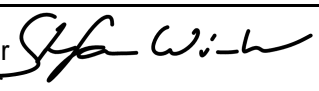
 Verification and certification report form for CDM programme of activities (Version 03.0)		
Complete this form in accordance with the instructions attached at the end of this form.		
BASIC INFORMATION		
Title and UNFCCC reference number of the programme of activities (PoA)	Impact Carbon Global Safe Water 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	2.0	
Completion date of the verification and certification report	11/12/2020	
Monitoring period number and duration of this monitoring 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 number: 2.0 Monitoring report version: 3.0	
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 ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	131,083 tCO ₂ e	
Name and UNFCCC reference number of the DOE	TUV 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 Large UV: 6-8 L/min
Capacity/lifespan	340,000 l / 5-year expiry	>3 years or >1000l
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: **131,083 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	TUV NORD CERT
2.	Technical reviewer/Approver	IR	Winter	Stefan	TUV 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
<input type="checkbox"/>	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 ;
<input type="checkbox"/>	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;
<input type="checkbox"/>	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;
<input checked="" type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM PoA other than registered CDM PoA covered under next category below;
<input type="checkbox"/>	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: <ul style="list-style-type: none"> 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 the parameter $f_{NRB,y}$, 	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 calculations	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 / installation database is accurate

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

	<ul style="list-style-type: none"> • 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.			
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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	<input checked="" type="checkbox"/>	CL 01, CAR 01, CAR 02, CAR 03, CAR 04	<input checked="" type="checkbox"/>	Not material
T _{yi} (Total distributed water purification systems)	CDC	<input checked="" type="checkbox"/>	CAR 01, CAR 02, CAR 03, CAR 04	<input checked="" type="checkbox"/>	Not material
N _{yi} (The average population serviced by water purification systems)	CDC	<input checked="" type="checkbox"/>	CL 01, CAR 03, CAR 04	<input checked="" type="checkbox"/>	Not material
Water Quality _i (Water quality measurement)	SPL	<input checked="" type="checkbox"/>	CAR 04	<input checked="" type="checkbox"/>	Not material
Operational Units _i (percent of monitoring period in which the units are in use)	SPL	<input checked="" type="checkbox"/>	CAR 01, CAR 02, CAR 03, CAR 04	<input checked="" type="checkbox"/>	Not material
f _{INRB,y} (Fraction of woody biomass saved by project activity in year, y, that can be established as non-renewable biomass)	CDC	<input checked="" type="checkbox"/>	CAR 02, CAR 03, CAR 04	<input checked="" type="checkbox"/>	Not material
η _{wb} (Efficiency of water boiling system being replaced)	CDC	<input type="checkbox"/>	NA	<input type="checkbox"/>	Not material

<i>Parameter</i>	<i>Approach*</i>	<i>Errors* detected</i>	<i>Findings reference</i>	<i>Corrected</i>	<i>Remaining verification risk</i>
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	<input type="checkbox"/>	NA	<input type="checkbox"/>	Not material
Existence of public distribution network of safe drinking water (Existence of public distribution network of safe drinking water in year y)	SPL	<input checked="" type="checkbox"/>	CAR 01	<input checked="" type="checkbox"/>	Not material
EC _{Pj,j,y} (Quantity of electricity consumed by the project electricity consumption source j in year y)	CDC	<input checked="" type="checkbox"/>	CAR 02, CAR 04	<input checked="" type="checkbox"/>	Not material
<i>Aggregate</i>					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 assessment². 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> 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	Usage of the water filtration devices, baseline water source for drinking purposes, date of installation, operation and maintenance survey, survey related verification.
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		
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):

<input type="checkbox"/>	No sampling approach has been used by the PP to determine the monitored parameters
<input checked="" type="checkbox"/>	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)

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

Where:

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

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

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

<input type="checkbox"/>	No sampling approach has been used by the VT to verify the monitored parameters
<input checked="" type="checkbox"/>	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.	Existence of public distribution network of safe drinking water	StRS	PS	42	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)

(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	41	(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
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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 2020⁴. 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	<p>Para 321 of VVS-PS</p> <p>It is mandatory for the DOE to conduct an on-site inspection at verification for the included CPA if:</p> <p>(a) It is the first verification for the DOE with regard to this CPA;</p> <p>(b) More than three years have elapsed since the last on-site inspection conducted for verification for the CPA; or</p> <p>(c) The CPA has achieved more than 300,000 t CO₂ e.q. of GHG emission reductions or net anthropogenic GHG removals since the last verification when an on-site inspection was conducted.</p>	Y	<p>(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).</p> <p>(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).</p> <p>(c) The CPA's have not achieved more than 300,000 t CO₂ e.q. of GHG emission reductions or net anthropogenic GHG removals since the last verification. Thus, the site visit not is mandatory as per § 321 (c).</p>

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

No	Condition	Applicable (Y/N)	Justification
			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 131,083 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
• 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

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).

• 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	0
• 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	0

SECTION E. Verification findings

E.1. General

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

Means of verification	<p>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.</p> <p>By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-PoA-MR-FORM has been used.</p> <p>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.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /MRT/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The latest reporting template CDM-PoA-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	<input checked="" type="checkbox"/>	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	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.

