unit.
c. It is not clear how CME is evaluating maximum output of the unit [per unit], provisions are missing in the ER worksheet.
d. The MR is unclear how the applied value of the operation days includes non-school days, whereas the ER calculation considers both boarding and non-boarding persons.

CME response	**Date:** 23/08/2020

a. The formula to calculate the reliability/achieved precision, given in worksheets "Sample size calculation-MS1" and "Sample size calculation-MS2" cell D25, D46 and D67 have been rectified in line with eq. 42, page 89 of the Guideline: Sampling and surveys for CDM project activities and PoAs (v.4). Similarly, cell D26, D47 and D68 in the worksheet "Sample size calculation-MS1" and "Sample size calculation-MS2" have been rectified to compare the achieved precision with the applicable precision limit (10%).
The revised ER Sheet and MR are being submitted.
b. In case of multiple units of Multi-barrier UV systems installed in an institution, it is deemed that the units will be used simultaneously (or in parallel) to service different persons and areas in that institution. Thus, in such cases, Ny,i has been calculated as number of persons serviced / unit (e.g. refer "Sales Database-MS1" for S. No. 622, excel row 624, AT624 = L624 / AS624).
Accordingly, in column AW of the worksheet "Sales Database-MS1", the "Treatment capacity of a unit (based

on residual/installation capacity + subsequent supplies) (Ltrs)" has been determined for a singular unit.
This ensures consistency wrt application of $N_{y,i}$ calculated in AT624, for determining other values in cells AY624 and AT624 which determine the number of days the systems are expected to run continuously if used simultaneously (based on individual capacity of system and average number of person serviced per system).
The aforesaid approach has been incorporated in the ER sheet to ensure ($N_{y,i}$ * $R_{y,i}$) per unit does not exceed the maximum output of unit system for cases where multiple systems are used simultaneously as explained in response to question d) below.
Consideration of aggregate capacity of all systems in Cell AW624, would over-calculate the maximum output/system and would result in over-estimation of emission reductions.
While "Sales Database-MS1" does focus on $N_{y,i}$ per unit, the "ER Calculation- MS1" does considers the total number of units from column AS of "Sales Database-MS1" to calculate $T_{y,i}$.
The same calculation approach has been used in MS2. Refer S.No. 736, excel row 738 for reference.

c. Please note, that the registered monitoring plan mandates to limit $N_{y,i}$ * $R_{y,i}$ at maximum output of unit [per unit]. The $N_{y,i}$ (per unit) * $R_{y,i}$ (Average Volume of drinking water per person per day) has been calculated in column AV of worksheets "Sales Database-MS1" and "Sales Database-MS2".

The treatment capacity (per unit) has been calculated in column AW of worksheets "Sales Database-MS1" and "Sales Database-MS2".
Subsequently, in Column AY of worksheets "Sales Database-MS1" and Sales Database-MS2", "System's continuous running end date" has been determined based on treatment capacity of a unit divided by ($N_{y,i}$ (per unit) * $R_{y,i}$).
This "System's continuous running end date" is then used to determine the residual capacity of the system after the end of monitoring period in column BA of worksheets "Sales Database-MS1" and "Sales Database-MS2". If the "System's continuous running end date" is before the end of monitoring period, the residual capacity is calculated as 0. If the "System's continuous running end date" is after the end date of monitoring period, the residual capacity at the end of monitoring period, is calculated as the number of running days remaining after end of monitoring period * Total Volume of drinking water per day per unit (column AV).
Thus, a residual capacity of 0 indicates that the system was fully consumed before the end of monitoring period. This automatically ensures that $N_{y,i}$ * $R_{y,i}$ never exceeds the maximum output capacity of the system. A non-zero residual capacity shows that the output capacity of the system is more than $N_{y,i}$ * $R_{y,i}$ leaving some un-utilized capacity at the end of monitoring period.
Hence, in this way, it is ensured that $N_{y,i}$ * $R_{y,I}$ never exceeds the maximum output of the unit [per unit].

d. The CPAs supply safe drinking water to institutions (day schools, boarding schools, prisons etc.). The application of 365 days of operation for the project units is justified on the basis of the following:

I. The number of days of operation is mentioned as 365 days in the registered PoA-DD (refer equation 1.a. on page 70 of the registered PoA-DD). Similarly, the CPA-DDs also mention 365 days of operation in the ER calculation formulae.
II. Besides, the number of days of operation is neither an ex-ante parameter not an ex-post monitoring parameter as per the monitoring methodology or the registered monitoring plan in the PoA-DD.
III. The application of 365 days of operation per year for project units is also corroborated by the subsequent versions of the methodology (refer para 17 of AMS-III AV. Version 08.0).
IV. Last but not the least, the applied methodology (AMS III.AV version 4.0) caps the volume of drinking water per person per day at 5.5L/capita/day. The PoA has applied a much conservative cap of 2L/person/day (for days school) and 3.5L/person/day (for boarding schools /prison). These limits are already attributed to minimum survival levels advocated by WHO (Minimum water quantity needed for domestic uses, Technical Note No. 9, WHO/SEARO Technical Notes for Emergencies). Table 1 of the referred document mentions that minimum survival allocation for domestic use (i.e. full day service deemed equivalent to boarding schools and prisons) as 7 l/capita/day (sustainable only for few days), out of which 3-4 ltr is attributed solely for drinking. For schools, it specifies 2 ltr per student per day as the minimum requirement. Also, Water, Sanitation and Hygiene Standards for Schools in Low-cost Settings, published by WHO specified a basic water requirement of 5 l/per/day for day / non-residential schools and 20 ltr/per/day for boarding schools (Page 18, Water, Sanitation and Hygiene Standards for Schools in Low-cost Settings, Indicators for Guidelines). Thus, a consideration of 2 ltr/per/day for day schools and 3.5 ltrs/per/day for boarding schools/prisons is already referring to minimum survival levels and is overly conservative and deemed applicable to entire year.
V. Lastly, the weighted average value if $R_{y,i}$ = 2.67 which is much less than the default value of 3 ltrs per person per day given by AMS III.AV. version 8.0 that is also at 365 days of crediting.

The aforesaid approach has been discussed (via a clarification request from CDM EB) and approved by CDM-EB during PRC-9948-003. Please refer document DOE clarification 8 – "FVR 599 CPA 16 to 22 PRC VR Uganda 25.03.19 clean", page 20 of 26, CAR 01 dated 21/01/2019. (https://cdm.unfccc.int/PRCContainer/DB/prcp52130222/view).

Documentation provided by the CME

- Revised ER worksheet
- Revised MR

DOE assessment | **Date: 04/11/2020**

The Assessment is included under the section E.3.6.1. of FVR.

The CL 01 has been opened following the below I&R Incompleteness:

(a) The CME shall provide information how it considered application of 365 days as appropriate for the calculation of the total quantity of water purified during the year y, considering that the CPA-DDs indicate that the quantity of purified water is based on the "average population serviced/system" while the systems do not service the population during periods when population (i.e. the students) are on holidays and the CPA-DDs for 9948-P1-0014 and 9948-P1-0015 provide 291.50 days/year which consider the school calendar.

(b) The registered CPA-DDs requires that the water quality will be tested as per paragraph 2(b) of AMS-III.AV ver. 4 (i.e. Laboratory test report and/or official notifications (e.g. from national authority on health)). However, the monitoring report shows that Aquagenx testing kits were used to determine the water quality. The DOE shall elaborate how it verified compliance of monitoring with the registered monitoring plan in the included CPA-DDs

(c) The CPA-DDs indicate the monitoring frequency for the parameter "operational units" as "At least once per verification or biennially as per the monitoring requirements in the methodology". The applied methodology (AMS-III.AV. ver. 04, paragraph 15) requires "at least once every two years (biennial)". The DOE shall provide further information how it verified that the monitoring plan complies with the applied methodology

(d) The DOE shall provide further information on how it has crosschecked the operation of the project activity and continuous availability of safe drinking water as per paragraph 304 (c) of VVS for PoA, considering that the monitoring method was based on survey questionnaire alone (e.g. the question "When was the last time, a supply of cartridges/tablets were received?") and no information is provided regarding the crosschecking of the monitored data against other sources such as quantity of chlorine/No. of cartridges used during this monitoring period

CME response | **Date: 11/12/2020**

(a) Please refer above response**(d) in previous round** for justification, furthermore, following the I&R Incompleteness and the reopening of the CL 01, and given that the CPA-DDs for CPA 14 and CPA 15 refer to 291.5 days per year for crediting, hence the ERs for CPA 14 and 15 have been revised conservatively to calculate emission reductions for 291.5 days in year instead of 365 days. Please refer revised ER calculator as follows:

MS#	Worksheet Name	Cell Reference	CPA reference	Description
1	PoA 9948_MP2_Uganda ER Sheet_ver 3.0_08122020; Tab: ER Calculation-MS1	Cell: F6 and G6	CPA 14, CPA 15	Number of days of crediting has been multiplied with a fraction of 291.5/365 to ensure that ER equivalent to the service level mentioned din CPA-DD is being accounted.
2	PoA 9948_MP2_Uganda ER Sheet_ver 3.0_08122020; Tab: ER Calculation-MS2	Cell: F6 and G6		

(b) The CPA-DDs on page 3 states the following:
"The application of technologies distributed under the CPA achieve compliance with "Interim or higher" performance target as per "Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO 2011) or a comparable national standard or guideline, per the methodology AMS-III.AV Version 4." All technologies that are going to be distributed under this CPA, will be lab tested to ensure they adhere to these guidelines.

This has also been made an eligibility criterion (# 7, page 32 of CPA-DD) for inclusion of a technology in the CPA which states the following:

Eligibility criterion - Required condition	Supporting evidence for inclusion	Description of this CPA in relation to the criterion and supporting evidence
The water purification technology/equipment must achieve compliance with either: a) A relevant national standard or b) The interim performance targets as per "Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO, 2011)	Verifiable evidence: – Laboratory test report and/or official notifications (e.g. from national authority on health). – Technical specifications document(s)	The water purification technology/equipment are in compliance with the following: (b) The interim performance targets as per "Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO, 2011) Supporting Evidence: – – Technical specifications document(s)

Thus, the project technology (Ultra TAB, Ultra Flow or UV) needs to demonstrate that they comply with WHO, 2011 interim performance targets. This has already been confirmed via the technical specifications listed in CPA-DD wherein Log 4 reduction is achieved by UV systems and Log 2 reduction is achieved by Chlorination systems (as mentioned in CPA 02 CPA-DD on page 4 and CPA 16 CPA-DD on page 5, respectively). Thus, the technology's compliance with interim measures has already been demonstrated.

For ex-post water quality monitoring, the CPA-DD on page refers to the following:
"As per the World Health Organizations Guidelines[11] it is more cost-effective and feasible to monitor indicator organisms such as E.Coli. Monitoring of proxies such as E. Coli, faecal coliform counts, chlorine levels may be used to assess water quality. CPA implementer shall be responsible for conducting testing. Enumerators will be trained on proper testing procedures and the appropriate testing technology will be used. CPA implementer shall be responsible for conducting testing".

The CME has used Aquagenx Compartment Based Test (CBT) E.Coli / Total Coliform (ECTC) testing kits to monitor E.Coli as the indicator organism to test the quality of water. Aquagenx CBT ECTC testing Kits are used extensively across the globe in low resource areas. The Aquagenx Test is very effective testing method in terms of flexibility wrt transportation, for cases involving institutional and community engagement. The test kits detect and quantify E.Coli in 100 mL samples.

