



**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)	9948: Impact Carbon Global Safe Water Programme of Activities (PoA)	
Version number(s) of the PoA-DD(s) to which this report applies	7.0	
Version number of the verification and certification report	3.0	
Completion date of the verification and certification report	08/08/2019	
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 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	Version: 3.0 Monitoring report number: 2.0	
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. ver.4 Low greenhouse gas emitting safe drinking water production systems Standardized Baseline: None	
Mandatory sectoral scopes	3: Energy Demand	
Conditional sectoral scopes, if applicable	None	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	22,010 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	92 tCO ₂ e	
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited E-0066	

Name, position and signature of the
approver of the verification and certification
report



Dr. Kaviraj Singh
Managing Director

SECTION A. Executive summary

The PoA aims at distribution of the low carbon water purification technologies to households, communities and institutions in Rwanda, Nigeria, Kenya and Uganda. Thus, PoA through the dissemination of these technologies aims to address the issue of lack of access to drinking water.

In absence of the PoA, boiling water using non-renewable woody biomass would have been the source of availing safe drinking water. The Water Purification Systems (WPS) provides safe drinking water without the use of non-renewable biomass/ fossil fuel, thus leading to reduction in Green-house gas (GHG) emissions. This verification covers implemented CPAs 9948-0038 to CPA 9948-0042 (5 CPAs).

The verification team confirms that the total emission reduction achieved under this monitoring period 23/05/2017 to 22/05/2019 (inclusive of both days) is 92 tCO₂e.

Scope of verification:

The verification is an independent and objective review of ex-post determination of the monitored reductions in GHG emissions, by the DOE. The verification includes the implementation and operation of the PoA as set out in the revised accepted PoA-DD & CPA-DDs viz., 9948-0038 to 9948-0042 in the monitoring period.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the CMEs and is based on the following:

- (i) The approved methodology AMS-III.AV. ver.4 Low greenhouse gas emitting safe drinking water production systems applied in the PoA-DD & CPA-DDs/1,2/
- (ii) The registered and revised accepted PoA-DD & CPA-DD and monitoring plan/1,2/
- (iii) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- (iv) The CDM Validation and Verification Standard (VVS) for PoA version 2.0/9/
- (v) The CDM Project Standard (PS) /7/ and Project Cycle Procedure (PCP) for PoA version 2.0/8/
- (vi) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

The verification has considered both quantitative and qualitative aspects on stated/reported emission reductions. The monitoring report (all versions) and corresponding supporting documentation was assessed in accordance with the rules defined by UNFCCC, as appropriate to the PoA. The verification is not meant to provide any consulting or recommendations to the CME/others. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

Verification Process:

The verification process is conducted as per internal CDM Quality Manual, which includes the following steps;

- a) Contract with CME and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- b) Completeness check of Monitoring Report
- c) Publication of Monitoring Report at UNFCCC website
- d) Desk review (refer Section D.1 of this report) of Monitoring Report/13/ and corresponding ER sheet /4/ by verification team and planning of onsite audit (including sampling approach (refer Section D.4 of this report) to be applied)
- e) On site audit (refer Section D.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consistent of Team Leader and all Technical Experts, as a minimum
- f) Follow up activities e.g., interviews (refer Section D.3 of this report)
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)

- h) Independent technical review (refer Section F of this report) of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
- i) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section G and H of this report).
- j) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion:

Based on the outcome of the verification process of the registered/revised accepted PoA “Impact Carbon Global Safe Water Programme of Activities (PoA)” and its 5 CPAs (9948-0038 to 9948-0042) for the monitoring period **23/05/2017 – 22/05/2019** (including both dates) we confirm that the implementation of referenced registered/revised accepted PoA and CPAs is complying with applicable CDM rules and regulations as stated in the Monitoring Report (final) **Ver 3.0, dated 08/08/2019** /13/. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodologies AMS-III.AV. ver.4 Low greenhouse gas emitting safe drinking water production systems /6/ and the monitoring plan contained in the revised accepted PoA-DD /1/.

Earthood Services Private Limited is able to certify that the emission reductions from the registered CDM PoA UN#9948 “Impact Carbon Global Safe Water Programme of Activities (PoA)” in Uganda during the period **23/05/2017 – 22/05/2019** (including both days) amount to **92 tCO₂e**. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

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	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
2.	Verifier	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
3.	Technical Expert	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
4.	Methodology Expert	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
5.	Local Expert	IR	Khaukha	Julius Sam	Central Office	Y	N	N	Y
6.	Trainee Verifier	IR	Shresth	Gaurav	Central Office	Y	N	N	Y

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	Gautam	Ashok Kumar	Central Office
2.	TA to TR	IR	Gautam	Ashok Kumar	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

SECTION C. Application of materiality in conducting the verification**C.1. Consideration of materiality in planning the verification**

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Observational error by monitoring survey staff of CME/CPA implementer while recording the responses of users in relation to survey parameters	High	5 CPAs are being verified for the first time and there may be lack of experience. Surveyors may be unsupervised at the site.	Verification team randomly selected all the samples from CME surveyed institutions. The recorded survey forms by CME were checked with DOE field observations. The verification team interviewed the monitoring staff and checked their training records.
2.	Calculation Errors	Med	The process in manual and therefore there is potential risk of errors / omissions/misstatements.	All calculations were checked by verification team with respect to applicable requirements under various documents viz., methodology, registered PoA DD/1/, CPA DDs/2/ etc.

C.2. Consideration of materiality in conducting the verification

In accordance with CDM VVS for PoAs, Version 02.0/9/ the prescribed thresholds for materiality for CDM PoAs are as under;

Type of PoA	PoAs comprising large-scale CPAs			PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
Emission Reductions (tCO ₂ e)/year	500,000 or more	300,001 to 499,999	300,000 or less		
Materiality Threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The applicable materiality threshold is 5% as PoA comprises only small-scale CPAs.

Particulars / Monitoring Report	MR Version (Public)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO ₂ e) in this monitoring period	150	92*
Applicable Threshold (%) as per CDM VVS for PoAs Version 02.0	5.0%	5.0%

The verification team has identified the impact of errors observed and those have been corrected by CME during verification for all monitoring parameter at individual and aggregate level.

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data* (Total) Total (100%)	Sample selected for verification Sample (100%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
CPA 9948-0038-CPA 9948-0042						
For water purifier						

QPW _y , Quantity of purified water in year y	Annual or at least biennial	5(calculated parameter for each CPA)	5 (100%)	There were errors in calculation which have been corrected (5).	All the errors have been corrected*	No extrapolatio n is required as 100% values checked and corrected.
n _{WB} , Efficiency of water boiling system being replaced	Continuousl y or at least biennial	1	1	None	NA	NA
T _{yi} , Total distributed water purification systems	Continuous	9 UltraFLO 10 UltraTAB (19)	9 UltraFLO 10 UltraTAB Sales database was checked for the information 8 systems were checked during site visit for cross check.	None	NA	NA
N _{yi} , The average population served by water purification systems	Continuous	19 values for each system and 5 values (average value for each CPA)	Entire sales database was checked for the information.	None	NA	NA
Water quality (WQ)	Annual or at least biennial	19	8	None	NA	NA
Operationa l Units _i	At least once per verification or biennially	19	8	None	NA	NA
f _{NRB} , Fraction of woody bio- mass saved by the project activity in Year	Continuousl y or at least biennial	1	1	None	NA	NA
EF _{projected} , Emission factor of the fossil fuel substituted	1	1	1	None	NA	NA
Existence of public distribution network of	Annual	19	8	None	NA	NA

safe drinking water						
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* The ERs mentioned in MR (public) and the ER sheet were found to be different. A calculation error was identified by the CME in the ER calculator (for QPWY) after the MR was published for webhosting. CL#03 was raised and resolved.

Based on the above table it can be confirmed that the actual individual and aggregated material error is determined for the registered PoA as per CDM VVS for PoA /09/. The applicable threshold for materiality in accordance with CDM PoA VVS Version 2 para 308(d)/9/ is 5%. Thus, it can be concluded that the results are acceptable and does not breach the applicable threshold (5%) of materiality.

SECTION D. Means of verification

D.1. Desk/document review

A desk review was conducted by the verification team that included:

- a) A review of data and information provided for its completeness.
- b) A review of registered monitoring plan, monitoring methodologies including applicable tools, standards and the applicable applied standardized baselines.

All the documents reviewed during the verification process are listed in the Appendix 3 of VCR.

D.2. On-site inspection

Duration of on-site inspection: 25/07/2019 – 26/07/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting Interviews with schools	Kampala, Uganda	25/07/2019	Deepika Mahala
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Kampala, Uganda	25/07/2019	Deepika Mahala
3.	Cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources	Kampala, Uganda	25/07/2019	Deepika Mahala
4.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the applicable requirements Interviews with schools	Kampala, Uganda	26/07/2019	Deepika Mahala
5.	Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Kampala, Uganda	26/07/2019	Deepika Mahala
6.	Closing Meeting	Kampala, Uganda	26/07/2019	Deepika Mahala

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Akankunda	Moreen	Impact water Uganda Operation Manager	25/07/2019– 26/07/2019	Monitoring survey	Deepika Mahala
2.	Mileva	Nadya	Impact water Country Director	25/07/2019– 26/07/2019	Implementation, Sales records	Deepika Mahala
3.	Srivastava	Nihar	Climate- secure services- Consultant	25/07/2019– 26/07/2019	ER calculations	Deepika Mahala
4.	Lohia	Rohit	Climate- secure services- Consultant	25/07/2019– 26/07/2019	Monitoring Report, Sampling methodology, ER calculations	Deepika Mahala
5.	Kalcic	Katrina	Impact water Country office advisor	25/07/2019– 26/07/2019	Database management	Deepika Mahala
6.	Molly	Adong	Kansanga Primary school	25/07/2019	DOE Survey	Deepika Mahala

7.	Stephen	Kakungu	Munyonyo Primary school	25/07/2019	DOE Survey	Deepika Mahala
8.	Alex	Tebesumbwa	Gobero Baptist Primary school	26/07/2019	DOE Survey	Deepika Mahala
9.	Samnel	Oehan	MPERERWE Primary school	26/07/2019	DOE Survey	Deepika Mahala
10.	Lydia	Malubwama	Gayanza Public primary school	26/07/2019	DOE Survey	Deepika Mahala
11.	Shallon	Birashekize	Namugongo Mixed Primary school	26/07/2019	DOE Survey	Deepika Mahala
12.	Margret	Nkugwa	St. Anthony Bukasa Primary school	26/07/2019	DOE Survey	Deepika Mahala
13.	Jacinta	Amulen	Senior Director-Studies Kasuki Family Primary school	26/07/2019	DOE Survey	Deepika Mahala

D.4. Sampling approach

CME Sampling approach

Only 19 units (09 UltraFlo and 10 UltraTab) units are installed under the CPAs (CPA 38 to 42). The CME has not applied any sampling plan as the number of installed units is less than 30 and monitored 100% data.