	<input checked="" type="checkbox"/>	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) Open issues from validation:

<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the latest version of the validation report.
<input type="checkbox"/>	All open issues from the validation have been appropriately addressed in the context of previous verifications.
<input type="checkbox"/>	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)
<input type="checkbox"/>	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

(ii) Open issues from previous verifications:

<input type="checkbox"/>	N/A – as this is the first monitoring period for this CDM project activity.
<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the previous verification report
<input type="checkbox"/>	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)
<input type="checkbox"/>	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

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

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
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	<p>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:</p> <ul style="list-style-type: none"> implemented technology i.e. low GHG emitting water purification
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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 of the PoA DD, Version 7^{/PoA-DD/, /CPA-DD/}. The technical specifications of the products (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	<input checked="" type="checkbox"/>	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.
	<input type="checkbox"/>	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
	<input type="checkbox"/>	In this context the following CARs, CLs have been raised: -
	<i>In case of phased implementation:</i>	
	<input checked="" type="checkbox"/>	N/A
	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PoA-DD.
	<input type="checkbox"/>	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.
Conclusion	<input type="checkbox"/>	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
	<input checked="" type="checkbox"/>	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.
	<input type="checkbox"/>	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	<p>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.</p> <p>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.</p> <p>It was established that the programme management system has been implemented and operated as described.</p> <ul style="list-style-type: none"> • /POA-DD/ • /PO/ • /QA/ • /IM/ • /VAL/ • /CPA-DD/
Findings	N/A
Conclusion	<p>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:</p> <ul style="list-style-type: none"> • Project Development Director • Programme Manager • CPA Implementer • Programme Associate • Field measurement personnel • External QA/QC <p>Below important functions are undertaken</p> <ul style="list-style-type: none"> • 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

	<p>details, type of institution, population (students, staff [boarding/non-boarding])</p> <ul style="list-style-type: none"> • 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 Verification) • 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 <p>Below data checks were undertaken by the Verification Team:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>
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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.

<input checked="" type="checkbox"/>	During this verification of the current MP no need for corrections has been identified.
<input type="checkbox"/>	The following corrections have been applied:

	Corrections in the PoA-DD and CPA-DD were made and approved by the CDM EB.
<input type="checkbox"/>	A related post registration change has been submitted prior to the issuance request.
<input type="checkbox"/>	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

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PoA-DD /CPA-DD
<input type="checkbox"/>	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.
<input type="checkbox"/>	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.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period	
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC	
	1	Title
		Status <input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Approval
		Ref. No.
<input checked="" type="checkbox"/>	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	
<input type="checkbox"/>	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:
<input type="checkbox"/>	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.

<input type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
<input checked="" type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref. No.	
	2	Title	Expansion of PoA Boundary to include Host Country Nigeria
		Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved
		Appr.date	03/07/2017
		Ref.No.	PRC-9948-002
	3	Title	Changes have an impact on: Include additional host Parties
		Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved
		Appr.date	08/05/2017
		Ref.No.	PRC-9948-001
<input checked="" type="checkbox"/>	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		
<input type="checkbox"/>	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:	
<input type="checkbox"/>	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

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered CPA-DD
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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
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	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Interviews with, CME, CPA implementer and operational personnel have been carried out. QMS records, maintenance records, instruments specifications were also checked in this context.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /CPA-DD/ • /MR/ • /VVS/ • /XLS/ • /ELIG/ • /IPCC/ • /unfccc/
Findings	-
Conclusion	<p>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.</p>

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.

<input checked="" type="checkbox"/>	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.	
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC	
	1	Title
		Status
		<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)

		Appr.date	
		Ref. No.	
	2	Title	
	Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)	
	Appr.date		
	Ref.No.		
<input checked="" type="checkbox"/>	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		
<input type="checkbox"/>	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:	
<input type="checkbox"/>	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.

<input checked="" type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.		
<input type="checkbox"/>	The following corrections have been applied:		
	1	Issue:	
	2	Issue:	
	<input type="checkbox"/> A related post registration change has been submitted prior to the issuance request. <input type="checkbox"/> 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

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the included CPA-DD
<input type="checkbox"/>	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.
<input type="checkbox"/>	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-XXX-00Z.
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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 (PCfMP) 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.

<input checked="" type="checkbox"/>	No PCfMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following PCfMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref. No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following PCfMP, 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:	
<input type="checkbox"/>	The following PCfMP, 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.

<input type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
<input checked="" type="checkbox"/>	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	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved
		Appr.date	02/05/2019

		Ref. No.	PRC-9948-003
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref.No.	
<input checked="" type="checkbox"/>	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		
<input type="checkbox"/>	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:	
<input type="checkbox"/>	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

<input checked="" type="checkbox"/>	N/A - as this registered PoA is not an afforestation and reforestation activity
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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: <ul style="list-style-type: none"> • /MR/ • /AMS-III.AV./ • /IPCC/ • /unfccc/ 			
Findings	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM PoA project (last registered/approved version of the PoA-DD)		
	<input checked="" type="checkbox"/>	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		<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> 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	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A		
<input type="checkbox"/>	The breakdown of MP accordance of the applicable SB is as follows:			

		1	Title (of the SB)	n.a.
			Version	-
			MP compliance	-
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:		
		-		
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	<input type="checkbox"/>	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
	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).
	2.	WH	Specific Heat of Water
	3.	T _f	Final Temperature
	4.	T _i	Initial Temperature
	5.	WHE	Latent Heat of Water Evaporation
	6.	L	Leakage
	7.	R _{y,i}	Average volume of drinking water per person per day
8.	EF _{EL,j,y}	Emission factor for electricity generation for source j in year y (tCO ₂ /MWh)	
9.	TDL _{j,y}	Average technical transmission and distribution losses for providing electricity to source j in year y	
The following sources of information have been used in this context:			
<ul style="list-style-type: none"> • /MR/ • /XLS/ • /PoA-DD/ • /CPA-DD/ • /PS/ • /VVS/ • /unfccc/ • /TOOL/ 			

Findings	<input type="checkbox"/>	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.
	<input type="checkbox"/>	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
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -
		CL 01 and CAR 03 has been raised
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	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 and CAR 04	
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	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: <ul style="list-style-type: none"> • /MR/ • /RC/ • /XLS/ • /PoA-DD/ • /CPA-DD/ 	
Findings	<input type="checkbox"/>	
		The PPs have applied sampling approaches for the following parameters monitored. <table border="1" style="width: 100%;"> <tr> <td>Parameter</td> </tr> </table>
Parameter		