The water quality assessment using Aquagenx CBT ECTC testing kit follows a standard testing procedure. Each kit includes a sample collection Whirl-Pak Thio-bag and a powder growth medium pack. The powder growth medium has a glucose substrate called X-Gluc. When E. coli metabolize this substrate in Aquagenx's growth medium, the color of the water turns blue, indicating the presence of E. coli.

The Aquagenx CBT ECTC is a laboratory-based test with provisions for sample collection in the field directly. Given the project systems are installed in institutions, thus, the water quality sample collection can only be done in the field. The portable water sample collection bags provisioned in Aquagenx CBT ECTC testing kit, renders it as a preferred and viable option for testing water quality for project devices installed in institutions and schools under the PoA.

The following standard sample collection procedure is followed:

1. At the time of sample collection in the field - the Whirl-Pak Thio-bag is labeled with the name of the institution, date and time of sample collection and the unique SF ID for that institution.
2. After labelling the bag, it is filled with 100 ml of water from the project system being monitored.
3. The powder growth medium is added to the Whirl-Pak Thio bag. The Whirl-Pak seal is rolled down and the Thio-bag is closed shut. This ensures that the sample collections remain free from any external contamination.
4. The powder medium is dissolved by gently swirling the bag.

The sealed Thio bag is then incubated in the in-house lab in the Impact Water's office. The incubation is an ambient temperature incubation for 48 hours. The incubation for 48 hours ensures that even the trace presence of E.Coli gets detected in the water sample collected. The bags are incubated in controlled environment in the lab to prevent contamination and health hazard in the Impact Water's office.

After the incubation of 48 hours the results of the water quality test are read by the qualified lab technician. A

[11] WHO 'Guidelines for Drinking-water Quality, Fourth Edition Page 41.

blue/green color indicates presence of E.Coli in water sample. After the test is completed, chlorine tablets are added in the Thio bag and stranded for 30 minutes to ensure decontamination. The decontaminated water sample is then discharged in the in-house lab itself.

Thus, the water sample collection and testing have been conducted by trained staff with extensive prior experience of water quality testing using Aquagenx CBT ECTC testing kits. The same was cross verified by the Verification Team via interviews with the water quality testing staff wrt testing protocol, process of sample collection, testing procedure followed, test results assessment etc. The Verification Team also reviewed photographic evidence of water quality samples and test results to confirm the accuracy to results reported by the CME.

For details, refer the testing protocol is available at the following link:
https://www.aquagenx.com/wp-content/uploads/2020/05/PA-CBT-ECTC-Instructions-DrinkingWater-May2020.pdf

The use of Aquagenx CBT ECTC testing kit for determining water quality is therefore in line with the registered CPA-DDs as well as monitoring methodology. The tests have been conducted by trained staff with extensive prior experience of water quality testing.
Further, various studies conducted across many locations and environments around the world by academic institutions, national government agencies, international NGOs and United Nations agencies confirm that, the Aquagenx test a Compartment Bag Test (CBT) gives results comparable with more complicated, expensive and less portable tests conducted otherwise.

A paper published in "The American Journal of Tropical Medicine and Hygiene, Volume 96, Issue 4, 5 Apr 2017, p. 970 – 975[12] states that:

……., and one sample using membrane filtration (MF) was analyzed by reference laboratories. There were no statistically significant differences in E. coli concentrations between the field and laboratory CBT results, or when compared with MF results. These results suggest that the CBT for E. coli is an effective method to quantify fecal bacteria in household drinking water. The CBT can be incorporated into DHS and other national household surveys as a direct measure of drinking water safety based on microbial quality to better document access to safe drinking water.

Thus, the testing technology deployed by the CME/CPAI is deemed accurate, credible and reliable.

(c) As per the applied methodology AMS-III.AV version 04.0 "Monitoring shall consist of checking of all appliances or a representative sample thereof, at least once every two years (biennial) to ensure that they are still operating or are replaced by an equivalent in service appliance as per the relevant sampling requirements of AMS-I.E".

The monitoring frequency of "at least once every two years", is deemed the maximum duration over which the parameter must be monitored at least once.

The term "per verification", on the other hand is provisioned to cover cases when the verification is being conducted for a monitoring period which is less than two years. For example, refer the following:

MP#	Duration	Start date of Monitoring	Justification
2	23 May 2017 – 22 May 2019	MS#1: 18 Nov 2018 MS#2: 03 Nov 2019	Over the two-year period, two annual monitoring events were conducted instead.
3	23 May 2019 – 31 Dec 2019	Jan 2020	MP3 is less than 2 years, still monitoring done again in Jan 2020 despite monitoring done in MP2 MS#2 in Nov 2019
4	01 Jan 2020 – 21 Ma 2020	Sep 2020	MP4 less than 2 years since MP3, still monitoring done again in Sep 2020 despite monitoring done in MP3 in Jan 2020.

This approach avoids application of values established in previous monitoring period (in above example, values determined in MP3), to the subsequent monitoring period (MP4) without monitoring the parameter

[12] http://www.ajtmh.org/content/journals/10.4269/ajtmh.15-0717

(because the monitoring frequency is once every two years). Thus, the monitoring frequency of "at least once per verification" applicable to shortened MPs, results in yielding more representative and accurate results of monitoring parameter rather than applying the values established in the previous monitoring period.

Further, the "biennial" monitoring frequency supersedes "per verification" and not the other way around. Thus, in case of a verification covering more than 2-year monitoring period, the PP shall need more than a singular monitoring event to ensure "at least biennial" monitoring frequency is met.

Lastly, the monitoring period under concern as shown in table above, still remains within the "biennial" monitoring frequency.
Thus, the monitoring plan and the concerned monitoring report is compliant with the monitoring methodology.

(d) Firstly, the monitoring methodology para 15 states:
"Monitoring shall consist of checking of all appliances or a representative sample thereof, at least once every two years (biennial) to ensure that they are still operating or are replaced by an equivalent in service appliance as per the relevant sampling requirements of AMS-I.E".

Para 16(b) of the methodology states:
"The quantity of purified water in year y shall be derived from the capacity of the equipment established by manufacturers' specifications and the number of functional project appliances as per paragraph 15"

Thus, the continuity of service (continuous availability of safe drinking water) is to be determined via ex-post sampling and if the project device is found functional during ex-post monitoring, the continuity of service is deemed being maintained over the entire monitoring period.

However, during the ex-post monitoring, the CME has taken additional measures to ensure continuous availability of safe drinking water as follows:

The monitoring survey form consists of the following questions:

Question pertaining to continuity/Maintenance:

- Has routine supply/maintenance been conducted for the IW System? (Yes/No).
- When was the last time supply/maintenance was conducted? (DD-MMM-YYYY).

Question pertaining to usage:

- Is the IW unit being used for water treatment? (Yes/No)
- Presence of other water treatment technologies / devices in the institution

The question pertaining to continuity /maintenance is intended to ensure that the user is receiving regular supplies / maintenance which ensures system's continuity. The date of last supply / maintenance serves as an objective evidence to cross-verify regular supplies/ maintenance being received by the user at the time of survey.

Further the date of last supply / maintenance provides the surveyor an option to check if last delivery has reached the user and have been put in use. This is achieved by physically cross verifying the product ID mentioned in the last delivery note / installation log with the system found installed on site (TAB packs available in case of UltraTAB and cartridge installed in case of UltraFLO). This also confirms that earlier supplies have been consumed, ensuring continuous availability of safe drinking water.

The questions related to usage confirms that the system is functional as per para 16. Additionally, none of the monitored schools were found using any other form of water treatment technology / device. This further substantiates imperative use of project devices, given drinking water is a basic sustenance need, and continuity of use of project devices.

In addition, the CME has implemented the following system to ensure continuous availability of the safe drinking water in the institutions:

- At the time of installation/distribution of the water purification systems (WPS) in the institution, the CME train the institution staff on usage of the WPS to ensure that the project devices are put to use and any apprehension regarding their quality and safety is resolved.
- The CME Call Center in the country offices, regularly follow ups with the institution regarding operational status of the project system of their installed WPS as well as the expected date of next supply. The schools are supplied with reinforcements in time to ensure system's continuity.
- Additionally, the CME country office contact detail is available in the system Purchase Order and

Delivery Notes available with institution and also pasted on the system tank or school wall in form of sticker. The institution can anytime call the CME office for the subsequent supply of the UltraTab pack or UltraFlo cartridge if needed, or as and when required. It has been verified by the DoE during remote assessment that schools are aware of the phone number to contact in case of needing maintenance / supplies.

- Lastly, the subsequent supply of the UltraTab packs and UltraFlo cartridges in the institution is recorded in the CME database management software (SalesForce). The information on each supply made during the monitoring period (product quantity and serial number) has been provided for each school as well as for each supply (refer ER calculator, worksheet "ER Calculation-MS1" and "Sales Databse-MS2" column S:AP). The details of these supplies have also been cross verified against the delivery notes / installation records available at the CPAI office, by the DoE during remote assessment. Also, the DOE has cross verified the product ID reported in the last supply with the product ID found mentioned on the physical systems on site for sampled schools.

The above sales and monitoring provisions ensure as uninterrupted supply of safe drinking water in the institution

Documentation provided by the CME

- Revised ER worksheet
- Revised MR

DOE assessment	**Date: 11/12/2020**

(a) Verification team has assessed the justification provided by CME and confirms that this issue has been addressed as part of the closure of the CL 01, DOE Assessment dated 07/07/2020, point d) under "However below additional points are identified". The justification provided by the CME is acceptable since the "number of days of operation"

- is not a monitoring parameter;
- is deemed fixed as 365 as per the equation 1.a) in the registered PoA-DD;
- Subsequent versions of the applied methodology (AMS-III AV. Version 08.0) also utilize 365 days as the days of operation, in the applicable formulae and sample calculation shown in the methodology.
- conservative assumptions for the parameter "$R_{y,i}$"; considering 2 l/person/day for day schools and 3.5 l/person/day for boarding schools/prisons were found to be conservative and acceptable against WHO standards and/or latest version of the methodology.
- as well as the quoted PRC's also affirm this explanation provided by the CME;

Further, it has been assessed that the CME has updated the ER calculations for CPA-14 and CPA-15 considering 291.5 days of crediting in a year and hence is deemed most conservative and acceptable approach. During of the closure of the CL the ER have decreased to **131,083 tCO_2.**

(b) As per paragraph 2(b) of the applied methodology:
"*It shall be demonstrated based on laboratory testing or official notifications (for example notifications from the national authority on health) that the application of the project technology/equipment achieves compliance either with: (i) at a minimum the performance target as per "Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO, 2011); or (ii) an applicable national standard or guideline"*

The CME used Aquagenx Compartment Based Test (CBT) E.Coli / Total Coliform (ECTC) testing kits to monitor E.Coli as the indicator organism to test the quality of water. The CME has also explained clearly that the test with its protocol (https://www.aquagenx.com/wp-content/uploads/2020/05/PA-CBT-ECTC-Instructions-DrinkingWater-May2020.pdf) qualifies as laboratory test and meets the compliance required by applied methodology.