DOE Sampling approach

As per para 26 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 7, When the project participants or the coordinating/managing entity have not applied a sampling approach, the DOE may apply a sampling approach, choosing a different confidence/precision than the ones indicated in paragraph 10 of the tool, provided that samples are randomly selected and are representative of the population.

The verification team has applied 95/30 confidence precision and derived a minimum sample size of 8 by using raosoft.com. The verification team visited 8 systems¹ out of 19, thus meeting the minimum sample size.

Since, the distribution ratio between the two categories is 1.1 :1. The sample size was divided in 1:1 ratio as dividing the DOE sample size 8 in 1.1:1 does not give whole numbers. The closest plausible ratio was 1:1, therefore verification team divided the DOE sample size into 1:1 ratio. The samples were chosen randomly (using website www.randomizer.org) out of total of 19 CME's monitored systems (100% of entries in the database). As per plan 8 systems were required. DOE visited 4 systems of Ultra FLO type and 4 systems of Ultra Tab type. No inconsistency/discrepancy between the CME's result (results of monitoring survey conducted by CME) and DOE's observations on site were found. Therefore, monitoring results presented by CME was found correct and justified by the DOE.

¹ The definition of each system considered for ER is different for Ultra FLO and Ultra Tab. Each unit of Ultra FLO having unique ID as listed in the database, is considered as individual system for CER calculations. For Ultra TAB, the value of the parameter has been determined by considering each institution as one system. Therefore, for institutions with Ultra TAB, the number of TAB systems is same as the number of institutions.

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	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	-
CPAs considered for verification and covered in this report	-	-	-
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	CL#03	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes			
• Corrections	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents ²	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Component project activities			
Compliance of the CPA implementation with the included CPA design document	CL#04	-	FAR#01
Post-registration changes			
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
• Corrections	-	-	-
• Changes to the start date-of the crediting period	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	-	-	-
• Changes to the project design	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan			-
• Data and parameters fixed ex ante or at renewal of crediting period			-
• Data and parameters monitored	CL#02 CL#03 CL#04	CAR#05 CAR#07	-
• Implementation of sampling plan			
Compliance with the calibration frequency requirements for measuring instruments			-

² 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).

Assessment of data and calculation of emission reductions or net removals	CL#02		-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks		CAR#06	-
• Calculation of project GHG emissions or actual net GHG removals by sinks			-
• Calculation of leakage GHG emissions			-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks			-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA			-
• Remarks on difference from estimated value in included CPA			-
Assessment of reported sustainable development co-benefits			-
Global stakeholder consultation			-
Others (please specify)			-
Total	03	03	01

SECTION E. Verification findings

E.1. General

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

Means of verification	The monitoring report form used is CDM-PoA-MR-FORM version 03.0 /10/ which was the appropriate form and the latest version available at the time of verification/submission for request for issuance. All the sections of the aforesaid form were duly filled as per the guidelines and provided all the relevant details.
Findings	No findings
Conclusion	The final monitoring report /13/ is found to be in-line with the latest CDM-PoA-MR-form /10/ available and the instructions therein.

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

There is no FAR from the **previous verification** as checked from the previous verification report/32/.

There was one FAR (listed as FAR#01 under Appendix 4) raised at the **time of inclusion** because the implementation of the CPAs, that are being verified as part of this verification, could not be confirmed at the time of inclusion by validating DOE.

Therefore, the verification team raised this FAR#01. Based on the response submitted by CME and the delivery notes/21/ shared by the CME, the start date of each CPA was confirmed. Furthermore,

The compliance of the CPAs with the PoA DD/1/ eligibility criteria was also checked through following:

1. The technology implemented during the 5 CPAs includes Ultra FLO and Ultra TAB systems only as checked from the sales database /5/ and the site visit observations.
2. The address given in the sales database /5/ and physical visit to the institutions confirmed that the systems have been installed within the geo-graphical boundary of Uganda.
3. The unique IDs of each purification system and details of institutions where the systems are installed were checked from the purchase order/14/ and IDs written on the purification systems to ensure that double counting would be avoided for each WPS. It was observed during the site visit that for Ultra FLO systems, the cartridges have UIDs written on them and for Ultra TAB systems, each pack of purification tablets (10 strips of 10 tablets each) have UIDs written on it in line with registered CPA-DDs/2/.
4. Onsite inspection and manufacturer's specification /28/ confirmed that the system does not consume fossil fuel.

Thus, the verification team confirms that the CPAs have been implemented in line with the registered PoA DD/1/. Therefore, FAR#01 was resolved satisfactorily. Please refer to Appendix 4 for more details.

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	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, 9948-0001	No	01/05/2014	3.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 2, Version: 3.0, 9948-0002	No	01/05/2014	3.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 3, Version: 1.3, 9948-0003	No	08/05/2017	6.1	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 4, Version: 01.2, 9948-0004	No	02/07/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 5, Version: 5.0, 9948-0005	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 6, Version: 5.0, 9948-0006	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 7, Version: 5.0, 9948-0007	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 8, Version: 5.0, 9948-0008	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 9, Version: 5.0, 9948-0009	No	04/10/2017	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 10, Version: 5.0, 9948-0010	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 11, Version: 5.0, 9948-0011	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 12, Version: 5.0, 9948-0012	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 13, Version: 5.0, 9948-0013	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 14, Version: 1.0, 9948-0014	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 15, Version: 1.0, 9948-0015	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 16, Version: 5.0, 9948-0016	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 17, Version: 5.0, 9948-0017	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18, Version: 5.0, 9948-0018	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 19, Version: 5.0, 9948-0019	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 20, Version: 5.0, 9948-0020	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 21, Version: 5.0, 9948-0021	No	21/11/2017	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 22, Version: 5.0, 9948-0022	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 23, Version: 4.0, 9948-0023	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 24, Version: 4.0, 9948-0024	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 25, Version: 4.0, 9948-0025	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 26, Version: 4.0, 9948-0026	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 27, Version: 4.0, 9948-0027	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 28, Version: 4.0, 9948-0028	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 29, Version: 4.0, 9948-0029	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 30, Version: 4.0, 9948-0030	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 31, Version: 4.0, 9948-0031	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 32, Version: 4.0, 9948-0032	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 33, Version: 4.0, 9948-0033	No	18/11/2018	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 34, Version: 4.0, 9948-0034	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 35, Version: 4.0, 9948-0035	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 36, Version: 4.0, 9948-0036	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 37, Version: 4.0, 9948-0037	No	18/11/2018	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 38 supported by Republic of Korea, Version: 1.0, 9948-0038	Yes	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 39 supported by Republic of Korea, Version: 1.0, 9948-0039	Yes	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 40 supported by Republic of Korea, Version: 1.0, 9948-0040	Yes	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 41 supported by Republic of Korea, Version: 1.0, 9948-0041	Yes	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 42 supported by Republic of Korea, Version: 1.0, 9948-0042	Yes	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 43 supported by Republic of Korea, Version: 1.0, 9948-0043	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 44 supported by Republic of Korea, Version: 1.0, 9948-0044	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 45 supported by Republic of Korea, Version: 1.0, 9948-0045	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 46 supported by Republic of Korea, Version: 1.0, 9948-0046	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 47 supported by Republic of Korea, Version: 1.0, 9948-0047	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 48 supported by Republic of Korea, Version: 1.0, 9948-0048	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 49 supported by Republic of Korea, Version: 1.0, 9948-0049	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 50 supported by Republic of Korea, Version: 1.0, 9948-0050	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 51 supported by Republic of Korea, Version: 1.0, 9948-0051	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 52 supported by Republic of Korea, Version: 1.0, 9948-0052	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 53 supported by Republic of Korea, Version: 1.0, 9948-0053	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 54 supported by Republic of Korea, Version: 1.0, 9948-0054	No	26/04/2019	7.0	NA

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

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 65 supported by Republic of Korea, Version: 1.0, 9948-0065	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 66 supported by Republic of Korea, Version: 1.0, 9948-0066	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 67 supported by Republic of Korea, Version: 1.0, 9948-0067	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 68 supported by Republic of Korea, Version: 1.0, 9948-0068	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 69 supported by Republic of Korea, Version: 1.0, 9948-0069	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 70 supported by Republic of Korea, Version: 1.0, 9948-0070	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 71 supported by Republic of Korea, Version: 1.0, 9948-0071	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 72 supported by Republic of Korea, Version: 1.0, 9948-0072	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 73 supported by Republic of Korea, Version: 1.0, 9948-0073	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 74 supported by Republic of Korea, Version: 1.0, 9948-0074	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 75 supported by Republic of Korea, Version: 1.0, 9948-0075	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 76 supported by Republic of Korea, Version: 1.0, 9948-0076	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 77 supported by Republic of Korea, Version: 1.0, 9948-0077	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 78 supported by Republic of Korea, Version: 1.0, 9948-0078	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 79 supported by Republic of Korea, Version: 1.0, 9948-0079	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 80 supported by Republic of Korea, Version: 1.0, 9948-0080	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 81 supported by Republic of Korea, Version: 1.0, 9948-0081	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 82 supported by Republic of Korea, Version: 1.0, 9948-0082	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 83 supported by Republic of Korea, Version: 1.0, 9948-0083	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 84 supported by Republic of Korea, Version: 1.0, 9948-0084	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 85 supported by Republic of Korea, Version: 1.0, 9948-0085	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 86 supported by Republic of Korea, Version: 1.0, 9948-0086	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 87 supported by Republic of Korea, Version: 1.0, 9948-0087	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 88 supported by Republic of Korea, Version: 1.0, 9948-0088	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 89 supported by Republic of Korea, Version: 1.0, 9948-0089	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 90 supported by Republic of Korea, Version: 1.0, 9948-0090	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 91 supported by Republic of Korea, Version: 1.0, 9948-0091	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 92 supported by Republic of Korea, Version: 1.0, 9948-0092	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 93 supported by Republic of Korea, Version: 1.0, 9948-0093	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 94 supported by Republic of Korea, Version: 1.0, 9948-0094	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 95 supported by Republic of Korea, Version: 1.0, 9948-0095	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 96 supported by Republic of Korea, Version: 1.0, 9948-0096	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 97 supported by Republic of Korea, Version: 1.0, 9948-0097	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 98 supported by Republic of Korea, Version: 1.0, 9948-0098	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 99 supported by Republic of Korea, Version: 1.0, 9948-0099	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 100 supported By Republic of Korea, Version: 1.0, 9948-0100	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 101 supported By Republic of Korea, Version: 1.0, 9948-0101	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 102 supported By Republic of Korea, Version: 1.0, 9948-0102	No	26/04/2019	7.0	NA

E.2. Programme of activities

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

Means of verification	The PoA aims at disseminating water purification technology (WPS) to target countries like Rwanda, Nigeria, Uganda and Kenya for addressing the problem of safe drinking water. During this monitoring period 5 CPA's of Type 2: Technologies for institutional water consumption, with no project emissions is included. This monitoring period includes the implementation and monitoring of 5 CPAs from 9948-0038 to 9948-0042 in Uganda. The coordinating and managing entity is Impact Carbon and CERPD is the CPA Implementer/15/..The roles and responsibilities are stated in the PoA DD/1/ and CPA DD/2/ which was found to be same as roles and responsibilities defined in the signed agreement. The team
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interviewed the CME's representatives present during the site visit to confirm that the stated roles and responsibilities are executed in line with the PoA DD/1/ and CPA DD/2/ on ground.