	Name:	Water Quality _i																														
	Description on how the sampling efforts and survey comply with the validated sampling plan:	<p>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.</p> <p>A sample size was calculated from the installed Water Purification System as:</p> <table border="1"> <thead> <tr> <th>Particular</th> <th>Total population (N)⁷</th> <th>Reliability</th> <th>Sample Size (n) required</th> <th>Samples covered</th> </tr> </thead> <tbody> <tr> <td colspan="5" style="text-align: center;">MS1</td> </tr> <tr> <td>Water Quality (UV)</td> <td>693</td> <td>95/10</td> <td>30</td> <td>42</td> </tr> <tr> <td colspan="5" style="text-align: center;">MS2</td> </tr> <tr> <td>Water quality (UF)</td> <td>78</td> <td rowspan="2">95/10</td> <td rowspan="2">(3 UF + 28 UV) = 31</td> <td rowspan="2">(7 UF + 41 UV) = 48</td> </tr> <tr> <td>Water quality (Multi barrier UV)</td> <td>953</td> </tr> </tbody> </table> <p>The sample size has been calculated according to the following equations:</p> $n \geq \frac{z^2 * N * V}{(N - 1) * precision^2 + z^2 * V}$ <p>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)</p> $V = \frac{SD^2}{p^2}$ <p>Where,</p> $SD^2 = \frac{\sum_{i=1}^k g_i * p_i * (1 - p_i)}{N}$ $p = \frac{\sum_{i=1}^k g_i * p_i}{N}$ <p>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</p> <p>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.</p> <p>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.</p> <p>During remote audit assessment conducted by VVB, a total of 16</p>				Particular	Total population (N) ⁷	Reliability	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
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	Water quality (Multi barrier UV)	953																														

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

		<p>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.</p> <p>During course of verification, relevant findings were raised and same can be referred in detail in Appendix 4 of this report.</p>																										
	Name	Operational units																										
	Description on how the sampling efforts and survey comply with the validated sampling plan:	<p>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.</p> <p>A sample size was calculated from the installed Water Purification System as:</p> <table border="1"> <thead> <tr> <th>Particular</th><th>Total population (N)⁸</th><th>Reliability</th><th>Sample Size (n) required</th><th>Samples covered</th></tr> </thead> <tbody> <tr> <td colspan="5">MS1</td></tr> <tr> <td>Operational units</td><td>693</td><td>95/10</td><td>30</td><td>44</td></tr> <tr> <td colspan="5">MS2</td></tr> <tr> <td>Operational units (UF)</td><td>78</td><td rowspan="2">95/10</td><td rowspan="2">(3 UF + 28 UV) = 31</td><td rowspan="2">(7 UF + 43 UV) = 50</td></tr> <tr> <td>Operational units (Multi barrier UV)</td><td>953</td></tr> </tbody> </table> <p>The sample size has been calculated according to the following equations:</p> $n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$ <p>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)</p> $V = \frac{SD^2}{p}$ <p>Where:</p> $SD^2 = \frac{\sum_{i=1}^k g_i * p_i * (1-p_i)}{N}$ $p = \frac{\sum_{i=1}^k g_i * p_i}{N}$ <p>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</p> <p>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</p>	Particular	Total population (N) ⁸	Reliability	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)
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⁸These are rounded figures of total strata population for calculating sample size only.

		<p>for MS1 and November 2019 for MS2.</p> <p>The monitoring survey were conducted in November 2018 for MS1 and November 2019 for MS2.</p> <p>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.</p>
	Name	Existence of public distribution network of safe drinking water
	Description on how the sampling efforts and survey comply with the validated sampling plan:	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Additional checks by the VT: All the interviewed institution heads of "randomly sampled systems" were interviewed by the VT to confirm that</p> <ul style="list-style-type: none"> • 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. <p>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</p> <p>Additionally, during the remote assessment the VT checked if there are provisions in place to ensure continuous supply of safe drinking water</p>

- **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 Database-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 population (N) ⁹	Reliability	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			

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

	<p>The sample size has been calculated according to the following equations:</p> $n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$ <p>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)</p> $V = \frac{SD^2}{\bar{p}^2}$ <p>Where:</p> $SD^2 = \frac{\sum_{i=1}^k g_i * p_i * (1-p_i)}{N}$ $\bar{p} = \frac{\sum_{i=1}^k g_i * p_i}{N}$ <p>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</p> <p>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.</p> <p>The monitoring survey was conducted in November 2018 for MS1 and November 2019 for MS2.</p> <p>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/ Both schools) as illustrated above under section D.4 of this FVR.</p>
Conclusion	<input checked="" type="checkbox"/> In this context the following CARs, CLs, FARs have been raised: CL 01, CAR 01, CAR 02 and CAR 04
	<input type="checkbox"/> No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/> 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. <p>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.</p> <p>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.</p> <p>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.</p>

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

Means of verification	<p>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.</p> <p>The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6).</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PoA-DD/ • /CPA-DD/ • AMS. III. AV/ 						
Findings	<table border="1"> <tr> <td data-bbox="432 640 496 824"><input checked="" type="checkbox"/></td><td data-bbox="496 640 1453 824">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.</td></tr> <tr> <td data-bbox="432 824 496 1104"><input type="checkbox"/></td><td data-bbox="496 824 1453 1104">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</td></tr> <tr> <td data-bbox="432 1104 496 1167"><input type="checkbox"/></td><td data-bbox="496 1104 1453 1167">In this context the following CARs, CLs, FARs have been raised: -</td></tr> </table>	<input checked="" type="checkbox"/>	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.	<input type="checkbox"/>	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	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -
<input checked="" type="checkbox"/>	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.						
<input type="checkbox"/>	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						
<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -						
Conclusion	<table border="1"> <tr> <td data-bbox="432 1167 496 1234"><input checked="" type="checkbox"/></td><td data-bbox="496 1167 1453 1234">No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</td></tr> <tr> <td data-bbox="432 1234 496 1328"><input type="checkbox"/></td><td data-bbox="496 1234 1453 1328">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.</td></tr> <tr> <td colspan="2" data-bbox="432 1328 1453 1476">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.</td></tr> </table>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	<input type="checkbox"/>	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.	
<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.						
<input type="checkbox"/>	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	<p>During the verification, the calculation of baseline GHG emissions has been checked. The following has been verified in detail:</p> <ul style="list-style-type: none"> • <i>Transparency:</i> It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • <i>Parameter consistency:</i> 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. • <i>Correctness:</i> 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. • <i>Completeness:</i> It has been checked whether all calculations are complete and without omissions. <p>Note: As per the registered PoA-DD^{/PoA-DD/} "products deployed under the project activity are</p>
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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 is ending in 22/05/2019, therefore only the units installed till April 2019 (up to 30/04/2019) are eligible for crediting under the concerned monitoring period. Thus, the CME has considered 30/04/2019 as the cut-off date of installation for this monitoring period. 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 ₂ e)
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 (QPW_y)

$QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ for 9948-P1-0002-CP1, 9948-P1-0016-CP1 - 9948-P1-0022-CP1

$QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 291.5 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ 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
$\text{Operational Units}_i$	Percent of the monitoring period in which the units are in use

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

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

Where,

WH	Specific heat of water (kJ/L °C)
T_f	Final temperature (°C)
T_i	Initial temperature of water (°C)
WHE	Latent heat of water evaporation (kJ/L)
η_{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	%	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	-	349	60	58	302
Water Qualityi	proportion	0.98	0.98	0.98	0.98
QPWy	l/yr	298,627,145	4,086,756	4,289,860	307,003,760
ηwb	fraction	0.1172	0.1172	0.1172	0.1172
Tf	°C	100	100	100	100
Ti	°C	20	20	20	20
WH	kJ/°C	4.186	4.186	4.186	4.186
WHE	kJ/l	2260	2260	2260	2260
SEC	kJ/l	3050.17	3050.17	3050.17	3050.17
fNRB	fraction	0.8304	0.8304	0.8304	0.8304
EFprojected_fossilfuel	tCO ₂ e/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 ₂ e	60,604	776	815	59,053

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 Units	%	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	-	320	191	191	175	192
Water Qualityi	fraction	0.95	0.95	0.95	0.95	0.95
QPWy	l/yr	268,451,882	45,697,362	42,448,241	2,919,645	2,623,670
ηwb	Fraction	0.1172	0.1172	0.1172	0.1172	0.1172
Tf	°C	100	100	100	100	100
Ti	°C	20	20	20	20	20
WH	kJ/°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	tCO ₂ e/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 ₂ e	54,481.00	9,274	8,614	592.00	532.00

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 Units	%	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	-	203	192	186	184	181	263
Water Qualityi	fraction	0.95	0.95	0.95	0.95	0.95	0.95
QPWy	l/yr	2,202,962	2,731,245	2,425,498	2,610,690	2,491,228	374,602,423
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/°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_fossilf	tCO ₂ e/TJ	80.12	80.12	80.12	80.12	80.12	80.1210

	uel						
	Systems having access to public distribution system providing safe drinking water	fraction	0.00	0.00	0.00	0.00	0.00
	BEy	tCO ₂ e	447.00	554.00	492.00	529.00	505.00

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	<input type="checkbox"/>	<p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>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.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p>
	<input checked="" type="checkbox"/>	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CL 01, CAR 01, CAR 02, and CAR 03 has been raised</p>
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	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.
<p>Residual Life:</p> <p>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:</p> <ol style="list-style-type: none"> 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. <p>Thus, the aforesaid ensures that residual capacity at the end of monitoring period is</p>		

appropriately calculated.

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.

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 considered as 0. The approach is found appropriate and acceptable.

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 UVsystems 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 "Sales Database-MS1" and "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 $(N_{y,i} * R_{y,i})$ per unit does not exceed the maximum output of unit system for cases where multiple systems are used simultaneously. 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 "Sales Database-MS1" and "Sales Database-MS2" therefore considers the total number of units to calculate $T_{y,i}$.

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 $(N_{y,i} \text{ (per unit)} * R_{y,i})$.

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.

Determination of operating days:

The Verification Team has checked the CME's approach and deems that the approach 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.

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:																																		
	<ul style="list-style-type: none">• 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. $PE_y = 0$, for type 2 CPAs																																		
	For type 3 CPA, it is calculated as follows:																																		
	$PE_y = T_{y,i} \times EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$																																		
	MS1																																		
	<table><tr><th>Data/Parameter</th><th>Unit</th><th>9948-P1-0002-CP1</th><th>9948-P1-0014-CP1</th><th>9948-P1-0015-CP1</th></tr><tr><td>$T_{y,i}$</td><td>-</td><td>580</td><td>56</td><td>57</td></tr><tr><td>$EC_{PJ,j,y}$</td><td>MWh/yr</td><td>0.1226</td><td>0.1226</td><td>0.1226</td></tr><tr><td>$EF_{EL,j,y}$</td><td>tCO2/MWh</td><td>1.3</td><td>1.3</td><td>1.3</td></tr><tr><td>$TDL_{j,y}$</td><td>%</td><td>20</td><td>20</td><td>20</td></tr><tr><td>PE_y</td><td>tCO_{2e}</td><td>111</td><td>11</td><td>11</td></tr></table>					Data/Parameter	Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1	$T_{y,i}$	-	580	56	57	$EC_{PJ,j,y}$	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	PE_y	tCO _{2e}	111	11	11
	Data/Parameter	Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1																														
	$T_{y,i}$	-	580	56	57																														
	$EC_{PJ,j,y}$	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																															
PE_y	tCO _{2e}	111	11	11																															
MS2																																			
<table><tr><th>Data/Parameter</th><th>Unit</th><th>9948-P1-0002-CP1</th><th>9948-P1-0014-CP1</th><th>9948-P1-0015-CP1</th></tr><tr><td>$T_{y,i}$</td><td>-</td><td>580</td><td>184</td><td>189</td></tr><tr><td>$EC_{PJ,j,y}$</td><td>MWh/yr</td><td>0.1226</td><td>0.1226</td><td>0.1226</td></tr><tr><td>$EF_{EL,j,y}$</td><td>tCO2/MWh</td><td>1.3</td><td>1.3</td><td>1.3</td></tr><tr><td>$TDL_{j,y}$</td><td>%</td><td>20</td><td>20</td><td>20</td></tr><tr><td>PE_y</td><td>tCO_{2e}</td><td>111</td><td>36</td><td>37</td></tr></table>					Data/Parameter	Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1	$T_{y,i}$	-	580	184	189	$EC_{PJ,j,y}$	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	PE_y	tCO _{2e}	111	36	37	
Data/Parameter	Unit	9948-P1-0002-CP1	9948-P1-0014-CP1	9948-P1-0015-CP1																															
$T_{y,i}$	-	580	184	189																															
$EC_{PJ,j,y}$	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																															
PE_y	tCO _{2e}	111	36	37																															
The following sources of information have been used in this context:																																			
<ul style="list-style-type: none">• /MR/• /CPA-DD/• /XLS/• / AMS-III.AV./																																			
Findings	<input checked="" type="checkbox"/>	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.
	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	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	<p>During the verification the calculation of leakage has been checked. The following has been verified in detail:</p> <ul style="list-style-type: none"> • 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. <p>Leakage has been calculated using a default 95% leakage adjustment factor to baseline emissions as per applied methodology.</p> <p>PP has applied related default factor correctly to the baseline emissions. $L_y = BE_y * (1 - 0.95)$</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /CPA-DD/ • /XLS/ • /AMS-III.AV./ 	
Findings	<input checked="" type="checkbox"/>	<p>The calculation of the leakage was found to be fully compliant with the above stated principles.</p> <p>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.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>
	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -

Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	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 verification	of	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately.</p> <p>- Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions</p> <p>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:</p> <p>ERy = BEy - (PEy + Ly)</p> <table><tr><th>CPA</th><th>BEy (tCO2e)</th><th>PEy (tCO2e)</th><th>Ly (tCO2e)</th><th>ERy (tCO2e)</th></tr><tr><td>9948-P1-0002-CP1</td><td>115,085</td><td>222</td><td>5,756</td><td>109,107</td></tr><tr><td>9948-P1-0014-CP1</td><td>10,103</td><td>47</td><td>506</td><td>9,550</td></tr><tr><td>9948-P1-0015-CP1</td><td>9,484</td><td>48</td><td>475</td><td>8,961</td></tr><tr><td>9948-P1-0016-CP1</td><td>592</td><td>-</td><td>30</td><td>562</td></tr><tr><td>9948-P1-0017-CP1</td><td>532</td><td>-</td><td>27</td><td>505</td></tr><tr><td>9948-P1-0018-CP1</td><td>447</td><td>-</td><td>23</td><td>424</td></tr><tr><td>9948-P1-0019-CP1</td><td>554</td><td>-</td><td>28</td><td>526</td></tr><tr><td>9948-P1-0020-CP1</td><td>492</td><td>-</td><td>25</td><td>467</td></tr><tr><td>9948-P1-0021-CP1</td><td>529</td><td>-</td><td>27</td><td>502</td></tr><tr><td>9948-P1-0022-CP1</td><td>505</td><td>-</td><td>26</td><td>479</td></tr><tr><td>Total</td><td>138,323</td><td>317</td><td>6,923</td><td>131,083</td></tr></table> <p>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.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none">• /MR/• /XLS/• /CPA-DD/• /PoA-DD/• /AMS-III.AV./• /USAGE/	CPA	BEy (tCO2e)	PEy (tCO2e)	Ly (tCO2e)	ERy (tCO2e)	9948-P1-0002-CP1	115,085	222	5,756	109,107	9948-P1-0014-CP1	10,103	47	506	9,550	9948-P1-0015-CP1	9,484	48	475	8,961	9948-P1-0016-CP1	592	-	30	562	9948-P1-0017-CP1	532	-	27	505	9948-P1-0018-CP1	447	-	23	424	9948-P1-0019-CP1	554	-	28	526	9948-P1-0020-CP1	492	-	25	467	9948-P1-0021-CP1	529	-	27	502	9948-P1-0022-CP1	505	-	26	479	Total	138,323	317	6,923	131,083
		CPA	BEy (tCO2e)	PEy (tCO2e)	Ly (tCO2e)	ERy (tCO2e)																																																								
		9948-P1-0002-CP1	115,085	222	5,756	109,107																																																								
		9948-P1-0014-CP1	10,103	47	506	9,550																																																								
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9948-P1-0022-CP1	505	-	26	479																																																										
Total	138,323	317	6,923	131,083																																																										
Findings	<input checked="" type="checkbox"/>	Section F.4 of the MR includes in a summary table of the emission reductions calculation.																																																												
	<input type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.																																																												
	<input type="checkbox"/>	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.																																																												
	<input checked="" type="checkbox"/>	During the verification issues with impact on the ER calculation have been identified.																																																												

		CL 01, CAR 02 and CAR 03 has been raised
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	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 ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
9948-P1-0002-CP1	1,15,085	222	5,756	0	109,107	1,09,107
9948-P1-0014-CP1	10,103	47	506	0	11,970	9,550
9948-P1-0015-CP1	9,484	48	475	0	11,233	8,961
9948-P1-0016-CP1	592	-	30	0	562	562
9948-P1-0017-CP1	532	-	27	0	505	505
9948-P1-0018-CP1	447	-	23	0	424	424
9948-P1-0019-CP1	554	-	28	0	526	526
9948-P1-0020-CP1	492	-	25	0	467	467
9948-P1-0021-CP1	529	-	27	0	502	502
9948-P1-0022-CP1	505	-	26	0	479	479
Total	138,323	317	6,923	0	131,083	131,083

