



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

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	2.0	
Completion date of the verification and certification report	26/10/2020	
Monitoring period number and duration of this monitoring period	Monitoring Period Number: Third Monitoring Period: 23/05/2019-31/12/2019 (both days inclusive)	
Number and version number of the monitoring report to which this report applies	Version: 3.0 Monitoring Report Number: 4	
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	No
	Nigeria	No
	Kenya	Yes
Applied methodologies and standardized baselines	Methodology: AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0) Standardized Baseline: Not Applicable	
Mandatory sectoral scopes	3: Energy Demand	
Conditional sectoral scopes, if applicable	Not Applicable	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	558,747 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	153,508 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 emissions 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 safe drinking water.

In absence of the PoA, boiling water using fossil fuels/non-renewable woody biomass would have been the means of availing safe drinking water. The project Water Purification Systems (WPS) provides safe drinking water without the use of non-renewable biomass/ fossil fuel, thus leading to a reduction in Green-house gas (GHG) emissions attributed to boiling in the baseline. This verification covers implemented CPAs 9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1 (16 CPAs).

The verification team confirms that the total emission reductions achieved under this monitoring period 23/05/2019 to 31/12/2019 (inclusive of both days) are 153,508 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-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1 (16 CPAs) 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-DDs 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;

- (i) Contract with CME and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- (ii) Completeness check of Monitoring Report
- (iii) Publication of Monitoring Report at UNFCCC website
- (iv) Desk review (refer Section D.1 of this report) of Monitoring Report/13/ and corresponding ER sheet /4/ by verification team and planning of remote audit (including sampling approach (refer Section D.4 of this report) to be applied)
- (v) Remote audit survey (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
- (vi) Follow up activities e.g., interviews (refer Section D.3 of this report)
- (vii) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)

- (viii) 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)
- (ix) 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).
- (x) 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 16 CPAs (**9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1**) for the monitoring period **23/05/2019 – 31/12/2019** (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 26/10/2020 /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 Kenya during the period **23/05/2019 – 31/12/2019** (including both days) amount to **153,508 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	N	Y	Y
2.	Verifier	IR	Sahni	Rahi	Central Office	Y	N	N	Y
3.	Verifier	IR	Vatsa	Vaishali	Central Office	Y	N	Y	Y
4.	Technical Expert	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
5.	Methodology Expert	IR	Mahala	Deepika	Central Office	Y	N	Y	Y
6.	Local Expert	IR	Njata	Virginia	Central Office	Y	N	Y	Y

*Remote Audit survey was conducted instead of on-site audit. Refer to section D.2 for details.

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	Central Office
2.	TA to TR	IR	Gautam	Ashok	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	The survey is conducted for representative samples of population, which may impact the population significantly. Surveyors may be unsupervised at the site.	Verification team randomly selected the samples from CME surveyed sampled WPS. The recorded survey forms by CME were checked with DOE remote survey 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 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 as per para 308 of CDM VVS for PoA Ver 02.0	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	167,888	153,508*
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 (%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
9948-P1-0004-CP1, 9948-P1-0023 – 9948-P1-0037-CP1						
<u>For water purifier</u>						

CDM-PoA-VCR-FORM

QPW _y	Annually	16(calculated parameter for each CPA)	16(100%)	There were errors in calculation which have been corrected (16).	All the errors have been corrected*	No extrapolation is required as 100% values checked and corrected.
nWB	Continuously	1	1	None	NA	NA
T _{y,i}	Continuously	2,471 UltraFLO 2,234 UltraTAB 138 Multi-UV Barrier (4,843)	2,471 UltraFLO 2,234 UltraTAB 138 Multi-UV Barrier Sales database/5/ was checked for the information. 11 systems were checked during remote survey for cross check.	None	NA	NA
N _{y,i}	Continuously	4,843 (one values for each institution and 16 values (average value for each CPAs)	Entire sales database was checked for the information.	None	NA	NA
Water Quality _i	Annually	66	11 (based on acceptance sampling)	None	NA	NA
Operational Units _i	once per verification	70	11 (based on acceptance sampling)	None	NA	NA
f _{NRB,y}	Continuously	1	1	None	NA	NA
EF _{projected_fossil_fuel}	Continuously	1	1	None	NA	NA
Existence of public distribution network of safe drinking water	Annually	66	11 (based on acceptance sampling)	None	NA	NA
EC _{pJ,i,y}	Annually	1	1	None	NA	NA