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 technology helps in replacing the non-renewable biomass / fossil fuel for boiling with the WPS reducing amount of equivalent GHG emissions.

The CPAs of PoA involves dissemination of two types of water purification systems:

1. Ultra FLO
2. Ultra Tab

	Ultra FLO	Ultra Tab
Size / Dimensions	Cartridge Length: ~12 cm Cartridge height: ~10 cm Cartridge circumference: ~22 cm	Strip size: ~13 cm X ~5.5 cm (10 tablets per strip)
Application	Piped water	Un-piped water
Flow rate	20L/min	1 tablet treats 100 L
Capacity/lifespan	340,000 L / 5-year expiry	10,000 L / 5-year expiry
Fixed or Portable	Fixed	Portable
Removal of E. Coli	99 (2-log)	99 (2-log)
Watts/Voltage	Not applicable	Not applicable

Both the systems meet the eligibility requirements of the PoA DD, page 65/01/. The details of the systems were verified from the manufacturer's specification provided by the CME.

During the on-site visit the installation of WPS claimed by the PP were checked and found to be in-line with the technical description provided in the registered PoA-DD/1/ and Monitoring report/13/.

Also, the verification team checked the implementation status of the CPA's as defined in the registered PoA-DD/1/ and Monitoring Report/13/.

Interview of the personnel involved in the QA/QC procedures reveals that the procedures mentioned in the PoA-DD/1/ are being followed and the Training records/20/ regarding the trained personnel were checked.

Further, based on the review of sales database (presented in ER sheet)/4/, physical observations and interview conducted during the site visit, the verification team found that:

- The CPA(s) were implemented within the boundary of the PoA as described in the revised accepted PoA-DD/1/.
- The CME is same as that mentioned in the revised accepted PoA-DD/1/
- The implementation and operation of the project activity has been conducted in accordance with the description contained in the revised accepted PoA-DD/1/ and included CPA-DDs/2/.
- All physical features of the CPA proposed in the included CPA-DDs/2/ were in place
- The project participants/CPA implementer has operated the CPAs as per the included CPA DDs/2/.

An onsite verification was conducted by the verification team; 8 institutions (4 for Ultra FLO and 4 for Ultra Tab) were visited. The uniqueness of the system was

	<p>identified from UID written on the units (either on cartridges or on TAB box packs)/27/. Along with the unique ID the following details are also noted in the database:</p> <ul style="list-style-type: none"> a) Type of system (UltraFLO / UltraTAB) b) Unique serial number of the units installed / distributed c) Date of installation / distribution d) Address and details of school and contact detail (if available) of representative e) Type of School (Boarding / Non-boarding) f) School population count (number of students / staff in boarding / non-boarding category) <p>The information was also verified from the CME database/5/ which was cross checked for 8 samples with the purchase orders /14/.</p> <p>The emission reductions being claimed during this monitoring period are lesser than the estimated emission reductions in the revised or included CPA-DDs/2/, as given in the table under section E.3.6.5. for comparable estimated CERs in the CPA DDs /2/ for the corresponding period.</p> <p>The CPAs are within the threshold limits of the applied methodology/6/.</p> <p>The monitoring report was compared and verified against the description provided in the revised accepted PoA-DD/01/ and found to be correct.</p>
Findings	CL#03 was raised and resolved. Please refer Appendix 4 for details.
Conclusion	<p>In view of the information's verified during the site visit, the verification team is able to confirm that all physical features (technology, project equipment, and monitoring and metering equipment) of the registered CDM program of activities were in place and that the CME has operated the project activity as per the registered PoA-DD /1/ during the concerned monitoring period.</p> <p>The emission reductions achieved during the current monitoring period are 92 tCO₂e. Justification of it has been assessed in further sections of report.</p>

E.2.2. Implementation and operation of the management system

Means of verification	<p>The verification team during the site visit assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system through physical inspection. The roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR /13/ and were verified through interviews with the local staff.</p> <p>CPA implementers fill purchase order /14/ to note the details of the institution and provide delivery notes /21/ at the time of installation (receipt of tablets in case of Ultra TAB). All the information is transferred to Salesforce software by the CME which was checked during the site visit to confirm that the management system is in place. The sales database was crosschecked with purchase order, delivery notes and Salesforce data to confirm that information for any system installed (unique ID) is consistent between the records. The unique ID code of WPS is combination of system type code, year code, country code and a serial number. The unique IDs of the WPS were checked for all the sampled systems seen during site visit to ensure that no number is repeating in the database and the same system is not credited in any other CPA either, thus avoiding the double counting.</p> <p>The CME also has a customer care centre which contacts the schools to ensure if the cartridge replacement (Ultra FLO) or new packets of tablets (Ultra TAB) are required or not.</p> <p>For data survey, a monitoring team has been organized by the CME consisting of trained monitoring staff, who conducted the Aquagenix tests (water quality tests)</p>
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	<p>and Usage surveys. The monitoring manager at the CME is responsible for QA/QC of the data, analysis and reporting in the monitoring report. QA/QC procedures were found being followed during the site visit. Scanned copies of purchase order /14/ and completed monitoring survey forms with test results /18/ were made available to the verification team for assessment of the information of institutions and survey and test results, in the sales data and monitoring data mentioned in ER calculator /4/. Monitoring team staff were interviewed by the verification team regarding the monitoring procedures, using the water quality testing kits and filling the monitoring questionnaires. The staff explained the complete procedure followed for Aqua-genix tests and the monitoring survey form filling. The evaluation of the water quality test is done in the main office. The verification team also checked training records of the monitoring & data recording personnel /20/.</p> <p>Thus, it can be confirmed that the Implementation and operation of the management system has been done in line with the registered PoA DD/1/ and CPA DDs/2/.</p>
Findings	No finding was raised. Please refer Appendix 4 for details.
Conclusion	The verification team from the desk review and on-site assessment confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.

E.2.3. Post-registration changes

E.2.3.1. Corrections

No correction observed.

E.2.3.2. Inclusion of a monitoring plan

N/A

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

N/A

E.2.3.4. Changes to the programme design

The request of approval of changes from the PoA as described in the registered PoA-DD was submitted by CME under the following request number and approval date:

PRC request number	Approval Status	Date of Approval	Reference Link
PRC-9948-002	Approved	03/07/2017	https://X/cdm.unfccc.int/PRCContainer/DB/prcp445611461/view
PRC-9948-001	Approved	08/05/2017	https://X/cdm.unfccc.int/PRCContainer/DB/prcp266525508/view

E.2.3.5. Addition of CPA inclusion template

NA

E.2.3.6. Change of coordination/managing entity

NA

E.2.3.7. Changes specific to afforestation and reforestation activities

NA

E.3. Component project activities

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

Means of verification	The registered PoA aims to provide safe drinking water to the institutions in Nigeria, Rwanda, Uganda and Kenya. The PoA is primarily design to replace the existing non-renewable means of purifying water and installing Water purification systems instead to purify the drinking water. CERPD is the implementer of the CPA's and has fully implemented the CPAs with the help of the monitoring team. The same has been verified from the agreement between the CME and CPAI/15/. This monitoring period includes the implementation and monitoring of 5 CPAs- CPA 9948-0038 to CPA 9948-0042 in Uganda.							
	CPA Re. No.	First WPS Installation date	Inclusion date	Crediting period start date	No. of units		ERs estimate	ERs actual
					FLO ³	TAB ⁴		
	9948-0038	23-04-2019	26-04-2019	26-04-2019	2	2	4,402	28
	9948-0039	24-04-2019	26-04-2019	26-04-2019	2	2	4,402	12
	9948-0040	24-04-2019	26-04-2019	26-04-2019	2	2	4,402	20
	9948-0041	24-04-2019	26-04-2019	26-04-2019	2	2	4,402	27
	9948-0042	24-04-2019	26-04-2019	26-04-2019	1	2	4,402	5
	Checked from>>	Delivery notes/21/	PoA Web page /12/	PoA Web page /12/	sales data base /5/	sales data base /5/	ER sheet /4/ & CPA DDs/2/	ER sheet /4/
<p>For Ultra Tab each unit is 100 tablets which treats 10000L water. Each school receives different number of units and fresh set of units are provided once the current set of tablets are used. However, to be conservative, the CME has assumed each institution receiving Ultra Tab systems is one unit. It was confirmed that through interview with the head teachers that they receive calls from the CME customer center to check if the tablets are finished or not. There are posters also in the schools, displaying the phone number of the CME office in the country so that school team can contact them if the tablets are about to get finished.</p> <p>For Ultra FLO, each unit is considered to claim for the ERs which is in line with the applied methodology/6/.</p> <p>As per the registered PoA-DD page 59 <i>"products deployed under the project activity are assumed to be in operation as of the start of the next month following the date of sale"</i>. Thus, any installation in the month of May 2019 will be eligible for crediting only in the month of June 2019. Given, the current monitoring period is ending in 22 May 2019, therefore only the units installed in April 2019 (i.e., up to 30-April-2019) are eligible for crediting under the concerned monitoring period. Thus, the CME has considered 30-April-2019 as the cut-off date of installation for this monitoring period.</p> <p>It has been checked by the verification team from the ER sheet /4/ that the ERs achieved for the specific CPAs lies between 5 tCO₂e - 28 tCO₂e, which is way below the threshold of small-scale activity. It has been confirmed that:</p> <ol style="list-style-type: none"> 1. Each of these CPAs achieved an annual emission reduction equal to or less than 60,000 tCO₂ e per year thus complying with the applied methodology SSC threshold /6/, 2. Each of the technologies installed under these CPAs achieves an annual emission reduction equal to or less than 3,000 tCO₂ e per year (5% of the SSC limit) thus fulfilling the additionality criteria stated in the CPA DD /2/ and PoA DD /1/. 3. Each of the independent subsystems/measures included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the applied methodology (i.e. not exceeding 600 tCO₂e for SSC type III methodologies) thus fulfilling the additionality criteria stated in the CPA DD /2/ and PoA DD /1/. <p>The implementation of the CPA as mentioned above is within the geographical boundary of PoA-DD/1/, which constitutes the physical boundary as well. Impact Carbon is the CME of</p>								

³ Ultra Flo

⁴ Ultra Tab:

	the CPA and CEPRD is the CPAI /15/. The reference number and the inclusion date of CPAs have been checked and verified from the UN website /12/ and the details are found correct and consistent. The start date of CPAs was confirmed from the delivery notes/21/. The WPS are installed across Uganda.
Findings	CL#04 and FAR#01 raised and resolved satisfactorily.
Conclusion	<ul style="list-style-type: none"> a) The verification team is of the opinion that physical features of the CPA have been implemented in accordance with the registered CPA-DDs/2/. b) No specific monitoring equipment had to be installed according to the monitoring plan. c) It is also confirmed, through the physical site visit and review of the supporting documentation that physical features of the component CPA have been implemented in accordance with the CPA-DD. d) The CPAs were also found to be completely operational in line with the CPA-DD. e) The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA.