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	<input checked="" type="checkbox"/>	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.
	<input type="checkbox"/>	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	<input checked="" type="checkbox"/>	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value (for CPA 002).
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	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.
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Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period (tCO ₂ e)	Value estimated in ex ante calculation in the included CPA-DD(s) (tCO ₂ e)
9948-P1-0002-CP1	109,107	30,728
9948-P1-0014-CP1	9,550	19,617
9948-P1-0015-CP1	8,961	19,617
9948-P1-0016-CP1	562	85,542
9948-P1-0017-CP1	505	85,542
9948-P1-0018-CP1	424	85,542
9948-P1-0019-CP1	526	85,542
9948-P1-0020-CP1	467	85,542
9948-P1-0021-CP1	502	85,542
9948-P1-0022-CP1	479	85,542
Total	131,083	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	<input type="checkbox"/>	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).
	<input checked="" type="checkbox"/>	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 $R_{y,i}$, $N_{y,i}$, $T_{y,i}$, 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)
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 03
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	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.
	<input type="checkbox"/>	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: <ul style="list-style-type: none"> • /MR/ • /PoA-DD/ • /CPA-DD/ • /unfccc/.
Findings	<input checked="" type="checkbox"/>	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.
	<input type="checkbox"/>	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.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	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.
	<input checked="" type="checkbox"/>	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: <ul style="list-style-type: none"> • /MR/ • /unfccc/.
Findings	<input checked="" type="checkbox"/>	No comments have been received on the published monitoring report for this monitoring period.
	<input type="checkbox"/>	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.
	<input type="checkbox"/>	Comments have been received. The DOE has <ul style="list-style-type: none"> - 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.
	<input type="checkbox"/>	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	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.

	<input type="checkbox"/>	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.
	<input checked="" type="checkbox"/>	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: **131,083 tCO₂e**

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: **131,083 tCO₂e**

New Delhi, 11/12/2020




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



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JICDM Certification Program

Mr. Prakash Kumar Mishra


SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2020-12-17
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2020-12-17

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand

146 - Rev. 6, Date: 2018-11-21

146_S01-VA060-F20_2018-11-21_unkl.docx S01-VA060-F20-rw3 / 2012-10-25



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JICDM 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_rw.6 S01-VA060-F20-rw3 / 2012-10-25



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JICDM 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	Aluminum 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_rw7 S01-VA060-F20-rw3 / 2012-10-25

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1.	UNFCCC	/AMS-III.AV	<ul style="list-style-type: none"> AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0) 		Other
2.	PP	/CPA-DD/	<ul style="list-style-type: none"> 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/	<ul style="list-style-type: none"> Sales Force Edition report Installation Records by Impact water Photographs and video clips of remotely assessed samples Telephonic/ skype call records 		Other
4.	DOE	/CPM/	<ul style="list-style-type: none"> TUV NORD JI / CDM CP Manual (incl. CP procedures and forms) 		Other
5.	PP	/USAGE/	<ul style="list-style-type: none"> 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 		Other

No.	Author	Reference	Title	References to the document	Provider
			<ul style="list-style-type: none"> PoA 9948_MP2_MS2_Sampling database.xlsx Citizens-Survey-on-Uganda-Vision-2040.pdf 		
6.	IPCC	/IPCC/	<ol style="list-style-type: none"> 1996 IPCC Guidelines for National Greenhouse Gas Inventories: workbook 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)', <ul style="list-style-type: none"> 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 	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
10.	UNFCCC	/MRT/	<ul style="list-style-type: none"> Monitoring Report Form (CDM-PoA-MR-FORM), Version 03.0 	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
11.	UNFCCC	/PoA-DD/	<ul style="list-style-type: none"> 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/po_a_db/YNXCPIJ5ZO7DTRGMV0F2AKEU486LQS	Other
12.	PP	/PRC/	<ul style="list-style-type: none"> 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/	<ul style="list-style-type: none"> Sales database included as part of 		Other

No.	Author	Reference	Title	References to the document	Provider
			the PoA 9948_MP2_Uganda ER Sheet_ver 2.0_10072020 <ul style="list-style-type: none"> Sales Receipt in the form of Purchase order including SF ID 		
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 <ul style="list-style-type: none"> CBT Instructions for DrinkingWater_Sobsey IP Water Testing Certificate Aquagenx New Test Kits 		Other
18.	PP	/ELIG/	Applied Technology: <ul style="list-style-type: none"> Technical Specification of Multi-barrier UV System Technical specification of UltraFlo and Ultra Tab System Location of CPA <ul style="list-style-type: none"> 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/	<ul style="list-style-type: none"> Certificate from UV Bulb Supplier Technical Specification of Multi-barrier UV System Technical specification of UltraFlo Ultra Flo Dimensions Declaration 		Other
20.	UNFCCC	/SAMPLE/	<ul style="list-style-type: none"> "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/	<ul style="list-style-type: none"> 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/	<ul style="list-style-type: none"> 01 - PoA 9948_MP2_Uganda ER Sheet_ver 1.0_13032020 02 - PoA 9948_MP2_Uganda ER Sheet_ver 2.0_29062020 	-	PP

No.	Author	Reference	Title	References to the document	Provider
			<ul style="list-style-type: none"> 2.2 - PoA 9948_MP2_Uganda ER Sheet_ver 2.2_21/08/2020 PoA 9948_MP2_Uganda ER Sheet_ver 3.0_08122020 		
23.	PP	/RC/	Reliability Check integrated into ER sheet <ul style="list-style-type: none"> 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/	<ul style="list-style-type: none"> 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: <ol style="list-style-type: none"> Letter/declaration for the reason Delivery deadline related justification evidence inter alia ERPA/Term sheets Contractual obligation on timeline with DOE (if any) 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 Database-MS2				
<ol style="list-style-type: none"> Clarification is requested on calculation of "Residual capacity from previous MP" under tab: Sales Database-MS1 and Sales Database-MS2. 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. 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 Database-MS1; and 30-04-2018 under Sales Database-MS2. 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
<ol style="list-style-type: none"> 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. As per registered PoA-DD, each water purification system in the CPA is limited to generate an emission reduction of 600 tCO₂e or less. The following texts are mentioned in respective CPA-DDs to ensure compliance with this cap. <i>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 QPW_y, to ensure that ERs per unit do not exceed 600 tCO₂equivalent/year. For these CPA, where $R_{y,i}$ is 2 L/person/day (for day schools) and 3.5L/person/day(for boarding schools and prisons), the maximum value for $N_{y,i}$ is 4,372 persons/institution.</i> <i>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 QPW_y, to ensure that ERs per unit do not exceed 600 tCO₂equivalent/year. For these CPA, where $R_{y,i}$ is 2 L/person/day (for day schools) and 3.5L/person/day(for boarding schools and prisons), the maximum value for $N_{y,i}$ is 3,050 persons/institution.</i> <i>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 QPW_y, to ensure that ERs per unit do not exceed 600 tCO₂ equivalent/year, For these CPA where $R_{y,i}$ is 2 L/person/day (for day schools) and 3.5L/person/day(for boarding schools and prisons), the maximum value for $N_{y,i}$ is 3,475 persons/institution.</i> 				

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, $N_{y,i}$ 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 $(N_{y,i} \text{ (per unit)} * R_{y,i})$.