*The ERs mentioned in MR (public) and the submitted ER sheet was found to be different An inconsistency was identified between the MR and the ER sheet after the MR was published for webhosting by the DoE. Thus, CAR#01 was raised and resolved for the inconsistency identified.

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%.

SECTION D. Means of verification

D.1. Desk/document review

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

- A review of data and information provided for its completeness.
- 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 inspection¹

Duration of on-site inspection: NA*				
No.	Activity performed on-site	Site location	Date	Team member
1.	Interview of the monitoring personnel and CME representative	-	04/06/2020-05/06/2020	Deepika Mahala and Vaishali Vatsa, Virginia Njata
2.	Interview of the head of institution related to the DoE sampled project devices	-	04/06/2020-05/06/2020	Deepika Mahala and Vaishali Vatsa, Virginia Njata

*No physical site-visit was conducted. Alternative means were adopted under which remote audit survey was also conducted

Mandatory Site-visit

The site-visit for the current verification was mandatory as there were sixteen new CPAs being verified for the first time in-line to para 321 of VVS for PoA Version 2.0 /9/.

Planned Site-Visit

The on-site visit was initially planned from 23/03/2020 – 26/03/2020. In view of the COVID-19 outbreak and increased exposure due to international travel and nation-wide lockdown in India (DOE office country), on-site visit was not possible as per original plan. An advisory issued by the Indian Ministry of Health & FW on 19/03/2020 said that “No scheduled international commercial passenger aircraft shall take off from any foreign airport for any airport in India, after 0001 hrs GMT of March 22, 2020 (*i.e. 0531 hrs Indian Standard Time (IST) of March 22, 2020) - these instructions shall remain in force till 0001 hrs GMT of March 29, 2020”/43/.

Also, the Indian government had imposed 21-day lockdown. In an attempt to slow spread of the coronavirus with effect from 26/03/2020- 15/04/2020. During this, period there was a total ban on venturing out of the homes/41,43/. In such a situation, conducting a site visit in a foreign country became an implausible activity for the verification team. Additionally, international travel was suspended by the government of India.

Issue with the postponement of Site-visit:

The on-site audit assessment for this verification could not be postponed as the cases of coronavirus started rising suddenly with a very high number of death rates in many countries/44/. The Indian government also foresaw the same situation to happen in India. The lockdown was imposed across the country. By each passing day it was not clear whether the lockdown would get relaxed or extended. Delaying the site visit would lead to delayed issuance of the CERs. The CME relies upon the CER revenue generated from the project for the working capital of the project. It was clarified by the CME that along with the impact on the working capital of the project, the delay might also cause ERPA/35/ being cancelled. In light of the argument and evidence (CME Mail /34/) made available by the CME a clarification for the exemption of the onsite visit was sought from CDM EB.

Exemption by CDM EB

The CDM-EB site visit advisory/48/ allow CDM Designated Operational Entities (DOEs) to apply alternative measures of validation/verification to mandatory on-site inspections until 31 December 2020. A declaration (Checklist for alternative means for site-visit exemption in accordance with the ESPL CDM QMS) was filled by TL and submitted to the Technical Manager for approval before the remote survey. For this verification

¹ This table lists down the activities conducted during the remote audit survey

remote survey (through telephonic call) has been scheduled with the CME, CPAI and Institution head (of the selected samples) to check the project related details .