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

No deviations identified in the current verification and there exist no previously approved deviations for the CPAs under verification.

E.3.2.2. Corrections

Corrections were identified in CPA 9948-0005 to CPA 9948-0013 and CPA 9948-0016 to CPA 9948-0022. The corrections were approved on 02/05/2019.

<https://cdm.unfccc.int/PRCContainer/DB/prcp52130222/view>

However, these CPAs are not considered under current verification as the monitoring report does not cover the aforesaid CPAs.

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

No changes to the start date of crediting period.

E.3.2.4. Inclusion of a monitoring plan

NA

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

NA

E.3.2.6. Changes to the project design

Corrections were identified in CPA 9948-0005 to CPA 9948-0013 and CPA 9948-0016 to CPA 9948-0022. The corrections were approved on 02/05/2019.

<https://cdm.unfccc.int/PRCContainer/DB/prcp52130222/view>

However, these CPAs are not considered under current verification as the monitoring report does not cover the aforesaid CPAs.

E.3.2.7. Changes specific to afforestation and reforestation activities

NA

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

Means of verification	The monitoring plan as contained in CPA-DD/2/ were reviewed against the monitoring requirements of the applied methodology AMS-III.AV version 04 /6/ as well as PoA-DD/01/ with reference to the technology involved. Based on this review, it was found that the monitoring plan contained in the CPA DD/2/ includes all the required parameters to be monitored in the context of the CPA design and description and allows proper determination of emission reductions in accordance with PoA DD/01/ and applied methodology AMS-III.AV version 04/6/.
Findings	None
Conclusion	The monitoring plan is in line with the approved methodology AMS III A.V Ver.4/6/, that is included in the CPA-DD/2/.

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

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), Case1 or Case 2

Means of verification	The CPAs located in Uganda fall under Case 1. It was checked from the registered CPA DD/2/ and UNHS_FINAL_REPORT 2016/26/ that less than 60% of the country has access clean drinking water, hence Case 1 is applied.
Findings	None.
Conclusion	The value applied is found to be consistent with the registered CPA-DDs/2/ which is correct and justified.

Specific Heat of water, WH, Kj/L °C

Means of verification	The value of the parameter is fixed at the time of validation and the value has been sourced from Methodology A.M.S.-III.AV Ver.4/6/. The value considered is 4.186 and is found to be consistent with the CPA-DD/2/.
Findings	None.
Conclusion	The value in the MR/13/ and ER sheet /4/ are consistent with the registered PoA-DD/1/ & CPA-DDs/2/. The applied value is correct and justified.

Final Temperature, T_f (°C)

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the methodology AMS-III.AV version 4.0/6/. The values as available in MR is 100 which is found consistent with the values in CPA-DD/2/.
Findings	None.
Conclusion	The value in the MR/13/ and ER sheet /4/ are consistent with the registered PoA-DD/1/ & CPA-DDs/2/. The applied value is correct and justified.

Initial Temperature, T_i (°C)

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the methodology AMS-III.AV version 4.0/6/. The value considered is 20 and is found to be consistent with the CPA-DD/2/.
Findings	None.
Conclusion	The value in the MR/13/ and ER sheet /4/ are consistent with the registered PoA-DD/1/ & CPA-DDs/2/. The applied value is correct and justified.

Latent heat of Water Evaporation, WHE, Kj/L

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the methodology A.M.S.III AV- version 4/6/. The value considered is 2,260 and is found to be consistent with the CPA-DDs/2/.
Findings	None.

Conclusion	The value in the MR/13/ and ER sheet /4/ are consistent with the registered PoA-DD/1/ & CPA-DDs/2/. The applied value is correct and justified.
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Leakage, L

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the methodology AMS-I.E version 5.0 /25/. The value considered is 0.95 times baseline emission and is found to be consistent with the CPA-DDs/2/.
Findings	None.
Conclusion	The value in the MR /13/and ER sheet /4/ are consistent with the registered PoA-DD/1/ & CPA-DD/2/. The applied value is correct and justified.

Average volume of drinking water per person per day, Ryi, Litres/Person/day

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the report WHO Minimum water quantity needed for domestic use in emergencies/24/. The value considered is 2 (for day schools) and 3.5 (for boarding schools, prisons) and is found to be consistent with the CPA-DD/2/.
Findings	None.
Conclusion	The value in the MR and CER sheet /13,4/ are consistent with the registered PoA-DD/1/ & CPA-DD/2/. The applied value is correct and justified.

E.3.4.2. Data and parameters monitored

Quantity of purified water in year y, QPW_y (liters):

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Annual or at least biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>The parameter is a calculated parameter determined through following equation: $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ The formula is correct and in line to the applied methodology/6/, PoA DD/1/ and CPA DDs/2/.</p> <p>The installation for CPAs under the verification has been done between 23/04/2019-27/04/2019.</p> <p>As per the page 59 of revised approved PoA DD/1/, "The date of installation for each unit is used to determine the portion of the monitoring period during which the unit was active. Products deployed under the project activity are assumed be in operation as of the start of the next month following the date of sale, i.e. if the date of sale is April 1st, the start of operation is May 1"</p> <p>Thus, for all the systems installed in April, ERs will be claimed in May 2019. The end date of the monitoring period is 22/05/2019.</p>

		<p>Thus, only 22 days have been considered for ER calculation. The approach was found to be conservative and in line with PoA DD/1/.</p> <p>The adjusted formula is: $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 22 \times \text{Water Quality}_i \times \text{Operational Units}_i)$</p> <p>The ER sheet/4/ was checked to confirm that the formula has been applied correctly and verified value of the parameter is 492,073 Litres/yr.</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. The equation used for the calculation is correct and is sourced from the paragraph 11 of the applied methodology/6/
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
Findings	CL#02, CL#04 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

Efficiency of water boiling system being replaced, n_{wb} , Fraction

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Continuous or at least biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>The CPA DDs/2/ states that the parameter should be determined by applying Default values as per AMS-III.AV/6/ combined with survey, national, or regional data to determine the percent of users using different types of water boiling systems in the baseline scenario.</p> <p>During the current monitoring period the parameter is determined by sourcing a default value from the applied methodology/6/ and multiplying it with the proportion of population of the institutions different type of stove sourced from national data.</p> <p>Citizen's survey on Uganda Vision 2040/17/, which used as a source of national data was reviewed to</p>

		<p>confirm that distribution of various stove types in Uganda are as follows:</p> <table border="1" data-bbox="774 241 1422 495"> <thead> <tr> <th>Stove type</th><th>Percentage of users as checked from/34/</th><th>Default value of efficiency from AMS-III.A.V.</th></tr> </thead> <tbody> <tr> <td>Unimproved</td><td>85.7%</td><td>0.1</td></tr> <tr> <td>Improved</td><td>13.5%</td><td>0.2</td></tr> <tr> <td>Fossil fuel</td><td>0.9%</td><td>0.5</td></tr> </tbody> </table> <p>As per the source used to check percentage of users have more than one system encountered, a weighted average value was applied.</p> <p>Therefore, average weighted value of 0.1172 was applied for the current monitoring period.</p> <p>The CPA DDs//2/ state under B.5.1. that "In case more recent data is not available use value established in previous monitoring period.". The data was for percentage of users is dated in 2015. Thus, In absence of any other reliable of recent data, the source of parameter is written as MR#01 in the current MR, which was found to be correct.</p>	Stove type	Percentage of users as checked from/34/	Default value of efficiency from AMS-III.A.V.	Unimproved	85.7%	0.1	Improved	13.5%	0.2	Fossil fuel	0.9%	0.5
Stove type	Percentage of users as checked from/34/	Default value of efficiency from AMS-III.A.V.												
Unimproved	85.7%	0.1												
Improved	13.5%	0.2												
Fossil fuel	0.9%	0.5												
	If applicable, has the reported data been cross-checked with other available data?	Yes. Sampled number of entries (8) were visited. The head/deputy head of the institutions were interviewed to know the treatment method used in the absence of the WPS installation. All interviewed people replied that unsafe drinking water was used from borewells and boiling water would have been the cheapest option to get safe drinking water. No other means were deemed affordable by the institutions.												
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA												
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA												
Findings	CAR#07 was raised and resolved. Please refer to Appendix 4 for details.													
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.													