The Verification Team has verified that the Aquagenix Water Testing kit meets the requirements of the registered monitoring plan and conformance to WHO guidelines via "Aquagenix Testing Kit Specifications". Even during the concerned Verification, the conformance was verified. The Verification Team also took due account of the above explanation of eligibility criteria.

The Verification Team assessed the competency of the trained staff, their prior experience of testing via interviews on the process of collecting samples, handling the samples, protocol followed for testing, lab incubation requirements, test results assessment etc to confirm that they had received training before conducting the test.

In addition, during the remote-site interviews, the Verification Team requested the CME to submit the evidence of water quality test reports, training procedure, training records, experience of enumerators' (refer

CAR 04 under FVR and its resolution) and found the submitted Evidence appropriate and confirming the testing to be conducted by experienced staff and under standard conditions. Thus, the results from the Aqugenx tests conducted by the monitoring team were found to be reliable and meeting the conditions of the applied methodology.

(c) The FVR under section D.4 Sampling Approach explains the appropriateness of the applied monitoring frequency. The CME has observed two separate monitoring events MS1 and MS2 for applied monitoring period MP2 (Refer MR and corresponding ER worksheet). The applied monitoring frequency is in line with the registered monitoring plan as the monitoring frequency follows the requirement of "at least once in two years" and/or "per verification". Besides, a review of subsequent MRs webhosted by CME on UNFCCC website, also confirms that the CME is following a higher monitoring frequency (even better than annual monitoring frequency @ per verification, which is in line with the methodology requirement of at least biennially). The applied monitoring frequency is thus accepted by Verification Team.

(d) The Assessment Team assessed the survey forms submitted by the CME. The Verification Team (during the remote audits) reconfirmed the below particulars with the end users to confirm the credibility of the monitoring data. The sample snapshot of Monitoring Survey protocol for Institutional Water Treatment (WT) Units is given below

Reference: Brighton Junior School

- **confirm that all appliances are in continued operation based on traceable maintenance schedules confirming** continuous supply of cartridge/tablets, through the questions stated below as 'Question pertaining to continuity/Maintenance' and also checks the operational status through 'Question pertaining to usage'.

2. Maintenance

2.1. Has routine supply/maintenance of filters / cartridges / tablets been conducted for the WT unit?	Yes ✓	No
2.2. When was the last time, a supply/maintenance of filters / cartridges / tablets was received?	DD-MM-YYYY 28/07/2018	

- **Assessment of the continued availability of the drinking water-** The above questions pertaining to continuity/maintenance ensures that the institution is receiving continuous supplies and hence have remained under continued use during the monitoring period. The questions pertaining to usage confirm that these supplies are being uninterrupted. The response to these questions confirms that the WT unit was used for the water treatment; the end users did not avail boiling/ unsafe drinking water during the applied monitoring period. Based on the review of the all the submitted monitoring survey forms read with the observation during remote assessment with the representatives of sampled end users, it can be concluded that there was continued availability of the safe drinking water.

3. Usage

3.1. Is the WT unit being used for water treatment?	✓Yes	No
If answer to 3.1 is Yes, jump to 3.3 directly, else continue to 3.2 and stop the survey		
3.2. If answer to 3.1 is No, then mention month & year the WT units was used last ?	Month	Year
3.3. Do you also boil water after treatment by the WT device?	Yes	✓No
If answer to 3.3 is Yes, continue to 3.4, else jump to 3.7 directly		
3.4. If "Yes" to 3.3, how much treated water do you boil? (In Liters/day)		
3.5. Equipment used for boiling treated water (tick any one. In case of 'Others', please specify)	Unimproved Cookstove	
	Improved Cookstove	
	LPG Stove	
	Kerosene	
	Others.....	

All the interviewed institution heads of "randomly sampled systems" were interviewed by the VT to confirm that

- the product installed in the school was currently in operational condition and
- they have been receiving continuous supply of cartridge/tablets thus, getting continuous supply of safe drinking water. Any institution reporting the product as being functional, cannot be out of supplies.

The Verification Team has assessed all the above data points while interviewing, the sampled school representatives. As stated above this data is already part of the submitted ER worksheet

Additionally, during the remote assessment the VT checked if there are provisions in place to ensure continuous supply of safe drinking water

- **Call Centers:** The CME representatives confirmed that follow up calls with the institutions regarding usage, users are performed to gauge the expected date of next supply next supply of (cartridge/tablets). This fact was also confirmed by the verification team with the school representatives.
- **Other Evidence (Purchase Order, delivery notes etc.):** The objective Evidence delivery notes, installation records, maintenance records and the traceability of customer care number/email for supply / repair on the system's tank or school wall in form of sticker were checked to confirm that the CME country office contact detail is available to the institution staff and they can contact the CME in case they find any issue with the performance, breakdown, problem with the product or need additional tablets / cartridge. During the remote assessment (telephone call and video calls) with the institution heads VT confirmed the availability and use of contact numbers to register their complaints regarding the product or their request for supplies.
- The VT is already in receipt of the sales database which captures the supplies with their product IDs for each institution, which is presented in the ER sheet (refer ER calculator, worksheet tabs "Monitored samples-MS1" and "Sales Databse-MS2"). The VT has also assessed the scanned copies of delivery notes made available for cross verification of the subsequent supplies made to an institution. The verification team had checked it for the sampled institutions. The evidence reviewed confirmed the quantities of supplies mentioned in the ER sheet.

Thus, the above monitoring provisions ensure uninterrupted supply of safe drinking water in the institution.

The CL is still open as additional issues are identified during the RFR:

Question 1 from Request for Review:

1) Refer to paragraph: VVS-PoA ver. 02 paragraph 340(a)

The included CPA-DDs (Section A.3) and the monitoring report (Section C.1) indicate that the implemented water purification devices, i.e. UltraFlo and Multi-barrier UV, are fixed and applicable to piped water. However, the emission reduction (Tab "Sales Database-MS1" and "Sales Database-MS2", column Q) indicates the primary water source for some institutions other than piped water, i.e. surface water, wells, boreholes, rainwater and others. Therefore, the DOE shall verify how it determined that the water purifiers are implemented in accordance with description contained in the included CPA-DDs, in particular with regard to the piped water application.

Question 2 from Request for Review:

2) Refer to paragraph: AMS-III.AV. ver. 04 paragraph 15

The DOE shall further substantiate how it has verified the compliance of the monitoring plan with the applied methodology, in particular the monitoring frequency of parameter "operational units", since the CPA-DDs states that the monitoring frequency for the parameter as "At least once per verification or biennially as per the monitoring requirements in the methodology", which could lead to possibilities whereby the monitoring frequency not meeting methodology requirement (i.e. at least once every two years) when the verification / monitoring period is conducted with a time gap of more than two years.

Question 3 from Request for Review

3) Refer to paragraph: VVS-PoA ver. 02 Paragraph 304 (c)

The DOE cross-verified continuous availability of safe drinking water based on the interviews with the users, maintenance records and delivery notes and further confirmed (page 42 of 92) that the subsequent supply product IDs are captured on the emission reduction spreadsheet. However, the following is observed in the submitted emission reduction spreadsheet:

(a) There is no verification opinion on the implemented water purifier capacities (Tab "Assumptions" cells D10 and D11) of 340,000 L/unit (for UltraTab purifier) and 4,088,232 L/unit (for Multi-barrier UV water purifier);
(b) The residual capacity (i.e. Tab "Sales Database" column AQ) data is not traceable;
(c) The residual capacity of some purification devices indicates system continuous running until year 2077 and more (i.e. Tab 'Sales Database' cells 'AY711) which is even beyond the device lifespan

(i.e. 5 years);

(d) Although the Tabs "Monitored samples_MS1" and "Monitored samples_MS2" Column H indicate the delivery dates of the tablets/cartridges, worksheet Tabs "sales database_MS1" and "sales database_MS2" (column AR) indicate that no supplies were delivered to any school.

Taking into account the above, the DOE is requested to

(a) substantiate how it has verified and concluded the installed water purifier capacities of 340,000 L/unit (for UltraTab purifier) and 4,088,232 L/unit (for Multi-barrier UV water purifier),

(b) submit a traceable emission reduction spreadsheet for the calculation of the system residual capacities,

(c) elaborate how a system's continuous running end date can be beyond its lifespan(5 years),

(d) substantiate continuous availability of safe drinking water to schools considering some water purifiers had no residual capacity from the previous monitoring period and received no supplies during the current monitoring period.

Question 4 from Request for Review:

4) Refer to paragraph: VVS-PoA ver. 02 paragraph 259(d)

The DOE shall further substantiate how it has verified the appropriateness of applying the entire days covered by the monitoring period when calculating parameter QPWy (i.e. quantity of purified water for drinking during the year y), given the facts that the systems do not service the population (i.e. the students) during the school holidays.

CME response	**Date: 19/03/2021**

1. The "Piped Water" cited as the application in Section A.3 of the CPA-DDs for both Multi-Barrier UV and UltraFLO Chlorination systems refers to pressurized piped water connection that is a pre-requisite for these two types of systems by virtue of their design. Thus, Both Multi-Barrier UV and UltraFLO systems can only be installed on piped applications only.

In the emission reduction spreadsheet, tab "MP2 Sales Database-MS1" and "MP2 Sales Database-MS2", column Q, on the other hand, refers to the water source from where the water is extracted instead (to add more transparency). In case of Multi-Barrier UV and UltraFLO Chlorination WPS, primary water sources like the surface water, wells, rainwater etc. have a piping connection installed to transport water from these primary sources to the point of installation of project device.

Please note that schools having Primary Water Source marked as "Piped" in Column Q, refers to only City Council / Government / Municipal Water Piped Connection in the school as the Primary Water Source.

For further detail, please refer to the table below:

Source of Water	**# Multi Barrier UV Schools**	**# Multi Barrier UV Schools**	**# UltraFLO Schools**	**Comments**
	MP2 - MS1	**MP2-MS2**		
Well/Bore hole	39	71	3	These wells/boreholes are connected to drinking water storage tanks via pipes. The water is pumped from wells/boreholes to these water storage tanks. The Multi-Barrier UV or UltraFLO Chlorination WPS is fitted in the tanks at the inlet to ensure that any water flowing in the tank is treated and rendered safe for drinking. The outlet of the tank is connected to the taps to facilitate drinking of water by the school students and staff.
Surface Water	7	21	3	There is a private piped connection used for transporting water from the nearest water body source to the drinking water storage tank in the school premises. Multi-Barrier UV or UltraFLO Chlorination system are fitted onto these piping connections same as that explained above
Rainwater	15	28	4	The rainwater is collected in a sump from where it is pumped via pipes to the drinking water

				storage tank, to which the Multi-Barrier UV or UltraFLO Chlorination system are fitted same as that explained above.
Others	2	2	-	Similar to above, these schools have a combination of aforesaid water sources (wells, surface or rainwater sump), depending on ease of access to the school to which Multi-Barrier UV or UltraFLO Chlorination WPS are connected as explained above

This has been verified by the DOE during the on-site visit during the previous monitoring period. This was also checked by verification team during the remote audit in the current monitoring period. For MP2-MS1, the DOE's audit samples included 1 Multi-Barrier UV school each connected via pipes to source "Other" and "Surface water". Similarly, for MP2-MS2, the DOE's audit samples included 1 Multi-Barrier UV school each connected via pipes to source "Surface Water" and "Well/Borehole". In all these 4 samples the DOE team was able to verify the school to have operational Multi-barrier UV system receiving water from the quoted primary water source and connected via pipes to the drinking water storage tank. Thus, the project devices have been implemented in line with the description provided in the CPA-DD / MR.