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 nor 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 day 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:

- 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.
- 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
- 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
- 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

- 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 in CPA-DD is being accounted.
2	PoA 9948_MP2_Uganda ER Sheet_ver 3.0_08122020; Tab: ER Calculation-MS2	Cell: F6 and G6		

- 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 Guidelines¹⁰ 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 blue/green color indicates presence of E.Coli in water sample. After the test is completed, chlorine tablets

¹⁰ WHO 'Guidelines for Drinking-water Quality, Fourth Edition Page 41.

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"¹¹ 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: 11 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 (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

¹¹ <http://www.ajtmh.org/content/journals/10.4269/ajtmh.15-0717>

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 Database-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 tCO₂**.

(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

Aquagenx 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
<i>If answer to 3.1 is Yes, jump to 3.3 directly, else continue to 3.2 and stop the survey</i>		
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 ✓
<i>If answer to 3.3 is Yes, continue to 3.4, else jump to 3.7 directly</i>		
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)	<input type="checkbox"/> Unimproved Cookstove <input type="checkbox"/> Improved Cookstove <input type="checkbox"/> LPG Stove <input type="checkbox"/> Kerosene <input type="checkbox"/> 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 Database-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 CLOSED

Table 5. CARs from this verification

CAR ID	01	Section no.	C, E and F	Date: 15/05/2020
Description of CAR				
<ol style="list-style-type: none"> 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
<ol style="list-style-type: none"> 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. <p>The revised ER Sheet and MR are being submitted.</p>				
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
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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 Database-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 Database-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 Database-MS1' and "Sales Database-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
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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	
<ol style="list-style-type: none"> 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 with the date mentioned under ER sheet tab "Sample Size Calculation-MS2". 7. The "Citizens' Survey on Uganda, Vision 2040"¹² 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	
<ol style="list-style-type: none"> 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	
<ol style="list-style-type: none"> 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 UV is 14 W. Thus, the applied value is deemed as appropriate and conservative. Finding is CLOSED. 	
Tab: Sales Database -MS1 and Sales Database-MS2	
<ol style="list-style-type: none"> 3. The Verification Team checked the revised ER worksheet tab "Sales Database-MS1" and "Sales Database-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	
<ol style="list-style-type: none"> 5. OK, The Verification Team has checked the tab "Sales Database-MS1" and "Sales Database-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"¹³. 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				
<ol style="list-style-type: none"> 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 $T_{y,i}$, $R_{y,i}$, $N_{y,i}$, f_{NRB} .				
CME response				Date: 29/06/2020

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

¹³ Refer table 12 on page 23 of "Citizen Survey on Uganda, Vision 2040"

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 $T_{y,i}$, $R_{y,i}$, $N_{y,i}$, 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:				
<ol style="list-style-type: none"> 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 				
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" were 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.aquagenix.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

N/A

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
1. QPW_y		Quantity of purified water in year y (litres)		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p><i>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)).</i></p> <p><i>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.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM01/ /PoA-DD/ /AMS-III. AV./ /USAGE/ /XLS/ /SAMPLE/ /MR/</p>	<p>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 (365) 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.</p> <p>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.</p> <p>Conclusion: Findings CL 01, CAR 01, CAR 02, CAR 03, CAR 04 were raised.</p>	<p>CL 01, CAR 01, CAR 02, CAR 03, CAR 04</p>	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>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.</i></p>	<p>/DB/ /WC/ /MR/ /XLS/</p>	<p>Description: It is calculated value. Additional QA/ QC measures are not applicable.</p> <p>Verifier’s action: Dependent parameters were assessed. Pending documents were requested. Sampling data of related parameters under</p>	<p>CL 01, CAR 01, CAR 02, CAR 03,</p>	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>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.</i>		monitoring was assessed. Conclusion: Findings CL 01, CAR 01, CAR 02, CAR 03, CAR 04 were raised.	CAR 04	
c) Correctness (VVS, §§ 389-393) <i>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.</i>	/MR/ /DB/ /WC/ /XLS/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> 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) <i>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.</i>	/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) <i>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</i>	/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

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>been made for calculating ERs.</i></p> <p><i>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.</i></p>		<p>Conclusion: The verification team deemed the reported values as appropriate.</p>		
<p>c) Correctness (VVS, §§ 389-393)</p> <p>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.</p>	<p>/MR/ / AMS-III. AV./ /XLS/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p>Description: No Pending issues were identified.</p> <p>Verifier's action: MR, applied methodology and the national data was reviewed.</p> <p>Conclusion: The verification team deemed the reported value as appropriate.</p>	OK	OK
3. T_{y,i}		Total distributed water purification systems		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p><i>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)).</i></p> <p><i>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.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM03/ /PoA-DD/ /CPA-DD/ / AMS-III. AV./ /CBT/ /XLS/ /TRG/</p>	<p>Description:</p> <p>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.</p> <p>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</p> <p>Conclusion: CAR 01, CAR 02, CAR 03 and CAR 04 were raised.</p>	<p>CAR 01, CAR 02, CAR 03, CAR 04</p>	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>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.</i> <i>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.</i>	/IM03/ /DB/ /WC/ /MR/ /XLS/	<p>Description: 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.</p> <p>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</p> <p>Conclusion: CAR 04 was raised.</p>	CAR 04	OK
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>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.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /IM03/	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p>Description: In absence of requested supporting documents and closure of raised issues the reported data cannot be assessed.</p> <p>Verifier's action: In addition to the remote assessment review, sales receipts / database applicable to the monitoring period and QA/ QC measures were assessed.</p> <p>Conclusion: CAR 01, CAR 02, CAR 03 and CAR 04 were raised.</p>	CAR 01, CAR 02, CAR 03 and CAR 04	OK
4. N_{yi}		The average population serviced by water purification systems		
a) Measurement / Determination method (VVS, §§ 389-393) <i>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)).</i> <i>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.</i> <i>Assess whether the measurement / determination method is in</i>	/MR/ / AMS-III. AV./ /XLS/	<p>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</p>	CL01, CAR 03 CAR 04	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>line with the registered monitoring plan of the PDD and the applied methodology.</i>		<p>specification of the water purification systems to PP. The “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.</p> <p>Verifier’s action: The $N_{y,i}$ 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</p> <p>Conclusion: CAR 01, CAR 03 and CAR 04 were raised.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>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.</i></p>	<p>/DB/ /WC/ /MR/ /XLS/</p>	<p>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.</p> <p>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</p> <p>Conclusion: CAR 01 and CAR 04 were raised.</p>	<p>CL 01, CAR 04</p>	<p>OK</p>
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is</i></p>	<p>/MR/ /IM03/</p>	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p>Description: In absence of documentary evidence the reported data cannot be assessed as correct.</p>	<p>CL 01, CAR 03,</p>	<p>OK</p>