Total distributed water purification systems, T_{yi}, Number

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Continuous
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>The total number of systems reported in the monitoring report are as following:</p> <p>9 UltraFLO</p> <p>10 UltraTAB</p> <p>The CME keeps purchase order, delivery note and details of each system on salesforce as checked on site.</p> <p>Each unit of Ultra FLO system has unique ID, which is listed in the database and has been claimed for ERs.</p> <p>For Ultra Tab each unit is 100 tablets which treats 10000L water. Each school receives different number of units and fresh set of units are provided once the current set of tablets are used. However, to be conservative, the CME has assumed each institution receiving Ultra Tab systems is one unit. It was confirmed that through interview with the head teachers that they receive calls from the CME customer center to check if the tablets are finished or not. There are posters also in the schools, displaying the phone number of the CME office in the country so that school team can contact them if the tablets are about to get finished. Therefore, for Ultra TAB system, the value of the parameter has been determined by considering each institution as a system. Therefore, for institutions with Ultra TAB, the number of tab systems is same as number of institutions.</p> <p>The entries in database were checked to confirm the total number presented in the MR. 8 samples were visited physically also, to confirm that the details of the entries in the database/5/</p>

		<p>are correct.</p> <p>Thus, the verified number of systems are ;</p> <p>9 UltraFLO 10 UltraTAB.</p> <p>The applied was found to be correct by the verification team.</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. Sampled number of entries (8) were checked with the installation invoices/14/ and the delivery notes/21/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
Findings	No finding was raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

The average population serviced by water purification systems, N_{yi} Person/equipment

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Continuously
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>At the time of installation, the purchase order form is filled by the CME. This form/14/ notes down the total number of students and staff in boarding/non-boarding schools.</p> <p>These number are mentioned for each school in the sales database. For the 8 samples checked by the DOE on site, the same numbers were checked and found to be correct.</p> <p>The CME has also applied formula in the ER sheet, column T, work sheet titled "Sales Database"/4/ to ensure that the N_{yi} multiplied by R_{yi} does not</p>

		<p>exceed the maximum output of the unit [per unit].</p> <p>An average value of all the adjusted $N_{y,i}$ has been used for ER calculation respective of each CPA. In general, the average of $N_{y,i}$ for all the CPAs was found to be 561 person/technology.</p> <p>The parameter value is noted at the time of installation by the CME and as the number of systems increases over the time, the value will change continuously. The institutions were checked to confirm that CME is recording this information in database and the implementation is in line with PoA DD/1/.</p> <p>As per the CPA DDs (9948-0038-9948-0042)/2/, The value of $N_{y,i}$ is effectively the number of people in the institution. The number of people in the institution will be updated (at least biennially) to reflect change in the institution size over time. The value will be updated in the sales database biennially.</p> <p>For the current monitoring, the value of the parameter was verified from the sales database /5/ and purchase orders/14/. This parameter is neither prescribed nor monitored by CME on sample basis as per registered monitoring plan. The parameter is monitored on absolute basis for each of the installation.</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. The values in the ER sheet were checked with onsite observations by the DOE which was further cross-checked with the purchase orders/14/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
Findings	CL#04 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

Water quality measurement, Water Quality_i

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Annual or at least Biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes /	Yes

	No)	
	Monitoring equipment	Aquagenix testing kits
	Calibration details	Not Applicable.
	How were the values in the monitoring report verified?	The CME conducted Aquagenix testing kits to monitor the thermo tolerant coliform value for all systems. The Head teachers/ Deputy Head teachers of the schools visited by the DOE confirmed that they were visited by monitoring team for the tests. The monitoring forms/18/ for all the institutions were checked to ascertain that all the tests gave positive results confirming safe drinking water Hence, the applied value of 1.00 was found acceptable.
	If applicable, has the reported data been cross-checked with other available data?	Photos of the test/30/ conducted during the monitoring were shared by the CME which confirmed the results in monitoring forms.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the tests were interviewed during the site visit and training evidences/20/ provided by the CME confirmed that the tests are conducted and evaluated by trained staff.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
Findings	CAR#07 was raised and resolved. Please refer to Appendix 4 for details.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

Percent of the monitoring period in which the units are in use, Operational Units, Percentage

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	At least once per verification or biennially
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	All the systems were visited by the CME's monitoring team to monitor the operational status of the WPS units installed in the institutions as checked from the monitoring survey forms/18/. The Head teachers/Deputy. Head teachers of the schools visited by the DOE confirmed that they were visited by monitoring team for the surveys. All the DOE visited institutions were found to be operational. Thus, the applied value of 100% was found acceptable.
	If applicable, has the reported data	Results presented in the ER sheet

	been cross-checked with other available data?	were checked with monitoring survey forms/18/ and DOE site visit.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the tests were interviewed during the site visit and training evidences/20/ provided by the CME confirmed that the surveys are conducted and evaluated by trained staff.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
Findings	CAR#07 was raised and resolved. Please refer to Appendix 4 for details.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

Fraction of woody bio-mass saved by the project activity in Year, fNRB

Means of verification	Criteria/Requirements	Assessment/Observations								
	Measuring /Reading /Recording frequency	Continuous or at least biennial or using values established in last monitoring period.								
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes								
	Monitoring equipment	NA								
	How were the values in the monitoring report verified?	<p>The CPA DD/2/ states that the parameter should be determined by applying Default values as per AMS-III.AV/6/ EB 67 Annex 22/34/ combined with survey, national, or regional data to determine the percent of users using different types of fuel used.</p> <p>During the current monitoring period the parameter is determined by sourcing a default value from the applied methodology/6/ and EB67 Annex 22/34/ and multiplying it with the proportion of population for different type of fuel replaced, sourced from national data.</p> <p>Uganda National Household Survey 2016/2017/26/, which used as a source of national data was reviewed to confirm that distribution of various fuel used in Uganda are as follows:</p> <table border="1"> <thead> <tr> <th>Description</th><th>Percentage of users as checked from/26/</th><th>Default value of efficiency from AMS-III.A.V./6//EB67 Annex 22/34/</th></tr> </thead> <tbody> <tr> <td>NRB users</td><td>94.2%</td><td>0.82</td></tr> <tr> <td>Fossil fuel users</td><td>5.8%</td><td>1.00</td></tr> </tbody> </table> <p>As per the source used to check percentage of users have more than one system</p>	Description	Percentage of users as checked from/26/	Default value of efficiency from AMS-III.A.V./6//EB67 Annex 22/34/	NRB users	94.2%	0.82	Fossil fuel users	5.8%
Description	Percentage of users as checked from/26/	Default value of efficiency from AMS-III.A.V./6//EB67 Annex 22/34/								
NRB users	94.2%	0.82								
Fossil fuel users	5.8%	1.00								

		<p>encountered, a weighted average value was applied.</p> <p>Therefore, average weighted value of 0.8304 was applied for the current monitoring period.</p> <p>The CPA DDs//2/ state under B.5.1. that “In case more recent data is not available use value established in previous monitoring period.”. The data was for percentage of users is dated in 2018. Thus, in absence of any other reliable of recent data, the source of parameter is written as MR#01 in the current MR, which was found to be correct.</p> <p>The applied value was found to be correct. The value has been determined is in line with the PoA DD/1/ and CPA DDs/2/.</p>
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	NA
Findings	CL#03 and CAR#07 were raised and resolved. Please refer to Appendix 4 for details.	
Conclusion	The values in the Monitoring Report /13/ and corresponding Emission Reduction Spreadsheet /4/ are consistent with the revised accepted PoA-DD/1/ and CPA-DDs/2/. The values applied for ER calculations/4/ in the relevant CPAs are correct and justified.	

Emission factor as per AMS-I.E. procedures when NRB is displaced or the emission factor of the fossil fuel substituted, EF projected_fossil fuel, tCO₂/TJ

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Continuous or at least biennial or using values established in last monitoring period.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>The CPA DD/2/ states that the parameter should be determined by applying Default values as per AMS-I.E./25/ and IPCC/22/ combined with survey, national, or regional data to determine the percent of users using different types of fuels displaced.</p> <p>During the current monitoring period the parameter is determined by</p>

		<p>sourcing a default value from the applied methodology/6/ and EB67 Annex 22/34/ and multiplying it with the proportion of population of the institutions different type of fuel used sourced from national data.</p> <p>Uganda National Household Survey 2016/2017/26/, which used as a source of national data was reviewed to confirm that distribution of various types of fuels displaced in Uganda are as follows:</p> <table border="1" data-bbox="962 584 1428 893"> <thead> <tr> <th>Description</th> <th>Percentage of users as checked from/26/</th> <th>Default value from AMS-I.E./25/ and IPCC/22/</th> </tr> </thead> <tbody> <tr> <td>NRB users</td> <td>94.2%</td> <td>81.6</td> </tr> <tr> <td>Fossil fuel users</td> <td>5.8%</td> <td>51.6⁵</td> </tr> </tbody> </table> <p>As per the source used to check percentage of users have more than one system encountered, a weighted average value was applied.</p> <p>Therefore, average weighted value of 80.12 was applied for the current monitoring period.</p> <p>The CPA DDs/2/ state under B.5.1. that "In case more recent data is not available use value established in previous monitoring period.". The data was for percentage of users is dated in 2018. Thus, in absence of any other reliable of recent data, the source of parameter is written as MR#01 in the current MR, which was found to be correct.</p> <p>The applied value was found to be correct. The value has been determined is in line with the PoA DD/1/ and CPA DDs/2/.</p>	Description	Percentage of users as checked from/26/	Default value from AMS-I.E./25/ and IPCC/22/	NRB users	94.2%	81.6	Fossil fuel users	5.8%	51.6 ⁵
	Description	Percentage of users as checked from/26/	Default value from AMS-I.E./25/ and IPCC/22/								
	NRB users	94.2%	81.6								
	Fossil fuel users	5.8%	51.6 ⁵								
If applicable, has the reported data been cross-checked with other available data?	Yes. The value sourced form AMS-I.E./25/ was also cross-checked from the IPCC greenhouse gas inventories report/22/.										
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.										
In case project participants have	NA										

⁵ To apply a conservative estimate of CERs, all fossil fuel used is assumed to be Natural Gas, as this fuel has the lowest emission factor

	temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	CAR#07 was raised and resolved. Please refer to Appendix 4 for details.	
Conclusion	The values in the Monitoring Report /13/ and corresponding Emission Reduction Spreadsheet /4/ are consistent with the revised accepted PoA-DD/1/ and CPA-DDs/2/. The values were found consistent with IPCC default values for fossil fuels /22/. The applied values are correct and justified.	

Existence of public distribution network of safe drinking water, Fraction, Existence of public distribution network of safe drinking water in year y, Fraction

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Annual or at least biennial
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	All the institutions were visited by the CME's monitoring team to check the existing public distribution network with safe drinking water as checked from the monitoring survey forms/18/. The Head teachers/ Deputy. Head teachers of the schools visited by the DOE during on site assessment confirmed that they were visited by monitoring team for the surveys. All the Ultra FLO systems DOE visited were found to have piped network (PDN). However, the head teachers interviewed confirmed that the source was rendering unsafe water. For Ultra Tab system, the verification team did not find any access to public distribution network on site. Their source of water was found to be Borewell/ Well. Besides, review of other monitoring survey forms and sales database indicated that safe drinking water based public distribution network was not accessible to project schools. Thus, the applied value of 0 was found acceptable for the current verification.
	If applicable, has the reported data been cross-checked with other available data?	Results presented in the ER sheet were checked with monitoring survey forms/18/ and DOE site visit.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The staff conducting the tests were interviewed during the site visit and training evidences/20/ provided by the CME confirmed that the surveys are conducted and evaluated by trained staff.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii)	NA

	has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	CAR#07 was raised and resolved. Please refer to Appendix 4 for details.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/6/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

E.3.4.3. Implementation of sampling plan

Means of verification	No sampling plan was used for this verification. Only 19 units (09 UltraFlo and 10 UltraTab) units are installed/distributed under the CPAs (CPA 38 to 42). The number of installed units is less than 30, thus the entire population was monitored.
Findings	None
Conclusion	100% of data has been monitored thus no sampling was required.