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2. Please note that the term "at least" is binding to both "once per verification" as well as "biennially as per the monitoring requirements in the methodology" and not to "once per verification" alone. Thus, under no circumstances, the monitoring frequency will extend beyond two years and shall remain compliant with the monitoring methodology requirement always. Further, please refer the PoA validation report, CAR 07, page 80 of 106 which states the following:

> *The PP revised the monitoring frequency to be "At least once per verification or biennially as per the monitoring requirements in the methodology" to ensure that the methodological requirements are met (at least biennial) and that each verification is based on relevant monitoring results.*

Thus, this substantiates that "at least once per verification" was provisioned in the PoA-DD to prohibit the CME apply the value established in a given MP to the following MP (without monitoring it again) for cases where the combined length of two consecutive MPs is less than two years.

Please refer all previous monitoring periods for different batches where dedicated monitoring for each monitoring period has been conducted despite them being even less than one year duration. Also, for the first monitoring period, although the monitoring period was longer than 2 years (30/05/2014 – 22/05/2017) and was covered under single verification, the CME did not claim any ERs for the period 30/05/2014 – 21/05/2015, and followed the "at least biennially" monitoring frequency to ensure that methodology prevails over such cases. Hence, the CME affirms that in no case the methodology requirements with respect to monitoring frequency would be compromised.

3.Please refer the following in this regard:

(a) The capacity of 340,000L/unit (for UltraFLO) and 10,000L/unit (for UltraTAB) stated in worksheet "Assumptions" is consistent with latest version of registered CPAs 16-22 CPA-DDs page 4. The capacity of 4,088,232L/unit (for Multi-barrier UV Large) and 2,044,116L/unit (for Multi-barrier UV Small) is sourced from Manufacturer technical specifications. The CME accepts oversight in ER spreadsheet assumption tab where the reference for the Multi-Barrier UV system capacity is mentioned as CPA-DD. Revised ER sheet is being submitted.

(b) For MP2-MS1, the 'system's residual capacity from previous monitoring period' (MP2 Sales Database-MS1, column AQ) has been sourced from MP1 sales database submitted to UNFCCC as part of MP1 ER calculator (https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss757932161/view, Refer: additional documents).
The CME extracted the above information from MP1 ER calculator (tab Sales database, Column BA) by applying the vlookup function, using School SF ID as a unique identifier, to call this information in MP2 ER calculator, tab: MP2 Sales database-MS1, column AQ. Given the vlookup function does not work externally, hence the CME had to remove the external links in the MP2 Sales Database-MS1, column AQ, which otherwise would have returned #Ref error in excel, once shared with DoE / UNFCCC.

The CME has now presented 'MP1 sales data – reference only' in revised MP2 ER calculator being

submitted. The column AQ of 'MP2 sales database-MS1' has now been linked with column BA of 'MP1 sales data – reference only' to establish full traceability of values for 'residual capacity from previous MP'. For systems that are newly installed in MP2-MS1, column AQ in tab 'MP2 Sales Database-MS1' now indicates, "not applicable, new installation" to avoid any confusion. Similarly, the column AQ of 'MP2 sales database-MS2' has been linked with column BA of 'MP2 sales database-MS1'. For systems that are newly installed in MP2-MS2, column AQ in tab 'MP2 Sales Database-MS2' now indicates, "not applicable, new installation".

(c) The "system's continuous running end date" is not depicting the lifetime/lifespan of the device. It is merely a determinant to check the compliance with the following registered monitoring plan requirement:

($N_{y,i}$ * $R_{y,i}$) should not exceed the maximum output capacity of the system installed.

1. The system's initial installation capacity or residual capacity from previous MP (as applicable) coupled with supplies made during the monitoring period is used to calculate total treatment capacity per unit (in column AW).
2. The ($N_{y,i}$ * $R_{y,i}$) provides the per day water consumption in school (in column AV).
3. System's continuous running end date (column AY) is then determined as ratio of "Column AW" and "Column AV".
4. If the continuous running end date is falling before the end of monitoring period, this indicates that the ($N_{y,i}$ * $R_{y,i}$) exceeds the system's maximum output capacity during the monitoring period. In such cases the operational days of the unit in that school (refer column BE) is limited within the monitoring period.
5. On the other hand, if this date is after the end date of monitoring period, this indicates that ($N_{y,i}$ * $R_{y,i}$) does not exceed the maximum output capacity during the monitoring period and hence the system can provide continuous supply till the end of the monitoring period .

This functionality in the ER model ensures that ($N_{y,i}$ * $R_{y,i}$) does not exceed the maximum output capacity for any school and operational days are calculated accordingly as per information in column AZ (corresponding to the monitoring period).

In some cases the continuous running end date is a very forward date because the per day water consumption in the school is very low (due to low student staff count) and hence the ($N_{y,i}$ * $R_{y,i}$) will not exceed the treatment capacity till that date. Hence, the continuous running end date is merely a determinant and is not linked with lifetime/lifespan of project devices.

The lifetime of Multi Barrier UV system has been cross-verified from the manufacturer specifications by the DoE. Besides, please note that the earliest Multi-Barrier UV system in Uganda were installed in 2014 and hence will not expire before 2021. Besides, the UV bulb can be replaced to further extend the Multi-Barrier device lifetime further after 7 years. For UltraFLO the lifespan/expiry stated in MR is consistent with that specified in CPA 16-22 CPA-DDs page 4. In case of UltraFLO, the expiry is 5 years with the earliest UltraFLO device being installed in June 2018 in Uganda and hence no UltraFLO device shall expire before the end of the monitoring period.. Besides, every-time a school receives a new supply UltraFLO cartridge, the lifetime of the UltraFLO system is automatically deemed renewed, the supplies being a consumable.

(d) Please note that column AQ in 'MP2 Sales Database-MS1' and 'MP2 Sales Database-MS2' show a value of 0 if there is no residual capacity from the previous monitoring period and show "not applicable, new installation" in case of new installations in the concerned MP-MS#. Please refer the following in this regard:

Description	MP2-MS1 Identifier	MP2-MS2 Identifier
1) Schools with no residual capacity from the previous monitoring period	Select value "0" in column AQ in MP2 Sales Database-MS1	Select value "0" in column AQ in MP2 Sales Database-MS2
2) Schools with no residual capacity from previous monitoring period and received no supplies during the current monitoring period	Simultaneously Select value "0" in column AR in MP2 Sales Database-MS1	Simultaneously Select value "0" in column AR in MP2 Sales Database-MS2
3) Total number of systems identified	6	51
4) Operational days for these	0 (refer column BE, MP2 Sales	0 (refer column BE, MP2 Sales

schools	Database-MS1)	Database-MS2)

Thus, for the schools in (3) above, the operational days have been calculated as 0 because there is no residual capacity from previous MP, neither continuous supplies have been made to the school in the current monitoring period.

On the other hand, “not applicable, new installation” cells in column AQ in ‘MP2 Sales Database-MS1’ and ‘MP2 Sales Database-MS2’ indicate that these systems are newly installed in the respective monitoring session and did not have any residual capacity from previous MP. This is verifiable against their installation dates which falls in the corresponding monitoring session. These systems provide continuous safe drinking water in the monitoring period by virtue of their initial installed capacity, even if no subsequent supplies have been made in these schools. Thus, the ER sheet is correctly ensuring that only those schools are credited that either have residual capacity from previous MP and/or, have received supplies and/or have been newly installed in the monitoring period.

Further, the monitoring survey sheet, in column H, indicates the latest date of Maintenance in case of Multi-Barrier UV and date of cartridge supply in case of UltraFLO, at the time of monitoring. For Multi-barrier UV systems, the date specified is the date of routine maintenance made during MS1 or MS2 given no UV bulb replacements were made during the monitoring period. In case of 7 UltraFLO systems in the monitoring survey sheet (applicable to MS2 only), the date specified is the date of initial installation (except for 1 case) substantiating that the information in Sales Database is correct. Only for one UltraFLO system (SF ID U1807597), the date of subsequent supply is mentioned as 25 Sep 2019 which is after the end of monitoring period but before the date of monitoring visit. Usually, the monitoring is conducted after sometime from end of monitoring period (mobilization time for monitoring teams). Thus, it is possible that this sampled school received supplies after the end of concerned monitoring period but before the monitoring event. The sales database on the other hand, must only report the supplies received during the monitoring period to correctly calculate the ($N_{y,i}$ * $R_{y,i}$) determinant as explained in previous response. The header in the monitoring survey summary sheet has been corrected to further clarify this.

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4. The number of days in ERs Summary tab, has been adjusted to correspond to only operational school days instead of complete duration of the monitoring period.

As a conservative measure, the school academic calendar, as issued by the Federal Ministry of Education and Sports, Uganda has been used to determine the total school term days within the monitoring period. Subsequently, the CME has only considered weekdays (excluding weekends and public holidays for boarding and non-boarding users alike, although boarding students/staff will consume water during weekends) for determining the school days for which WPS should be credited as a conservative measure. The QPWy has been discounted accordingly in ERs Summary by applying an adjustment factor in E6:N6, tab ER Calculation-MS1 and E6:N6, tab ER Calculation-MS2.

This results in reduction of emission reduction to 67,376 tCO2e

DOE assessment	**Date: 24/03/2021**

1. From technological aspect, Multi-Barrier UV and UltraFLO systems are fixed type of water purification systems (WPS) and can only be utilised on piped water connections. These two types of water purification units can work only when they are fitted on a piped connection and water flows through them. Hence, implemented technologies are in line with the CPA-DDs (section A.3.) and the monitoring report (section C.1) which correctly mention that Multi-barrier UV and UltraFLO are fixed type systems and applicable on piped water. The verification team physically verified the same, during the pervious verification (MP1). Additionally the verification team confirmed the project technology implementation on ground, remotely during this verification (MP#2), by applying other means of verification.

The ER sheet, tab “MP2 Sales Database-MS1” and “MP2 Sales Database-MS2”, column Q ‘Primary water source’ lists the source as surface water, wells etc. besides piped water. The term “piped” water under this column has been used for the schools which receive water from City Council / Government / Municipal Water Connections. It shall be noted that water is transported from primary water sources such as wells, surface water and boreholes through pipes to water storage tanks in project schools. The fixed multi barrier UV and Ultra-FLO systems installed on these pipes as verified during assessment.

During the remote site audit done for the current issuance request, as well as during the physical site-visit

done for previous batches verification, it was evident to the verification team that UltraFLO and Multi barrier UV systems have only been installed on pipeline connections, in cases where the primary water source is different from City Council / Government / Municipal water connection.

Thus, it can be confirmed during this verification that the CPAs, including related water purification systems, i.e. Multi-Barrier UV and UltraFLO systems, have been implemented in line with the validated CPA-DDs and correctly described in the monitoring report in section C.

2. The applied methodology AMS-III.AV. version 4.0, para 15, states that "Monitoring shall consist of checking of all appliances or a representative sample thereof, at least once every two years (biennial) to ensure that they are still operating or are replaced by an equivalent in service appliance".