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
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.		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.	CAR 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: <ul style="list-style-type: none"> 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, faecal 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	CAR 04	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>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.</i></p> <p><i>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.</i></p>	<p>/PoA-DD/ /CPA-DD/ /USAGE/ /CBT/</p>	<p>Description: During the remote assessment and interviews, the 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.</p> <p>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.</p> <p>Conclusion: Please refer to CAR 04.</p>	<p>CAR 04</p>	<p>OK</p>
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>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.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/PoA-DD/ /CPA-DD/ /USAGE/ /CBT/</p>	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p>Description: During the remote assessment, the Verification Team checked</p> <ul style="list-style-type: none"> • 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, faecal 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. <p>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.</p>	<p>CAR 04</p>	<p>OK</p>

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		Conclusion: Please refer to CAR 04.		
6. Operational Units;		Percent of the monitoring period in which the units are in use		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p><i>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)).</i></p> <p><i>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.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/</p>	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Please refer to Appendix-4 for details.</p> <p>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).</p> <p>Conclusion: Please refer to CAR 01, CAR 02, CAR 03, CAR 04.</p>	<p>CAR 01, CAR 02, CAR 03, CAR 04</p>	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>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.</i></p> <p><i>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</i></p>	<p>/PoA-DD/ /CPA-DD/ /USAGE/ /CBT/</p>	<p>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.</p>	<p>CAR 01, CAR 02, CAR 03, CAR 04</p>	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>installed monitoring equipment in the table in Appendix 6.</i>		<p>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.</p> <p>Conclusion: CAR 01, CAR 02, CAR 03, CAR 04 were raised.</p>		
<p>c) Correctness (VVS, §§ 389-393) <i>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.</i></p>	<p>/MR/ /IM03/ /USAGE/ /CBT/</p>	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p>Description: During the remote assessment, the Verification Team checked</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>Conclusion: CAR 01, CAR 02, CAR 03, CAR 04 were raised.</p>	<p>CAR 01, CAR 02, CAR 03, CAR 04</p>	OK
7. $f_{NRB,y}$		<p>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.</p>		
<p>a) Measurement / Determination method (VVS, §§ 389-393) <i>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.</i></p>	<p>/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/</p>	<p>Description: The parameter is utilized to determine the baseline emissions. Below documents were assessed from the CPA Implementer:</p> <ul style="list-style-type: none"> • 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. <p>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</p>	<p>CAR 02, CAR 04</p>	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		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) <i>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.</i>		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) <i>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.</i>	/MR/ /IM03/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment) Description: In absence of <ul style="list-style-type: none"> • 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) <i>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</i>	/IM03/ /PoA-DD/ /CPA-DD/ /CPA-DD/ /USAGE/	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

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>ODL to data aggregation level zero (DAL0)).</p> <p>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.</p> <p>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>		<p>Verifier's action: CPA-DD, PoA-DD, applied methodology and host country household surveys were utilized.</p> <p>Conclusion: The determination method of EFprojected_fossilfuel is in line with the registered monitoring plan and the applied methodology Value is correctly reported.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p>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.</p> <p>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.</p>	<p>/DB/ /WC/ /MR/ /XLS/</p>	<p>Description: It is a default value. Additional QA/ QC measures are not applicable.</p> <p>Verifier's action: Applied default value and national data base was reviewed.</p> <p>Conclusion: The reported value is accurate</p>	OK	OK
<p>c) Correctness (VVS, §§ 389-393)</p> <p>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</p> <p>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.</p> <p>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</p>	<p>/MR/ /IM03/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p>Description: Applied value is correct.</p> <p>Verifier's action: MR was reviewed.</p> <p>Conclusion: The value given in the monitoring report is correct.</p>	OK	OK
<p>9. Existence of public distribution network of safe drinking water</p>		<p>Existence of public distribution network of safe drinking water in year y</p>		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p>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)).</p> <p>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</p>	<p>/IM03/ /PoA-DD/ /CPA-DD/ /USAGE/</p>	<p>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.</p> <p>Verifier's action: Survey report was reviewed.</p> <p>Conclusion: The survey was reviewed. CAR 01 was raised.</p>	CAR 01	OK

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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
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) <i>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.</i>	/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 is raised	CAR 01	OK
c) Correctness (VVS, §§ 389-393) <i>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.</i>	/MR/ /IM03/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> 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 is raised	CAR 01	OK
10. EC_{PJ,i,y}		Quantity of electricity consumed by the project electricity consumption source j in year y		
a) Measurement / Determination method (VVS, §§ 389-393) <i>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.</i>	/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 appropriateness 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

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Checklist Item (incl. guidance for the verification team)	Reference	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) <i>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.</i>		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) <i>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.</i>	/MR/ /IM03/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> 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	<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
-	-	-	-	-	-	-	-	<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN);• Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		