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

Means of verification	No monitoring equipment are used required as outline in the CPA-DDs/2/ and revised accepted PoA-DD/1/.
Findings	None
Conclusion	The verification team has determined that no monitoring equipment has been used by the PP that requires calibration. Furthermore, there was no requirement of calibration in the CPA-DD/2/. This was in accordance with the accepted monitoring plan and the applied monitoring methodology/6/.

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>The following equations were used to determine the baseline emissions as provided in the monitoring report /13/ and applied in the corresponding ER calculations sheet /4/. The expressions used were found consistent with the revised accepted PoA DD /1/, CPA DDs /2/ and the applied methodology AMSIII.AV, version 04 /6/:</p> $BE_y = QPW_y * SEC * f_{NRB,y} * EF_{\text{projected_fossilfuel}} * 10^{-9}$ <p>Where,</p> <p>BE_y Baseline emissions during the year y in (tCO₂e)</p> <p>QPW_y Quantity of purified water in year y (Liters/yr).</p> <p>SEC Specific energy consumption required to boil one litre of water (kJ/L)</p> <p>$f_{NRB,y}$ Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable.</p> <p>$EF_{\text{projected_fossilfuel}}$ Emission factor when NRB is displaced or the emission factor of the fossil fuel substituted</p> <p>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</p> <p>Calculation for CPA 9948-0038: Specific energy consumption (SEC) i.e. energy required to boil one litre of water</p>
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	<p>is calculated as</p> $SEC = [WH \cdot (T_f - T_i) + 0.01 \cdot WHE] / n_{wb}$ <p>Where</p> <p>WH Specific heat of water (kJ/L °C)</p> <p>T_f Final temperature (°C)</p> <p>T_i Initial temperature of water (°C)</p> <p>WHE Latent heat of water evaporation (kJ/L)</p> <p>n_{wb} Efficiency of water boiling system being replaced (fraction)</p> $SEC = [4.186 \times (100 - 20) + 0.01 \times 2260] / 0.1172$ $SEC = 3050.17 \text{ kJ/L.}$ <p>And QPW_y is calculated through following equation:</p> $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ $QPW_y = 4 \times 786 \times 2.10 \times 22 \times 1.0 \times 1.0$ $QPW_y = 145,383 \text{ L}$ <p>As per the page 59 of revised approved PoA DD/1/, “The date of installation for each unit is used to determine the portion of the monitoring period during which the unit was active. Products deployed under the project activity are assumed be in operation as of the start of the next month following the date of sale, i.e. if the date of sale is April 1st, the start of operation is May 1”</p> <p>Thus, for all the systems installed in April, ERs will be claimed in May 2019. The end date of the monitoring period is 22/05/2019.</p> <p>Thus, only 22 days have been considered for ER calculation. The approach was found to be conservative and in line with PoA DD/1/.</p> <p>The number of days for the current monitoring period is 22 days. Thus, the revised formula is :</p> $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 22 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ <p>Where:</p> <p>QPW_y: Quantity of purified water for drinking for all technologies type i in year y (Liters)</p> <p>T_{y,i}: Total distributed water purification systems(Number)</p> <p>R_{y,i} : Average volume of drinking water per person per day (Liters/person/day)</p> <p>Water Quality_i: Percent of units that meet water quality requirements</p> <p>Operational Units_i: Percent of the monitoring period in which the units are in use</p> <p>N_{y,i}: The average population serviced by water purification systems(Persons/equipment)</p> <p>Calculation for CPA 9948-0038 (as an example):</p> $BE_y = 145,383 \times 3050.17 \times 0.8304 \times 80.12 \times 10^{-9}$ $BE_y = 29.55 \text{ tCO}_2\text{e}$ <p>The installation for CPAs under the verification has been done between 23/04/2019-27/04/2019.</p> <p>The verification team has checked that the calculation for other CPAs (9948-0039 to 9948-42) have also been done in the worksheet ‘ERs Summary’ /4/ in the same manner.</p> <p>The calculations for all the CPAs (9948-0038 to 9948-42) were checked in the ER sheet/4/ and it was found that calculations have been done inline to the PoA DD/01/ and in accordance to the applied methodology/6/.</p> <p>All the parameters are assessed in detail under section E.3.4. of this report.</p>
Findings	CL#02 and CAR#06 were raised and resolved.
Conclusion	<p>The verification team confirms that</p> <ol style="list-style-type: none"> The complete data was available and is duly reported; As indicated above, the description with regard to cross-check of reported data is included under respective parameter above; Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed;

	<p>d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.</p> <p>e) There is no pro-rata approach applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p>
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E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	The project activity involves no emissions as it involves dissemination of water purification systems and replaces the non-renewable woody biomass fossil fuel way of boiling water with the transitioned way of water purification by the chlorination technologies.
Findings	None
Conclusion	The project emissions have not been considered. The approach is in line with the PoA DD/1/.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	<p>The PoA-DD/1/, CPA DDs/2/ and applied monitoring methodologies does not prescribe any leakage emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard. However, the leakage adjustment factor that is required to adjust the baseline emissions has been duly accounted in baseline calculations.</p> <p>BE_y is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. Therefore, the leakage is calculated as follows:</p> $\text{Leakage} = \text{BE}_y * (1-95\%)$ <p>Calculation for 9948-0038 is as follows:</p> $\text{LE} = 29.50 * (1-0.95)$ $\text{LE} = 1.48 \text{ tCO}_2$ <p>The verification team has checked that the calculation for other CPAs (9948-0039 to 9948-42) have also been done in the worksheet 'ERs Summary' /4/ in the same manner.</p> <p>The calculations for all the CPAs (9948-0038 to 9948-42) were checked in the ER sheet/4/ and it was found that calculations have been done inline to the PoA DD/01/ and in accordance to the applied methodology/6/.</p> <p>The verified value of Leakage for all the CPAs is 4.99 tCO₂e. The value is mentioned CPA wise in the table presented under the next section.</p>
Findings	None
Conclusion	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology AMS-III.AV, version 04 /6/.

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

Means of verification	<p>As elaborated above, the entire emission reductions from the PoA were based on baseline emissions. The calculations presented in this regard in the final monitoring report /13/ and corresponding ER calculations sheet /4/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of respective CPA-DDs/2/, PoA-DD/1/ and applied methodology/6/.</p> <p>The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p>
Findings	CL#02 was raised and resolved.
Conclusion	<p>The verification team confirms that</p> <p>a) The complete data was available and is duly reported;</p> <p>b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.5.4 of this report);</p> <p>c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</p> <p>The total number of ERs achieved (on account of water purifiers installation) during the current monitoring period were 92 tCO₂e.</p>

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
9948-0038	29.50	0	1.48	0	28.0	28.0
9948-0039	13.22	0	0.66	0	12.0	12.0
9948-0040	21.93	0	1.10	0	20.0	20.0
9948-0041	28.97	0	1.45	0	27.0	27.0
9948-0042	6.24	0	0.31	0	5.0	5.0
Total	99.86	0	4.99	0	92.0	92.0

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

Means of verification	<p>Earthood Services Private Limited is able to certify that the emission reductions from the CDM project activity 9948 "Impact Carbon Global Safe Water Programme of Activities (PoA)" in Uganda for the monitoring period 23/05/2017-22/05/2019 (including both days) amount to 92 tCO₂.</p> <p>Verified and certified emission reductions as per commitment period:</p> <table> <tr> <th>Commitment period</th><th>Amount</th></tr> <tr> <td>Upto 31/12/2012 (1st commitment period)</td><td>0 tCO₂e</td></tr> <tr> <td>From 01/01/2013</td><td>92 tCO₂</td></tr> </table>	Commitment period	Amount	Upto 31/12/2012 (1 st commitment period)	0 tCO ₂ e	From 01/01/2013	92 tCO ₂
Commitment period	Amount						
Upto 31/12/2012 (1 st commitment period)	0 tCO ₂ e						
From 01/01/2013	92 tCO ₂						
Findings	CL#02 was raised and resolved.						
Conclusion	The actual ERs achieved in included CPAs are not higher than the estimated quantity of ERs in the CPA-DDs/2/. Accordingly, it was accepted by verification team.						

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO ₂ e)
9948-0038	28	4,402
9948-0039	12	4,402
9948-0040	20	4,402
9948-0041	27	4,402
9948-0042	5	4,402
Total	92	22,010

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

Means of verification	<p>As verified and evident from the Monitoring Report /13/ and corresponding ER calculations sheet /4/, the actual emission reductions achieved for Water Purification systems for the CPAs under this verification in the current monitoring period were found less than the estimated quantity in the CPA-DDs /2/ for the comparable period. This is largely due to lower number of water purifiers were sold. Considering, there is no increase in ERs no further verification effort was put in. The quantitative details of actual values of achieved ERs for the CPA and value</p>
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	estimated in the CPA- DD is presented in the next table.
Findings	None
Conclusion	The actual emission reductions achieved in specific CPA are not higher than the estimated quantity of ERs in the CPA-DD/2/. Accordingly, it was accepted by the verification team.

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

Means of verification	The coordinating/managing entity did not identify and establish the monitoring of the sustainable development benefits of the registered CDM PoA/1/ and no such document was developed and published on the UNFCCC CDM website/12/. Therefore, no assessment is required.
Findings	None
Conclusion	The CME is not required to monitor the sustainable development benefits of the registered CDM PoA.

E.3.8. Global stakeholder consultation

Means of verification	The global stakeholder consultation was not found applicable because period under verification is 2nd monitoring period.
Findings	None
Conclusion	The requirement is applicable for situations when global stakeholder consultation was carried out after the publication of first monitoring report. Therefore, this was not found applicable.

SECTION F. Internal quality control

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

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

SECTION G. Verification opinion

Earthood Services Private Limited (ESPL), contracted by Impact Carbon (the CME for the PoA), has performed the first independent verification of the emission reductions for the registered CDM PoA 9948 "Impact Carbon Global Safe Water Programme of Activities (PoA)" for the second monitoring period 23/05/2017 – 22/05/2019 (both days included) as reported in the Monitoring Report (public). The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

This verification report is for the PoA-9948 which was included at the UNFCCC webpage at the end of the current monitoring period.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow of CDM VVS-PoA Version 02/07/.

The verification activities were conducted in accordance with ESPL's CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the included CPAs confirm to the revised accepted PoA-DD/1/ as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodologies, AMS III.AV (Version 04)/06/.