The CPA-DDs (9948-P1-0002-CP1¸ 9948-P1-0014-CP1 to 9948-P1-0022-CP1) mention under section B.5.1., that for the parameter 'Operational Units$_i$', the frequency is 'at least once per verification or biennially as per the monitoring requirements in the methodology'. For the current issuance request, the frequency required by the applied methodology has been met.

As explained by CME and confirmed by the verification team, in all previous verifications (monitoring periods), the monitoring frequency was found to be adhering to the methodological requirements.

Further, the DoE also assessed the PoA validation report CAR 07, page 80 of 106 which confirms that "at least once per verification" is superseded by "biennial" and the methodology requirements prevails.

However, to ensure that under no circumstances, the methodology requirement is compromised in future, FAR 01 (a) has been raised in leu of assessors review question to ensure that monitoring frequency of parameter "operational units$_i$", shall be, 'at least once per verification or biennially, whichever is earlier'.

3.

(a) The Water Purification Systems's capacity is found correctly stated in ER sheet ('Assumptions' tab) for UltraFLO and UltraTab as verified from the registered CPA-DDs for CPAs 16 - 22 (section A.3., table on page 4, capacity). The capacity for Multi Barrier UV was verified against the manufacturer's specification as the capacity was not found mentioned in the CPA-DD for CPAs 02, 14 or 15. The verification against manufacturer's specification has already been reported in CAR 02 and in Appendix 3(item number 18, 19) of the FVR. The ER sheet has been found to be revised with regards to mention the correct reference for Multi barrier UV capacity, thus, same is accepted by the verification team.

(b) Please refer Section E.3.6.1 of the verification report (FVR) with respect to the issue related to system's residual capacity. Additionally to the conclusion in section E.3.6.1, where it is confirmed that the values of 'residual capacity from previous MP' in MP2 ER spreadsheet (tab: "MP2 Sales Database-MS1" and "MP2 Sales Database-MS2", column AQ) were verified to be correctly calculated after cross-checking with MP1 ER calculator, the verification team further confirms the following:

- In the revised MP2 ER Calculator, the MP1 Sales database has been added (Tab: 'MP1 Sales data – reference only') by the CME. The verification team has verified that the information in the revised ER Calculation spreadsheet, Tab: 'MP1 Sales data – reference only' is consistent with the tab: 'Sales database' in the MP1 ER calculator, available at: https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss757932161/view .
  Further, in the revised ER sheet, tab 'MP2 Sales database – MS1' column AQ, the residual capacity from previous MP has been found to be appropriately linked with 'MP1 Sales data – reference only', column BA, which is found to be completely traceable.
  The verification team independently downloaded the MP1 ER Calculator from PoA page (9948-MP1-IRP1) and cross-verified the information in the revised ER Calculation spreadsheet, Tab: 'MP1 Sales data – reference only' and found it to be consistent.
- In the revised ER sheet, 'MP2 sales database-MS1', column AQ, for all systems newly installed, the 'residual capacity from previous MP' is also found to be correctly specified as "not applicable, new installation".
  Thus, 'residual capacity from previous MP' is confirmed to be calculated correctly in column AQ of MP2 Sales database-MS1 for all schools. Similar, the 'residual capacity from previous MP' for MP2 Sales database -MS2 is also found to be correctly calculated for all schools based on residual capacity at the end of MP2-MS1, as well as this is independently verified by the verification team.
- Lastly, the residual capacity at the end of a given MP (column BA) is calculated as a function of Total daily consumption of drinking water (column AV) and the duration by which a system's continuous running end date (column AY) extends beyond the end date of the monitoring

period. This approach is equivalent to discounting the total available treatment capacity (in column AW) at the rate of total daily consumption (column AV) over the entire monitoring period duration to arrive at 'residual capacity remaining at the end of MP'.

- Given the credits are only being calculated for actual school days and not for entire duration of monitoring period, the aforesaid approach shall result in 'residual capacity remaining at the end of MP' (which gets carry forwarded to next MP as opening capacity) rendered most conservative.

In Addition a traceable emission reduction spreadsheet is submitted with this response.

(c) The continuous running end date is merely a determinant to check compliance with the registered monitoring plan requirement. The continuous running end date is a calculated value based on the total available treatment capacity and the total water consumption per day and indicates the date by which the available capacity will get fully consumed. If the total daily water consumption is low, the available capacity will get consumed over a longer period which may extend as far as 2077 or beyond.
The verification team confirms that this is merely a representation to objectively ensure that operational days remains lower of (Ny,i * Ry,i) and available output (capacity) and is not linked with lifetime. The DoE has checked the capacity / lifespan of UltraFLO / UltraTAB devices against CPA-DD (9948-P1-0016-CP1 to 9948-P1-0022-CP1) or manufacturer specifications (for Multi Barrier UV) as applicable. No devices installed are found expiring their lifetime before the end of the concerned monitoring period.

(d) The subsequent supplies to any school are found depicted under column AR of the worksheet titled "MP2 Sales Database-MS1" and "MP2 Sales Database-MS2". The subsequent supplies are required in cases where the residual capacity from the previous period is 0. If the residual capacity is high and sufficient for the current period, then no new supplies are required to be sent to the schools. The schools which have '0' residual capacity in the current MP, if 0 subsequent supplies have been provided, then no ERs have been claimed from it as can be evident and seen under column BE of the same worksheet where number of operation days have been considered as 0 (cases with 0 residual capacity from previous MP and 0 subsequent supplies).
For other systems (systems with residual capacities from previous MP or with subsequent supplies during monitoring period, or newly installed) the operational days have been calculated accordingly. The DoE has assessed and verified all corresponding calculations and found them accurate and appropriately demonstrated.
Thus, the CME has followed the implementation plan stated in the validated CPA DDs and accrued ERs for the systems that are rendering clean water during the current monitoring period.

Based on aforesaid and review of the following:

1. capacity / lifespan specified in CPA-DDs for Chlorination systems
2. capacity / lifespan as per manufacturer specifications for Multi Barrier UV systems
3. Revised MP3 ER calculator with traceable residual capacity from previous MP/s
4. Conservative calculation of residual days at the end of current MP
5. Continuous running end date being a theoretical determinant and not representing the device lifetime

<u>The verification team confirms and concludes that capacity of the devices (installed actual capacity or residual capacity from previous MP and residual capacity at the end of current MP) have been correctly determined. The installed systems are capable of continuously supplying safe drinking water over the concerned monitoring period and ERs stated in the monitoring report and corresponding ER calculation spreadsheet are correct, traceable, accurate, credible and conservative.</u>

4.

In the applied methodology / registered PoA-DD, CPAs do not have provision to account for school holidays. However, based on the request for review, the CME has discounted the school holidays (refer tab: MS1-MS2 School days) from monitoring days on the basis of published and objectively verifiable government data (Academic school calendar). The school term duration and corresponding term holidays are found to be correctly calculated as per the submitted academic school calendars for the period 2017, 2018 and 2019 (to cover the entire monitoring period from 23 May 2017 – 22 May 2019). Further, the CME has excluded all weekend days for day schools and boarding schools alike. The approach of not considering weekends for boarding staff and students is deemed highly conservative.

The discount factor applied has been checked and confirmed as correctly calculated. The revised achieved emission reductions of the current monitoring period are confirmed to be conservative, accurate and credible. Additionally FAR 01 (b) has been raised.

During of the closure of the CL the ER have decreased to **67,376 tCO_2.**
CL 01 is CLOSED.

Table 5. CARs from this verification

CAR ID	01	**Section no.**	C, E and F	**Date:** 15/05/2020
Description of CAR				
1. The stated Emission Reductions stated in the submitted MR are inconsistent with the submitted ER worksheet (refer Cover page, section C, section E) 2. The estimated emission reductions as stated in the MR are inconsistent with the submitted ER sheet on main page of MR (refer Cover page, section E, F) 3. The reference numbers of CPA 29,103,104 and 105 under section A.1.2 of MR are not aligned with the PoA webpage. 4. The distribution summary as stated under section C of MR for “Multi Barrier UV” is inconsistent with ER worksheet for MS1 and MS2. 5. The format for Tables under section E.1 and E.2 are not in line with MR form.				
CME response				**Date:** 29/06/2020
1. The Emission Reductions have been revised in throughout the MR and now consistent with the ER sheet. 2. The estimated emission reductions have been revised in MR and now consistent with the ER Sheet submitted. 3. The reference numbers of CPA 29, 103, 104 and 105 under section A.1.2 of MR has been revised and now aligned with the PoA webpage. 4. The distribution summary has been revised in MR and now consistent with the ER Sheet submitted for MS1 and MS2. 5. The format for Tables under section E.1 and E.2 of MR has been revised and now consistent with the MR template. The revised ER Sheet and MR are being submitted.				
Documentation provided by the CME				
PoA 9948_MP2_Uganda MR ver 2.0_29062020 PoA 9948_MP2_Uganda ER Sheet_ver 2.0_29062020				
DOE assessment				**Date:** 07/07/2020
1. The stated Emission Reductions stated in the submitted MR are now consistent with the submitted ER worksheet (Cover page, section C, section E are verified). Finding is CLOSED. 2. The estimated emission reductions as stated in the MR are now consistent with the submitted ER worksheet on main page of MR (Cover page, section E, F are verified). Finding is CLOSED. 3. The corrections are now accepted. 4. The distribution summary under C.1 of MR is verified with the submitted ER worksheet for MS1 and MS2. The verification Team confirms that the data is now consistent and accurate. Finding is CLOSED. 5. OK. The format is verified and deemed as consistent with the MR Form. Finding has been CLOSED. CAR 01 has been CLOSED.				

CAR ID	02	**Section no.**	ER worksheet	**Date:** 15/05/2020
Description of CAR				
Tab: Assumption 1. The Technical specifications of Small UV and Large UV are not evident under any of the CPAs which are part of the applied monitoring period/ report. Please clarify. 2. The supportive and backup for the uniform applied value of parameter "Quantity of electricity consumed by the project electricity consumption source j in year y" i.e. 14 Wh applied for small UV and Large UV is not evidenced. **Tab: Sales Database -MS1 and Sales Databse-MS2** 3. The Verification Team identified entries of both and non-boarding for the Institutions Types classified				

as "Boarding". Example School with unique id "U160114-A", "U160597-A", "U160683-2" (refer ER Worksheet, tab: "Sales Databse-MS1")

4. The Verification Team is assessing the MR for MP2 and MP 3 and found that the school with SF ID number "U151202-A", "U151202-B" is stated as “Non boarding” and “Both”

Worksheet Reference	MP2 ER worksheet, tab: Sales Database-MS1	MP2 ER worksheet, tab: Sales Database-MS2	MP3 ER worksheet, tab: Sales Database-MS1
MP	MP2	MP2	MP3
SF ID	U151202-B	U151202-A	U151202-B
Type	Both	Non-Boarding	Both
Population	782	782	782

Justification/ correction is requested.

Tab: ER calculation

5. The parameter "Total distributed water purification systems" is incorrectly calculated under tab: “ER Calculation-MS1” and “ER Calculation-MS2". The total number of water purification systems are not consistent between the sales database tab: ‘Sales Databse-MS1’ and ‘’ Sales Databse-MS2 and the corresponding ER calculation worksheets. Inconsistency needs to be addressed.
6. The section E.3 of MR states the date of effective monitoring period as 23-05-2018 (Table: Summary of Results for MS#2) which is inconsistent with the date mentioned under ER sheet tab “Sample Size Calculation-MS2”.
7. The evidence to support the parameter “% of UBBS users” and “% of OBBS users” is requested.

CME response | **Date:** 29/06/2020

Tab: Assumption

1. The small UV and Large UV are types of Multi-barrier UV System. The technical specification of Small UV (1GPM) and Large UV (2GPM) are being submitted
2. The wattage of Small UV System is 10 Watt and Large UV System is 14 Watt. For calculation of project emissions, wattage of Small UV System has also been considered as 14 Watts as a conservative measure.

Tab: Sales Database

3. The type of institution (Boarding/Non-Boarding/Both) have been rectified for "U160114-A", "U160597-A", "U160683-2" and some other institutions in sales database of ER Sheet based on the boarding and non-boarding student/staff count in the institute. The ERs have been updated accordingly.
4. The type of institute (Boarding/Non-Boarding/Both) with SF ID "U151202-A" and "U151202-B" have been rectified as “Both” based on the boarding and non-boarding student/staff count in the institute. The ERs have been updated accordingly.

The revised ER Sheet is being submitted.

Tab: ER Summary

5. The inconsistency has been addressed in ER sheet and MR
6. The date in section E.3 of MR (Table: Summary of Results for MS#2) has been made consistent which with the date mentioned under ER sheet tab “Sample Size Calculation-MS2”.
7. The “Citizens’ Survey on Uganda, Vision 2040”[13] report has been used to demonstrate the % of users using Unimproved Biomass Burning Stoves (UBBS), Other Biomass Burning Stoves (OBBS) and Fossil Fuel Burning Stoves (FBBS). The report is being submitted.

Documentation provided by the CME

1. PoA 9948_MP2_Uganda ER Sheet_ver 2.0_29062020
2. Technical Specification of Multi-barrier UV System
3. Citizens’ Survey On Uganda, Vision 2040 Report

DOE assessment | **Date:** 07/07/2020

Tab: Assumption

1. The Technical specifications of Small UV and Large UV are submitted by the CME and found consistent with the description under MR and values applied under ER worksheet. Finding is CLOSED.
2. The verification team reviewed the submitted supportive document i.e. “Technical Specification of Multi-barrier UV System.pdf” which confirms that the highest power consumption from Multi-barrier

[13] Refer table 12 on page 23 of “Citizen Survey on Uganda, Vision 2040”

UV is 14 W. Thus, the applied value is deemed as appropriate and conservative. Finding is CLOSED.

Tab: Sales Database -MS1 and Sales Databse-MS2

3. The Verification Team checked the revised ER worksheet tab "Sales Databse-MS1" and "Sales Databse-MS2" entries and compared the same with the Sales Receipts, Installation Form and Sales Report and confirmed that the Institution Type (Boarding / Non-Boarding/Both) is appropriately reported. Finding is CLOSED.
4. OK, Checked and verified based on Sales Receipts, Installation Form and Sales Report. Finding is CLOSED.

Tab: ER Summary

5. OK, The Verification Team has checked the tab "Sales Databse-MS1" and "Sales Databse-MS2", columns F "# of Units installed (UV/ FLO) / supplied (TAB)" and confirms that inconsistency has been addressed in ER sheet and MR. Finding is CLOSED.
6. The Verification Team has checked the date in section E.3 of MR (Table: Summary of Results for MS#2) with the date mentioned under ER sheet tab "Sample Size Calculation-MS2". Finding is CLOSED.
7. The Verification Team has checked page 23 Table 12 of "Citizens' Survey on Uganda, Vision 2040"[14]. It is confirmed that the applied value of Unimproved- 85.7%, Improved - 13.5% and Fossil fuel - 0.9% (0.4% for Gas stove/cooker + 0.2% for Paraffin stove + 0.2 % for others + 0.1% for Electric plate/cooker). Finding is CLOSED.

CAR 02 has been CLOSED.

CAR ID	03	**Section no.**	E and F of MR	**Date:** 15/05/2020
Description of CAR				

Inconsistency between MR and ER

1. The values of the parameter QPW_y, $N_{y,i}$, are inconsistent between MR and ER worksheet.
2. The values of parameter for calculation of emission reductions as stated under the ER section E.2, E.3, F.1, F.2 and F.3 needs to be updated.

Additional Emission Reduction compared to envisaged values:

The section F.6 is justifying the reasons for increase in the ERs, however the section is deficient with respect to the reasoning for the increase in the parameter example $T_{y,I}$, R_{yi} , $N_{y,i}$, f_{NRB}.

CME response	**Date:** 29/06/2020

1. The value of the parameter QPW_y, $N_{y,i}$, have been revised in MR and now consistent with the ER Sheet.
2. The value of parameters has been updated.

The reason for increase in the parameter like $T_{y,I}$, R_{yi} , $N_{y,i}$, have been added in section F.6 of the MR.

The revised MR is being submitted.

Documentation provided by the CME

PoA 9948_MP2_Uganda MR ver 2.0_29062020

DOE assessment	**Date:** 07/07/2020

1. The verification team checked MR and the submitted ER sheet and found values of the parameter QPW_y, $N_{y,i}$, are consistent between MR and ER worksheet. Finding is CLOSED.
2. The values of parameter for calculation of emission reductions under the ER section E.2, E.3, F.1, F.2 and F.3 are updated as per the recent submitted ER sheet. Finding is CLOSED.

CAR 03 has been CLOSED.

CAR ID	04	**Section no.**	Supportive Documents	15/05/2020
Description of CAR				

List of documents Requested:

1. Random number generator
2. Supportive documents for determination of the % of UBBS users, % of OBBS users, % of FFS users
3. Evidence of start date of the CPA's (CPA 14, CPA 15, CPA 16, CPA 17, CPA 18, CPA 19, CPA 20, CPA 21, CPA 22)

[14] Refer table 12 on page 23 of "Citizen Survey on Uganda, Vision 2040"

4. Technical specifications of all the technologies involved in both MPs
5. Sample Sales receipt to cross check the Sales Record submitted in form of “Sample Sales Receipt” and “Sample Installation forms” together with “Sample Salesforce Reports”
6. Monitoring records of complete samples monitored during MP#2 (MS1 and MS2) and MP#3
7. Conformance Certificate that the Aquagenix Water Testing kit meets the requirements of registered monitoring plan in form of “Aquagenix T esting Kit Specifications”, the conformance to WHO guidelines
8. Water Quality Testing Report on filtered water from the project technology under applied monitoring report in form of “Sample Monitoring Records”, section Water Quality
9. Competence check of with evidence (Training certificates) of the Enumerators who were employed for water testing
10. Training procedure included in the “Aquagenix Test Training Module”
11. Sampling Surveys (for each technology type)
12. Sample training certificates of the Enumerators who were employed for survey of Operational Units - Training Cert for Survey and Test belong to person conducted testing and survey as per the initial sample records provided for interviewed
13. Sample Lab test reports of filtration device including sample evidence that filters/cartridges have been replaced at stipulated interval
14. Latest version of the Operations Manual for allocation of unique serial number to water purification system
15. The life span of water treatment technologies supported by Sales Receipts / Technical Specification
16. Evidence of the electrical load (in Wattage) for the water purification systems which are part of the monitoring report with the help of Technical Specifications

CME response	**Date:** 29/06/2020

All the requested documents are being submitted

Documentation provided by the CME

1. Random number generator
2. Supportive documents for determination of the % of UBBS users, % of OBBS users, % of FFS users
3. Evidence of start date of the CPA’s (CPA 14, CPA 15, CPA 16, CPA 17, CPA 18, CPA 19, CPA 20, CPA 21, CPA 22)
4. Technical specifications of all the technologies involved in both MPs
5. Sample Sales receipt to cross check the Sales Record submitted in form of “Sample Sales Receipt” and “Sample Installation forms” together with “Sample Salesforce Reports”
6. Monitoring records of complete samples monitored during MP#2 (MS1 and MS2) and MP#3
7. Conformance Certificate that the Aquagenix Water Testing kit meets the requirements of registered monitoring plan in form of “Aquagenix Testing Kit Specifications”, the conformance to WHO guidelines
8. Water Quality Testing Report on filtered water from the project technology under applied monitoring report in form of “Sample Monitoring Records”, section Water Quality
9. Competence check of with evidence (Training certificates) of the Enumerators who were employed for water testing
10. Training procedure included in the “Aquagenix Test Training Module”
11. Sampling Surveys (for each technology type)
12. Sample training certificates of the Enumerators who were employed for survey of Operational Units - Training Cert for Survey and Test belong to person conducted testing and survey as per the initial sample records provided for interviewed
13. Sample Lab test reports of filtration device including sample evidence that filters/cartridges have been replaced at stipulated interval
14. Latest version of the Operations Manual for allocation of unique serial number to water purification system
15. The life span of water treatment technologies supported by Sales Receipts / Technical Specification
16. Evidence of the electrical load (in Wattage) for the water purification systems which are part of the monitoring report with the help of Technical Specifications.

DOE assessment	**Date:** 07/07/2020

1. Random number generator is submitted and it is confirmed that the samples were randomly selected across the population. Finding is CLOSED.
2. Supportive documents for determination of the % of UBBS users, % of OBBS users, % of FFS users - Citizens-Survey-on-Uganda-Vision-2040 submitted. The values are compared with Table 12, page 23 and found to be consistent and appropriate.
3. Evidence of start date of the CPA’s (CPA 14, CPA 15, CPA 16, CPA 17, CPA 18, CPA 19, CPA 20, CPA 21, CPA 22) –are provided. It is confirmed based on the review of tab “Sales Databse-MS1” and “Sales Databse-MS2” that appropriate date of crediting period is availed for the applied monitoring.