As a result, it is confirmed that the emission reductions from the CDM PoA 9948 "Impact Carbon Global Safe Water Programme of Activities (PoA)" are correctly reported in the Monitoring Report Version 3.0 /13/ dated 08/08/2019 and corresponding ER sheets for the monitoring period 23/05/2017-22/05/2019 (including

both days) amount as 92 tCO₂e. Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 02/08/.

SECTION H. Certification statement

The verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the PoA for the monitoring period 23/05/2017 – 22/05/2019 are fairly stated in the Monitoring Report (final) Version 3.0 dated 08/08/2019.

ESPL, based on outcome of verification activities, certify in writing that, during the monitoring period 23/05/2017-22/05/2019 (including both days), the registered CDM PoA “Impact Carbon Global Safe Water Programme of Activities (PoA)” and the included CDM CPAs achieved the verified amount of **92** tCO₂e reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CPAs.

Appendix 1. Abbreviations

	Full texts
AMS	Approved Methodology for Small-scale
BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CERPD	Carbon Emission Reduction Project Developers
CH ₄	Methane
CL	Clarification Request
CME	Coordinating and Managing Entity
CO ₂	Carbon di oxide
CPA	Component Project Activity
CP	Crediting Period
DNA	Designated National Authority
DR	Desk Review
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reduction
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Green House Gas
GSC/GSP	Global Stakeholder Consultation Process
GW	Giga Watt
GWh	Giga Watt hour
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
kW	kilo Watt
L/min	Litres per minute
LoA	Letter of Approval/Authorization
LSC	Local Stakeholder Consultation Process
MoC	Modalities of Communication
MoV	Means of Validation
MP	Monitoring Plan
MW	Mega Watt
MWh	Mega Watt hour
N ₂ O	Nitrous Oxide
PCP	Project Cycle Procedure
PE	Project Emission
PoA DD	Programme of Activities Design Document
PP	Project Participant
PRC	Post Registration Changes
PS	Project Standard
QA/QC	Quality Assurance/Quality Control
tCO ₂ e	tonnes of Carbon di Oxide equivalent
UID	Unique Identification
UNFCCC	United Nations Framework Convention on Climate Change
V	Version
VVS	Validation and Verification Standard
WPS	Water Purification Systems

Appendix 2. Competence of team members and technical reviewers

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	3 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shreya Garg	Date	14/09/2018
Approved by	Anshika Gupta	Date	14/09/2018

Competence Statement			
Name	Gaurav Shresth		
Education	B.Tech (Mechanical Engineering) M.E. (Thermal Engineering)		
Experience	4+ years		
Field	Mechanical and thermal engineering		
Approved Roles			
Team Leader	NO		
Validator	Yes (Trainee)		
Verifier	Yes (Trainee)		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.2, 3.1)		
Reviewed by	Shreya Garg	Date	01/05/2019
Approved by	Anshika Gupta	Date	02/05/2019

Competence Statement			
Name	Julius Sam Khaukha		
Country	Uganda		
Education	Bachelors in Social Administration		
Experience	7 Years +		
Field	Education and Social Work		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	YES (Uganda)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Ashok Gautam		
Country	India		
Education	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
Experience	16 Years +		
Field	Energy, Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
Reviewed by	Shreya Garg	Date	25/01/2019
Approved by	Anshika Gupta	Date	25/01/2019

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Impact Carbon	Registered PoA-DD Revised Accepted PoA-DD	Dated: 24/03/2014 Dated: 18/04/2017	CME
2	Impact Carbon	Registered CPA-DD-38 Registered CPA-DD-39 Registered CPA-DD-40 Registered CPA-DD-41 Registered CPA-DD-42	Version 2, Dated: 22/02/2019 Version 2, Dated: 22/02/2019 Version 2, Dated: 22/02/2019 Version 2, Dated: 22/02/2019 Version 2, Dated: 22/02/2019	Other
3	Carbon check India Pvt Ltd.	CPA Inclusion Report (9948-0038 to 9948-0042)	Version 2, Dated: 26/04/2019	Other
4	Impact Carbon	ER sheet	Dated: 02/08/2019	CME
5	Impact Carbon	Sales Database	-	CME
6	UNFCCC	Methodology: AMS III A.V.	Version 4	Others
7	UNFCCC	PS for PoA	Version 2	Others
8	UNFCCC	PCP for PoA	Version 2	Others
9	UNFCCC	VVS for PoA	Version 2	Others
10	UNFCCC	CDM-PoA-MR-Form	Version 3	Others
11	UNFCCC	CDM-PoA-VCR-Form	Version 3	Others
12	UNFCCC	PoA UN webpage	https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/5J36IFUKQVNMRA0OZPGLH9C7STED1W/viewCPAs?s=0	Others
13	Impact Carbon	Monitoring Report (Final)	Version 3.0 Dated:08/08/2019	CME
14	Impact Carbon	Purchase Orders	Dated: 24/04/2019-26/04/2019	CME
15	Impact Carbon	Agreement between CME and CPA Implementer	Dated: 15/01/2019	CME
16	DHS	Uganda Demographic and Health Survey	2011	CME
17	Uganda National NGO Forum	Citizens-Survey-on-Uganda-Vision-2040	May 2015	CME
18	Impact Carbon	Monitoring form + Water Quality Test	Multiple Dates: 30/05/2019-07/06/2019	CME
19	UNFCCC	Standards for Sampling and survey for CDM PoA	Version 7.0	Others
20	Impact Carbon	Training Records	15/04/2019 & 29/05/2019	CME
21	Impact Carbon	Delivery Notes	Multiple Dates: 24/04/2019-25/04/2019	CME
22	IPCC	IPCC default values for fossil fuels	https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf	Other
23	Impact Carbon	Random number -excel sheet	-	CME
24	WHO	WHO Technical Notes on Drinking -Water sanitation and	https://www.who.int/water_sanitation_health/emergencies/WHO_TN_10_Hygiene	CME

		Hygiene	e_promotion_in_emergencies.pdf?ua=1	
25	UNFCCC	AMS-I.E.	Version 5.0	Other
26	Uganda bureau of stats	UNHS_FINAL_REPORT 2016-17.pdf https://www.ubos.org/wp-content/uploads/publications/03_20182016_UNHS_FINAL_REPORT.pdf	Dated: January 2018	CME
27	Impact Carbon	UID photographs of WPS	-	CME
28	Impact Carbon	Manufacturer's Specifications	-	CME
29	Impact Carbon	Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO 2011)	https://www.who.int/water_sanitation_health/publications/2011/evaluating_water_treatment.pdf	CME
30	Impact Carbon	Photos of Aquagenix test	-	CME
31	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programme of activities	Version 4.0	Other
32	TÜV NORD CERT GmbH (TÜV NORD) / (E-0022)	Verification report for MP#1	https://cdm.unfccc.int/filestorage/R/U/J/RUJH4ETWX9Y8MQG5BVKZI7L2DAN3C0/PoA9948_MP1_MRP1_Verification%20report_final_26102018.pdf?t=cnd8cHZ4Zzh4fDC6jR5a5acT8klv94vpwqag (Version 1.0)	Other
33	Impact Carbon	Monitoring report for MP#1	Version 4.0	Other
34	UNFCCC	EB 67 Annex 22	-	Other

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

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

FAR ID	01	Section no.	E 1.2. and E.3.1.	Date :18/07/2019
Description of FAR				
FAR from the CPA inclusion:				
<p>"During the Validation stage, implementation for the five CPAs has not started. Referring to paragraph 34 of CDM VVS for PoAs, version 02.0, during 1st periodic verification, the verifying DOE shall check/review the project implementation in accordance with the CPA-DDs including checking of all the solutions/technologies (chemical disinfection based water purification systems) to be implemented in the CPAs and its compliance with the requirements of the PoA."</p>				
Project participant response				Date :02/08/2019

At the time of validation, the CPAs were not implemented hence, the FAR was issued to check the implementation of the CPAs (wrt to technology installed).

Implementation of all the five CPAs (9948-0038 to 9948-0042) covered in the Monitoring Report has started. The following demonstrates compliance with the inclusion eligibility criteria (relevant to technology implemented):

1. The technology implemented in the CPAs is same as that described in the CPA-DDs (i.e. UltraTab and UltraFlo systems have been implemented. Refer sales database in the ER calculator)
2. The water purification systems (WPS) installed in each of the CPA is located within the geographical boundary of Uganda.
3. Each water purification system bears a unique serial number (product ID) to avoid any double counting. Besides, the location of each unit (Address of school where it has been installed) has also been recorded in the sales receipt (Refer sales database in the ER calculator).
4. The water purification system installed under these CPAs do not consume any fossil fuel.

Thus, the CPAs have been implemented as defined in the CPA-DDs and in compliance with the requirements of the PoA.

Documentation provided by project participant

1. The installation log of installation of first unit in each CPA as an evidence of CPA implementation
2. Technical specifications of the WPS installed
3. ER calculator including the sales database

DOE assessment **Date:** 05/08/2019

The delivery notes shared by the CME confirmed the start date of each CPA.

The compliance of the CPAs were also checked to confirm that they meet the eligibility criteria.

1. The technology implemented during the 5 CPAs (9948-0038 to 9948-0042) includes Ultra FLO and Ultra Tab systems only as checked from the sales database and the site visit observations.
2. The address given in the sales database and physical visit to the institutions confirmed that the systems have been installed within the geo-graphical boundary of Uganda.
3. The unique IDs of each purification system and details of institutions where the system is installed were checked to ensure that double counting would be avoided for each of the WPS
4. Onsite inspection confirmed that the system does not consume fossil fuel.

Thus, the verification team confirms that the CPAs have been implemented in line with the registered PoA DD.

Thus, the FAR stands closed.

Table 2. CL from this verification

CL ID	02	Section no.	E.3.6, E.3.4.2.	Date	18/07/2019
Description of CL					
PP shall explain the reason for the difference between the MR made public and the ER sheet submitted to DOE for verification					
Project participant response					Date : 02/08/2019
A calculation error was observed in the ER calculator (for QPW _y) after the MR was published for web-hosting. In the revised MR the calculation error was corrected which resulted in reduction in ERs from that specified in the MR published for webhosting.					
Documentation provided by project participant					
PoA 9948 MP#2 v2.1 02082019 Uganda					
DOE assessment					Date: 05/08/2019
The calculation error has been rectified in the ER calculator (For QPW _y) and the revised MR incorporated the corrected value.					
Thus, the CL stands closed.					