S.No.	CPA Reference No.	Date of installation of first unit in the CPA	Check of date of installation (OK/Not OK)	Crediting Period Start date	Check of date of CER claim (OK/Not OK)
1	9948-P1-0002-CP1	21/06/2014	OK (21/06/2014)	30/05/2014	OK, start date of MP
2	9948-P1-0014-CP1	01/12/2017	OK (01/12/2017)	15/12/2017	OK, start date of MP
3	9948-P1-0015-CP1	01/12/2017	OK (01/12/2017)	15/12/2017	OK, start date of MP
4	9948-P1-0016-CP1	14/06/2018	OK (14/06/2018)	15/12/2017	OK, 01/07/2018
5	9948-P1-0017-CP1	06/07/2018	OK (06/07/2018)	15/12/2017	OK, 01/08/2018
6	9948-P1-0018-CP1	18/07/2018	OK (18/07/2018)	15/12/2017	OK, 01/08/2018
7	9948-P1-0019-CP1	20/07/2018	OK (20/07/2018)	15/12/2017	OK, 01/08/2018
8	9948-P1-0020-CP1	26/07/2018	OK (26/07/2018)	15/12/2017	OK, 01/08/2018
9	9948-P1-0021-CP1	31/07/2018	OK (31/07/2018)	15/12/2017	OK, 01/08/2018
10	9948-P1-0022-CP1	08/08/2018	OK (08/08/2018)	15/12/2017	OK, 01/09/2018

4. Technical specifications of all the technologies is submitted, finding has been CLOSED.
5. The submitted “Sample Sales Receipt” and “Sample Installation forms” together with “Sample Salesforce Reports” where verified with ER worksheet tabs “Sales Databse-MS1” and “Sales Databse-MS2”. No inconsistency was identified.
6. The Verification team verified the monitoring records under ER worksheet tab “Monitored samples-MS1” and “Monitored samples-MS2”. No inconsistency was identified.
7. The Verification team is in receipt of “Aquagenix Testing Kit Specifications”. In addition, the web based check was undertaken (https://www.aquagenx.com/cbt-ectc/) which confirm that the testing Kit meets the WHO guidelines. Please also refer appending assessment as below
8. The Verification team verified the Water Quality Testing Report under ER worksheet tab “Monitored samples-MS1” and “Monitored samples-MS2”. No inconsistency was identified.
9. Competence check of with evidence (Training certificates) of the Enumerators who were employed for water testing were deemed as appropriate. The Enumerators were also interviewed by the Verification Team.
10. Training procedure included in the “Aquagenix Test Training Module” found OK. The Verification Team verified it and deemed it as appropriate. The Enumerators were also interviewed who confirmed the training procedure.
11. Sampling Surveys (for each technology type) is verified. No inconsistency was identified.
12. Sample training certificates of the Enumerators who were employed for survey of Operational Units are provided, verified and deemed as appropriate. The trained Enumerators were employed for the monitoring and survey as per requirement of the monitoring plan.
13. Document “Salesforce - Enterprise Edition” for SF#151524 is provided showing the date on which maintenance job is done which confirm that filters/cartridges have been replaced at stipulated interval. Furthermore, the Verification Team noted that additional comment which is part of the “Salesforce - Enterprise Edition” stated that “A yearly package of filters and UV Lamp were delivered- System working well”.
14. OK, Operations Manual for Impact Water is provided
15. OK, “Technology Specification Documents” which confirms the life span of water treatment technologies supported by Sales Receipts / Technical Specification.
16. OK. Already assessed under closure of CAR 02 issue 2.

CAR 04 has been CLOSED.

Table 6. FARs from this verification

FAR ID	01	**Section no.**	E.2, E.3	**Date:** 24/03/2021
Description of FAR				
(a)The verifying DOE shall ensure that the monitoring frequency for parameter “Operational units $_i$” is “At least once per verification or biennially as per the monitoring requirements in the methodology” whichever is earlier (more frequent). (b) The verifying DOE shall ensure that operational school days (excluding holidays) are properly accounted in calculation of parameter “QPW_y” instead of duration of monitoring period, as applicable.				
CME response				**Date:** DD/MM/YYYY
Documentation provided by the CME				
DOE assessment				**Date:** DD/MM/YYYY

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
1. QPW_y		Quantity of purified water in year *y* (litres)		
a) Measurement / Determination method ***(VVS, §§ 389-393)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM01/ /PoA-DD/ /AMS-III. AV./ /USAGE/ /XLS/ /SAMPLE/ /MR/	Description: It is a calculated parameter. The value depends on the product of parameters "The average population serviced by water purification systems" ($N_{y,i}$) X "Total distributed water purification systems" ($T_{y,i}$) X "Average volume of drinking water per person per day" ($R_{y,i}$) X days per year X "Water quality measurement" (Water $Quality_i$) X "Monitoring to check the percentage of the monitoring period which technologies are in use"(Operational $Units_i$). The PP has stated the annual calculated values for the parameter "QPW_y". However, please refer Appendix 4. Verifier´s action: In addition to the remote assessment review, pending documentation was requested (e.g. Usage Survey Records, Water Quality records corresponding to applied monitoring session, sales database to cross verify the number of filtration devices being credited for each monitoring session) pertaining to the dependent parameters. Conclusion: Findings CL 01, CAR 01, CAR 02, CAR 03, CAR 04 were raised.	~~CL 01, CAR 01, CAR 02, CAR 03, CAR 04~~	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 394-400)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met.*	/DB/ /WC/ /MR/ /XLS/	Description: It is calculated value. Additional QA/ QC measures are not applicable. Verifier´s action: Dependent parameters were assessed. Pending documents were requested. Sampling data of related parameters under monitoring was assessed.	~~CL 01, CAR 01, CAR 02, CAR 03, CAR~~	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*		Conclusion: Findings CL 01, CAR 01, CAR 02, CAR 03, CAR 04 were raised.	~~04~~	
c) Correctness ***(VVS, §§ 389-393)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DB/ /WC/ /XLS/	☐ Correct ☒ Not correct (initial assessment) Description: In absence of confirmation on the related parameters, calculated value of this parameter cannot be considered as OK. Verifier´s action: In addition to the remote audit review observations, pending documentation pertaining to related parameters was requested, please refer above assessments. Conclusion: Findings CL 01, CAR 01, CAR 02, CAR 03, CAR 04 were raised.	~~CL 01, CAR 01, CAR 02, CAR 03, CAR 04~~	OK
2. η_{wb}		Efficiency of water boiling system being replaced		
a) Measurement / Determination method **(VVS, §§ 389-393)** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM01/ /PoA-DD/ /MR/ /XLS/	Description: The parameter is utilized to determine the baseline emissions. Default values from AMS III.V are utilized along with the national data limited to host country Uganda. Verifier´s action: Applied methodology and the national data was reviewed. Conclusion: No Pending issues are identified. The parameter is determined in line with the method is in the registered monitoring plan.	OK	OK
b) Accuracy and QA/QC Procedure **(VVS, §§ 394-400)** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.*	/DB/ /WC/ /MR/ /XLS/	Description: It is calculated value. Additional QA/ QC measures are not applicable. Verifier´s action: Applied methodology and the national data were reviewed.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*		Conclusion: The verification team deemed the reported values as appropriate.		
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/MR/ / AMS-III. AV./ /XLS/	☒ Correct ☐ Not correct (initial assessment) Description: No Pending issues were identified. Verifier´s action: MR, applied methodology and the national data was reviewed. Conclusion: The verification team deemed the reported value as appropriate.	OK	OK
3. $T_{y,i}$		Total distributed water purification systems		
a) Measurement / Determination method (VVS, §§ 389-393) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM03/ /PoA-DD/ /CPA-DD/ / AMS-III. AV./ /CBT/ /XLS/ /TRG/	Description: The parameter represents the total number of units that are distributed till the applied monitoring period. The distributed units are included under the sales database. The paper records of sales invoices are the means of cross verification of the sales database. As per the provisions of the monitoring plan of CPA-DD, the parameter is reported based on the Sales receipts/purchase orders. During the remote assessment and interviews, the CPA Implementer confirmed that the units that are not part of the Project/ Sales Database are not considered for the calculation of the emission reductions been analysed. Please refer to Appendix-4 for details. Verifier´s action: $T_{y,i}$ covering this monitoring period was verified by verification team by requesting the sales receipts / database applicable to the monitoring period. This Sales database was verified. The monitoring management was also cross verified during the remote assessment and interview with the CME, CPA implementer, consultant and verification of database system maintained by the CME Conclusion: CAR 01, CAR 02, CAR 03 and CAR 04 were raised.	~~CAR 01, CAR 02, CAR 03, CAR 04~~	OK
b) Accuracy and QA/QC Procedure	/IM03/	Description:	~~CAR~~	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
(VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*	/DB/ /WC/ /MR/ /XLS/	The Sales Database was cross-checked with scanned copy of paper records to ensure transparent and robust data reporting. The CME also confirmed that the units that are not functional or replaced are captured in monitoring parameter Operational Units. However, at time of desk review, all the supporting documents were not submitted, thus findings are raised by the Verification Team. CAR 04 is raised. Verifier´s action: Project personnel were remotely interviewed. CME and CPA Implementer QA/ QC measures were assessed. Pending documents for undertaking the implementation of QA/ QC measures was requested Conclusion: CAR 04 was raised.	~~04~~	
c) Correctness ***(VVS, §§ 389-393)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/	☐ Correct ☒ Not correct (initial assessment) Description: In absence of requested supporting documents and closure of raised issues the reported data cannot be assessed. Verifier´s action: In addition to the remote assessment review, sales receipts / database applicable to the monitoring period and QA/ QC measures were assessed. Conclusion: CAR 01, CAR 02, CAR 03 and CAR 04 were raised.	~~CAR 01, CAR 02, CAR 03 and CAR 04~~	OK
4. $N_{y,i}$		The average population serviced by water purification systems		
a) Measurement / Determination method ***(VVS, §§ 389-393)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the*	/MR/ / AMS-III. AV./ /XLS/	Description: The parameter represents the average population serviced by water purification systems. The number of person/ equipment depends on the technical specification / design capacity of the equipment. The Verification Team requested the Technical specification of the actually installed water purification systems and verified them with the sales receipts / database. During the remote audit assessment and interviews the PP confirmed that at the time of sale, the number of people using the unit is recorded in the sales receipt/purchase orders. Further this information is checked afterwards as well by CPA Implementer. The Verification Team requested the technical specification of the water purification systems to PP. The	~~CL 01, CAR 03 CAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
applied methodology.		"Calculation method" for parameter $N_{y,i}$ is not transparent (refer CL 01). The data is taken as the input for the ER calculations meaning it is the basis for determining of the CPA baseline emission reductions. The values of $N_{y,i}$ are not consistently reported under ER and MR. CAR 03 has been raised. However, for submission of the supportive data CAR 04 has been raised. Please refer to Appendix-4 for detail. Verifier´s action: The Ny,i covering this monitoring period was verified by verification team by requesting the technical specification / design duty and other database applicable to the monitoring period. The monitoring management was also cross verified by the remote assessments observation and interview with the CME, CPA implementer, consultant and verification on database system maintained by the CME Conclusion: CAR 01, CAR 03 and CAR 04 were raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*	/DB/ /WC/ /MR/ /XLS/	Description: As per the interviews with the CPA Implementer and the CME the "The average population serviced by water purification systems" is recorded at the time of sale, the number of people using the unit is recorded in the sales receipt. The data of the water purification unit is entered into the sales database. This Sales database is verified from the hard copy of the sales receipt. In addition, the parameter can also be verified from the Sales force report of the Institutions where this number is also updated for a water purification unit. However, the document submission is still pending from the CME. Verifier´s action: Project personnel were interviewed. CME and CPA Implementer QA/ QC measures were assessed. Pending documents for undertaking the implementation of QA/ QC measures was requested Conclusion: CAR 01 and CAR 04 were raised.	~~CL 01, CAR 04~~	OK
c) Correctness (VVS, §§ 389-393) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.*	/MR/ /IM03/	☐ Correct ☒ Not correct (initial assessment) Description: In absence of documentary evidence the reported data cannot be assessed as correct.	~~CL 01, CAR 03 , CAR~~	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		Verifier´s action: In addition to the onsite review, pending documentation was requested, please refer above assessments. Conclusion: CL 01, CAR 03, CAR 04 were raised.	~~04~~	
5. Water Quality[i]		Water quality measurement		
a) Measurement / Determination method (VVS, §§ 389-393) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/ /CBT/	This parameter is crucial as it allows counting of only those purification units which qualify the necessary water quality levels. According to MR, Aquagenx Water Testing kit was utilized for the water quality testing. Also, the CPA implementer is responsible to undertake the water testing with the help of the trained enumerators. During the desk review, the Verification team has requested below documents: • Conformance Certificate that the Aquagenx Water Testing kit meets the requirements of applied monitoring plan • Technical Specification of the Aquagenx Water Testing kit • Water Quality Testing Report on filtered water from the project technology under applied monitoring report (minimum requirement E.coli, TC Coliform, faceal coliform counts, chlorine levels) • Training certificates of the Enumerators who were employed for water testing • Copy of the training procedure • Copy of water testing procedure Refer CAR 04 for further details. Verifier´s action: The sampling plan has been cross checked by verification team according to EB sampling guideline and applied methodology. The results of Water Quality measurement (especially as per requirements of the monitoring plan was assessed) has been also verified by means of remote assessment and interview (sample based). Technical Specification of the Aquagenx Water Testing kit was assessed with respect to the requirements of the monitoring plan Conclusion: Please refer to CAR 04 and FAR 01	~~CAR 04,~~ FAR 01	OK
b) Accuracy and QA/QC Procedure	/PoA-DD/	Description: During the remote assessment and interviews, the	~~CAR~~	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
(VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*	/CPA-DD/ /USAGE/ /CBT/	CPA Implementer and CME confirmed that cost-effective and feasible water quality indicators like E.coli, faecal coliform counts, chlorine levels was utilized to assess water quality. CPA implementer conducted testing. CPA Implementer has trained enumerators with respect to standard testing procedures and the appropriate testing technology Aquagenx Water Testing kit was employed. However, documentary evidence for the same is requested by the Verification Team. Please refer CAR 04. Verifier´s action: Enumerators undertaking testing were also interviewed. The sampling plan has been cross checked by verification team according to EB sampling guideline and applied methodology. Conclusion: Please refer to CAR 04 and FAR 01	~~04,~~ FAR 01	
c) Correctness ***(VVS, §§ 389-393)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/PoA-DD/ /CPA-DD/ /USAGE/ /CBT/	☐ Correct ☒ Not correct (initial assessment) Description: During the remote assessment, the Verification Team checked • Conformance Certificate that the Aquagenx Water Testing kit meets the requirements of applied monitoring plan • Technical Specification of the Aquagenx Water Testing kit • Water Quality Testing Report on filtered water from the project technology under applied monitoring report (minimum requirement E.coli, TC Coliform, faceal coliform counts, chlorine levels) • Training certificates of the Enumerators who were employed for water testing • Copy of the training procedure • Copy of water testing procedure Refer CAR 04 for further details. Verifier´s action: Enumerators undertaking testing were interviewed. The sampling plan has been cross checked by verification team according to EB sampling guideline and applied methodology.	~~CAR 04~~ FAR 01	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		Conclusion: Please refer to CAR 04.		
6. Operational Units[i]		Percent of the monitoring period in which the units are in use		
a) Measurement / Determination method (VVS, §§ 389-393) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/	Description: This parameter is determined based on surveys conducted on the sample units (per each technology type) to determine the percentage of days of monitoring period when the unit is in use by the end user. At the time of Desk Review, the Verification Team is not in receipt of the Survey records, thus appropriateness of conducted survey and the value of the parameter as applied in the emission reduction worksheet and monitoring cannot be confirmed. The Verification Team has requested below documents from the CPA-Operator: • Sampling Surveys (for each technology type) • Training certificates of the Enumerators who were employed for survey of Operational Units Copy of the training procedure for survey of Operational Units • Copy of Questioner for undertaking the Sampling Survey Refer CAR 04 for further details. Please refer to Appendix-4 for details. Verifier´s action: The sampling plan has been cross checked by verification team according to EB sampling guideline and applied methodology. The results of technologies are in use has been also verified by means of remote assessment and interview (sample based). Conclusion: Please refer to CAR 01, CAR 02, CAR 03, CAR 04 and FAR 01.	~~CAR 01, CAR 02, CAR 03, CAR 04,~~ FAR 01	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*	/PoA-DD/ /CPA-DD/ /USAGE/ /CBT/	Description: During the remote assessment and interviews, it is noted that the CPA Implementer employs Enumerators to conduct the surveys with the help of the sales data which provides the unique identity of the water purification unit. The Enumerators also confirmed that the units are discarded from the survey if the unique serial number is no longer visible and date of purchase of the unit is not confirmed or if unit is replaced. However, the appropriate implementation is subjected to the submission of appropriate supportive evidence. Verifier´s action: Enumerators undertaking testing were also	~~CAR 01, CAR 02, CAR 03, CAR 04,~~ FAR 01	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		interviewed. The sampling plan has been cross checked by verification team according to EB sampling guideline and applied methodology. Conclusion: CAR 01, CAR 02, CAR 03, CAR 04 and FAR 01 were raised.		
c) Correctness ***(VVS, §§ 389-393)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/ /USAGE/ /CBT/	☐ Correct ☒ Not correct (initial assessment) Description: During the remote assessment, the Verification Team checked • Sampling Surveys (for each technology type) • Training certificates of the Enumerators who were employed for survey of Operational Units • Copy of the training procedure for survey of Operational Units • Copy of Questioner for undertaking the Sampling Survey. Verifier´s action: In addition to the onsite review, surveys conducted on the sample units (per each technology type) to determine the if the unit is in use were checked. Enumerators were interviewed. Conclusion: CAR 01, CAR 02, CAR 03, CAR 04 and FAR 01 were raised.	~~CAR 01, CAR 02, CAR 03, CAR 04,~~ FAR 01	OK
7. $f_{NRB,y}$		Fraction of woody biomass saved by the project activity in year, y, that can be established as non-renewable biomass using national or local statistics, survey results, studies, maps or other sources of information, such as remote-sensing data.		
a) Measurement / Determination method ***(VVS, §§ 389-393)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the*	/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/	Description: The parameter is utilized to determine the baseline emissions. Below documents were assessed from the CPA Implementer: • Survey report for determination of the fraction of the woody biomass saved by the project activity (CITIZENS' SURVEY ON UGANDA VISION 2040) • Applied international reports (with traceability) which are utilized for determination of the parameter $f_{NRB,y}$ • Training procedures for enumerator for determination of the parameter $f_{NRB,y}$ Please refer to Appendix-4 for details. Verifier´s action: The sampling plan has been cross checked by verification team according to EB sampling guideline and	~~CAR 02, CAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
applied methodology.		applied methodology. The results of technologies are in use has been also verified by means of remote assessment and interview (sample based) and assessment of list of equipment as per the Sales Database. Conclusion: CAR 04 and CAR 02 were raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*		Description: It is calculated value. Additional QA/ QC measures are not applicable. Verifier´s action: Enumerators undertaking testing were also interviewed. Implementation of CME and CPA Implementer QA/ QC measures were discussed the sampling plan has been cross checked by verification team according to EB sampling guideline and applied methodology. Conclusion: The verification team confirms that the parameter is monitored appropriately.	OK	OK
c) Correctness (VVS, §§ 389-393) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/	☐ Correct ☒ Not correct (initial assessment) Description: In absence of • Survey report for determination of the fraction of the woody biomass saved by the project activity • Applied international reports (with traceability) which are utilized for determination of the parameter $f_{NRB,y}$ • Training procedures for enumerator for determination of the parameter $f_{NRB,y}$ parameter cannot be considered as OK. Verifier´s action: In addition to the remote assessment, pending documentation pertaining to parameter was requested, please refer above assessments. Conclusion: CAR 04, CAR 02 were raised.	~~CAR 02, CAR 04~~	OK
8. $EF_{projected_fossilfuel}$		Emission factor as per AMS-I.E. procedures when NRB is displaced or the emission factor of the fossil fuel substituted		
a) Measurement / Determination method (VVS, §§ 389-393) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL)*	/IM03/ /PoA-DD/ /CPA-DD/ /CPA-DD/	Description: The parameter is utilized to determine the baseline emissions. Default emission factors as defined by the applied methodology AMS-III.AV and the national data base are utilized to derive the parameter.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/USAGE/	Verifier´s action: CPA-DD, PoA-DD, applied methodology and host country household surveys were utilized. Conclusion: The determination method of EFprojected_fossilfuel is in line with the registered monitoring plan and the applied methodology Value is correctly reported.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*	/DB/ /WC/ /MR/ /XLS/	Description: It is a default value. Additional QA/ QC measures are not applicable. Verifier´s action: Applied default value and national data base was reviewed. Conclusion: The reported value is accurate	OK	OK
c) Correctness (VVS, §§ 389-393) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/	☒ Correct ☐ Not correct (initial assessment) Description: Applied value is correct. Verifier´s action: MR was reviewed. Conclusion: The value given in the monitoring report is correct.	OK	OK
9. Existence of public distribution network of safe drinking water		Existence of public distribution network of safe drinking water in year y		
a) Measurement / Determination method (VVS, §§ 389-393) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.*	/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/	Description: The parameter is utilized to determine the eligibility conditions. The value is based on survey records. However, inconsistency observed between MR and ER worksheet. Refer CAR 01 and FAR 01. Verifier´s action: Survey report was reviewed. Conclusion: The survey was reviewed. CAR 01 was raised.	~~CAR 01,~~ FAR 01	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*				
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*	/DB/ /WC/ /MR/ /XLS/ /USAGE/	Description: It is a survey-based value. Additional QA/ QC measures are not applicable. Verifier´s action: Survey report was reviewed. Conclusion: CAR 01 and FAR 01 is raised	~~CAR 01,~~ FAR 01	OK
c) Correctness (VVS, §§ 389-393) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/	☐ Correct ☒ Not correct (initial assessment) Description: It is a survey-based value. Inconsistency noted between MR and submitted ER worksheet. Verifier´s action: MR and survey was reviewed. Conclusion: CAR 01 and FAR 01 is raised	~~CAR 01,~~ FAR 01	OK
10. $EC_{PJ,j,y}$		Quantity of electricity consumed by the project electricity consumption source j in year y		
a) Measurement / Determination method (VVS, §§ 389-393) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/	Description: The parameter is utilized to determine the project emissions. The value of parameter is based on manufacturer's specification. It is also noted that there is provision for application of default value of 14 Watt for 24 hours a day and 365 days a year. However, actual power rating (in a conservative manner is applied. CAR 02 has been raised to demonstrate appropriate ness of applied value. Assumption of 14-watt hour capacity is not backed by credible substantiation. Requisite supporting documents are requested, CAR 04 has been raised. Verifier´s action: CPA-DD, PoA-DD and MR were reviewed.	~~CAR 02,~~ ~~CAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		Conclusion: Please refer CAR 02 and CAR 04		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.* *Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.*		Description: It is technical specification or default value. Additional QA/ QC measures are not applicable. Verifier´s action: Manufacturer's specification and default value were reviewed. Conclusion: The QA/ QC measures are not applicable as the parameter is depend on the technical specification.	OK	OK
c) Correctness (VVS, §§ 389-393) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/	☐ Correct ☒ Not correct (initial assessment) Description: Pending closure of the raised findings. Technical specification have been requested Verifier´s action: Manufacturer's specification and default value were reviewed. Conclusion: CAR 02 and CAR 04 were raised.	~~CAR 02, CAR 04~~	OK

Appendix 6. Calibration dates and validity of installed monitoring equipment

Table A-6: Periodic Verification Checklist – Calibration details

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	☐ No ☐ Yes	From: To:
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	☐ No ☐ Yes	From: To:

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Document information

Version	*Date*	*Description*
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02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
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