CL ID	03	Section no.	E.2.1	Date	18/07/2019
Description of CL					

1. CME shall demonstrate compliance with requirement stated on page 66 of the PoA DD:

“The water purification technology/equipment must achieve compliance with either: a relevant national standard or (d) The interim performance targets as per “Evaluating household water treatment options: Health based targets and microbiological performance specifications” (WHO, 2011).”

Project participant response	Date : 02/08/2019
<p>1. As per table A.2.4, page 52, of the “Evaluating household water treatment options: Health based targets and microbiological performance specifications” (WHO 2011), free chlorine disinfection by default performs better than the interim level specified on page 7 of the report, therefore the water purification system installed under the CPAs achieve compliance. This has been also confirmed in page 33 and 35 of validation FVR (CPA inclusion) https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/5J36IFUKQVNMRA0OZPGLH9C7STED1W/vi ewCPAs?s=60).</p>	
Documentation provided by project participant	
NA	
DOE assessment	Date: 05/08/2019
<p>The compliance of the systems with “Evaluating household water treatment options: Health based targets and microbiological performance specifications” (WHO 2011) report was confirmed from the CPA inclusion report. Thus, the CL stands closed.</p>	

CL ID	04	Section no.	E.3.4.2, E.3.1.	Date : 18/07/2019
Description of CL				
<p>1. CME shall clarify why the last date of installation considered under the current monitoring is Apr 30, 2019 and not the end of monitoring period?</p> <p>2. For parameter $N_{y,i}$:</p> <ul style="list-style-type: none"> Please explain the monitoring of this parameter as it seems it was not prescribed on sampling basis. Considering that the validating DOE did not visit, how this information was captured by CME and will it change over a period of time for a given device and if yes how the new value would be captured by CME and if not, why it is expected that it won't change. Additionally, based on how CME recorded these numbers for each device, how the number appears to be assumption because several figures are like 200, 300, 400 under column H to column K, which eventually feeds to column R 				
Project participant response				Date : 02/08/2019
<p>1. As per the registered PoA-DD page 59 “products deployed under the project activity are assumed be in operation as of the start of the next month following the date of sale”. Thus, any installation in the month of May 2019 will be eligible for crediting only in the month of June 2019. Given, the current monitoring period is ending in May 2019, therefore only the units installed in April 2019 (up to 30-April-2019) are eligible for crediting under the concerned monitoring period. Thus, the CME has considered 30-April-2019 as the cut-off date of installation for this monitoring period.</p> <p>2. Parameter $N_{y,i}$:</p> <ul style="list-style-type: none"> The CME has monitored parameter $N_{y,i}$ (person / equipment) for each school at the time of distribution of the system in the school and recorded it on the purchase order. The parameter is marked as continuous as the new installations will keep on taking place and at the time of each installation, this will be monitored for the given school. To capture the change in the student and staff count, CME will monitor the parameter $N_{y,i}$ for each school at least biennially and update the student and staff count in its database management system (Salesforce). The updated value of $N_{y,i}$, will be used for calculation of the ERs in the subsequent monitoring periods, as applicable. The numbers are not assumptions but actual number of students and staff in the school as reported by the school representative and recorded in the PO which is signed by the school representative. Refer the response to the above CL Refer the response to the above CL 				
Documentation provided by project participant				
NA				
DOE assessment				Date: 05/08/2019

1. The PoA DD page 59 requires that the systems shall be credited for ERs only from the start of next month. Thus, all the system installed in May 2019 will be credited in June.
Thus, they have not been listed now in the database. Closed
2. Parameters $N_{y,i}$:
The parameter value is noted at the time of installation by the CME and as the number of systems increases over the time, the value will change continuously. The institutions were checked to confirm that PP is recording this information in database and confirm the implementation in line with PoA DD.
For the current monitoring, the value of the parameter was verified from the sales database and purchase orders.
As per the CPA DDs (88948-0038 - 9948-0042) page 17, The value of $N_{y,i}$ is effectively the number of people in the institution. The number of people in the institution will be updated (at least biennially) to reflect change in the institution size over time. The value will be updated in the sales database biennially. Closed

Thus, the CL stands closed.

Table 3. CAR from this verification

CAR ID	05	Section no.	C.1	Date	:18/07/2019
Description of CAR					
<ol style="list-style-type: none"> 1. The value of the Ultra Flow and Ultra Tab system for CPA 42 on page 14 of the MR is inconsistent with the ER sheet. 2. The dates of installation for CPA 40,41, 42 on page 14 is inconsistent from the Sales Database in the ER sheet. 					
Project participant response					Date : 02/08/2019
<ol style="list-style-type: none"> 1. The value of the UltraFlo and UltraTab system for CPA 42 on page 14 of the MR has been made consistent with ER sheet in the revised MR. 2. The dates of installation of the first unit for CPA 40, CPA 41, CPA 42 on page 14 of the MR have been made consistent with the Sales Database in ER Calculator in the revised MR. 					
Documentation provided by project participant					
PoA 9948 MP#2 v2.1 02082019 Uganda					
DOE assessment					Date : 05/08/2019
<ol style="list-style-type: none"> 1- The erroneous entry of the value of UltraFlo and UltraTab system on the MR has been corrected and found consistent with the ER sheet. Closed. 2- The erroneous entry of the date of installation of the first unit for CPA 40, 41, 42 on the MR has been corrected and found consistent with the Sales database in ER calculator. Closed. 					
Thus, the CAR stands closed.					

CAR ID	06	Section no.	E.3.6.1	Date	: 18/07/2019
Description of CAR					
As per the template guidelines, CME shall Provide sample calculations for all formulae used to calculate baseline GHG emissions or baseline net GHG removals, applying actual values under section F.1.					
Project participant response					Date : 02/08/2019
The sample calculations for all formula used to calculate baseline GHG emission or baseline net removals applying actual value has been added under section F.1 for the revised MR. The sample calculations presented are for CPA 38 as an illustration.					
Documentation provided by project participant					
PoA 9948 MP#2 MR v2.1 02082019 Uganda					
DOE assessment					Date : 05/08/2019
CME has clearly mentioned the sample calculations for each of the formulae involved in the baseline calculations along with the description of notations for each parameter in the revised MR. All the notations were checked and found to be in-line with the applied methodology. Thus, the CAR stands closed.					

CAR ID	07	Section No.	E.3.4.2.	Date	:08/08/2019
Description of CAR					

For the parameters:	
<ol style="list-style-type: none"> For the parameters: Water quality, Existence of PDN of safe drinking water and Operational units, the MR says that the source of data is sampling surveys under section E.2. However, there was no sampling done for the current monitoring period. For the parameters: $f_{NRB,y}$, $EF_{projected_fossilfuel}$, η_{wb} : , the MR says that the source of data is MP#1 MR, however it is not clear how the values of these parameters are determined and if the results are valid for the current monitoring period. For the parameter, $T_{y,i}$: total number of Water Purification Systems installed are 9 UltraFLO and 10 UltraTAB, However the Sales database under column F indicates 81 units? 	
Project participant response	Date :08/08/2019
<ol style="list-style-type: none"> For the parameters: Water quality, Existence of PDN of safe drinking water and Operational units, the source of data is monitoring surveys and not sampling surveys as 100% population has been monitored. The same has been rectified in the revised MR submitted. The monitoring parameter $f_{NRB,y}$ is calculated based on “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). In MP1, CME had used national data to determine the % users using biomass/ fossil fuel (refer MP1 MR, page 16, section E.2). Further, the registered CPA-DDs section B.5.1, data/parameter table ($f_{NRB,y}$) mentions “the value established in the previous monitoring period can be used for the next monitoring period, in case more recent data is not available.” The data source used for determining $f_{NRB,y}$ in MP1 is UNHS report dated 2018. No more recent national study, providing information on % population using different fuel types, is available. Hence MP1 value has been used in MP2. Similarly, parameters $EF_{projected_fossilfuel}$ and η_{wb} are also determined using national or regional data and may use values established in previous MP in case more recent data is not available. $EF_{projected_fossilfuel}$ is calculated using UNHS 2018 report which remains most recent national data as explained above. The parameter η_{wb} is based on CITIZENS’ SURVEY ON UGANDA VISION 2040 which remains the most recent national data on penetration of various cooking technology (unimproved / improved / fossil fuel stoves) in Uganda. Hence the same has been used. Being most recent data available, these are deemed valid and applicable to MP2. in the ER calculator, worksheet “Sales Database” column Q, the total distributed water purification system ($T_{y,i}$) has been determined. Total 19 (9 UltraFlo and 10 UltraTab units) systems are deemed installed during the monitoring period. As per the section B.5.1, additional comment in data/parameter table for $T_{y,i}$, mentions the following: “in case of Ultra tabs, parameter $T_{y,i}$ shall be the number of institutions where Ultra Tabs are being supplied. Thus, each school receiving Ultra tab will be counted as one unit, for the purpose of determining $T_{y,i}$” The same approach has been used in column Q and emission reductions have been determined accordingly. 	
Documentation provided by project participant	
PoA 9948 MP#2 MR v3.0 08082019 Uganda	
DOE assessment	Date: 08/08/2019

1. The source has been revised. It now mentions monitoring surveys.
2. The CPA DDs state under B.5.1. that "In case more recent data is not available use value established in previous monitoring period.". The data was for percentage of users is dated in 2018 for $f_{NRB,y}$, $EF_{projected_fossilfuel}$ and 2015 for nwb. The parameters are assessed in detail under section E.3.4.2. of the verification report. Thus, in the absence of any other reliable of recent data, the source of parameter is written as MR#01 in the current MR, which was found to be correct. The applied value was found to be correct. The value has been determined is in line with the PoA DD and CPA DDs.
3. For Ultra Tab each unit is 100 tablets which treats 10000L water. Each school receives different number of units and fresh set of units are provided once the current set of tablets are used. However, to be conservative, the CME has assumed each institution receiving Ultra Tab systems is one unit. It was confirmed that through interview with the head teachers that they receive calls from the CME customer center to check if the tablets are finished or not. There are posters also in the schools, displaying the phone number of the CME office in the country so that school team can contact them if the tablets are about to get finished. For Ultra FLO, each unit is considered to claim for the ERs which is in line with the applied methodology.

The CME has clearly shown the no. of systems claiming ER under column Q of the sales database and thus it is clear that the total number of systems is 19.

Thus, the CAR stands closed.

Table 4. FAR from this verification

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

There is no FAR from this verification.

Document information

Version	Date	Description
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.

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History of the document*						
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			Name	Date	Name	Date
2.0	11/06/2019	Adoption of latest forms	Shreya Garg	11/06/2019	Anshika Gupta	13/06/2019
1.0	04/05/2018	Guidelines updated	Shreya Garg	04/05/2018	Anshika Gupta	04/05/2018
*This table is for ESPL internal document control purpose only						