Alternative means applied

Following alternative means have been used to verify the project details:

1. Remote Audit Survey including interviews CME/CPA Implementer, end users and the personnels involved in monitoring and preparation of the monitoring report and related documents. Random samples for eleven WPS users (details on sampling provided in section D.3) were drawn from the CME's monitoring sample survey sheet and interviewed through skype calls.
2. Photographic evidence of the water quality testing kits /30/, UID photographs of WPS IDs/27/, Water Quality Test Photographs /36/, Monitoring Survey (filled) Forms/18/.
3. Complaint Log (Scanned Sample) /37/
4. Monitoring personnel certificates /20/
5. Review of Other Documentary evidences (ER sheet/4/, Sample Size Calculation sheet, Monitoring Data sheet)
6. Videos of the 11 selected samples showing the WPS installed along with the basic information related to the installation (Purchase order/14/, Delivery Notes/21/) and the interview of the respective school representative.

D.3. Interviews²

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Brown	Julie	Impact Carbon	04/06/2020-05/06/2020	Sampling Surveys	Deepika Mahala, Vaishali Vatsa, Virginia Njata
2.	Neville	Tim	Impact Water	04/06/2020-05/06/2020	Implementation	Deepika Mahala, Vaishali Vatsa, Virginia Njata
3.	Kumar	Ritesh	Climate Secure Services India Private Limited	04/06/2020-05/06/2020	ER calculation and Sampling	Deepika Mahala, Vaishali Vatsa, Virginia Njata
4.	Turgesen	Mark	Impact Water	04/06/2020-05/06/2020	Database management	Deepika Mahala, Vaishali Vatsa, Virginia Njata
5.	Huelsenbeck	Mark	Impact Water	04/06/2020-05/06/2020	Monitoring surveys	Deepika Mahala, Vaishali Vatsa, Virginia Njata
6.	Lohia	Rohit	Climate Secure Services India Private Limited	04/06/2020-05/06/2020	Monitoring Report, Sampling methodology, ER calculations	Deepika Mahala, Vaishali Vatsa, Virginia Njata
7.	-	Nihar	Climate Secure Services India Private Limited	04/06/2020-05/06/2020	ER calculation and Sampling	Deepika Mahala, Vaishali Vatsa, Virginia Njata
8.	Kibagendi	Everline	Impact Water	04/06/2020-05/06/2020	Monitoring surveys	Deepika Mahala, Vaishali Vatsa, Virginia Njata
9.	Githinji	Simon	Focus Academy	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa

² The interviews were conducted via Skype call.

10.	-	Nyaga	Thugunui Secondary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
11.		Stella rhoda	New Hope Academy	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
12.	-	-	Chepkero Primaary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
13.	Nabwire	Grace	St.Peter's Buria Primary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
14.	mugambi	Charles	MCK Lewa Downs Priimary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
15.	Omollo	Victor	Pawteng Primary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
16.	Njage	Samuel	Kigogo Ini Primary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
17.	Madafu	Benard	Nyadhi Primary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
18.	Munyo	Benjamin	AIC Chepkemel Primaary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa
19.	Kimani	Christopher	Rev Kitonyi Secondary School	05/06/2020	DOE Remote Audit Survey	Deepika Mahala, Vaishali Vatsa

D.4. Sampling approach

CME Sampling approach

For the purpose of sampling, CME has followed the CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities version 4.0/31/ and Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 8/19/ which is in-line with the revised accepted PoA DD/1/. The CME has applied Stratified Random Sampling at PoA level for different monitoring parameters as per validated revised accepted/registered PoA DD /1/and registered CPA DDs/2/. 95/10 confidence precision was applied by CME in the sampling which is appropriate as per the single sampling covering 16 CPAs. Thus, CPA wide single sampling plan was used by the CME. The CME applied stratified random sampling at the unit level, giving an equal chance of selection to each unit covered under the CPAs. In the case of institutions having multiple systems (UltraFlo / Multi Barrier UV especially), the system with the unique product ID randomly picked using online random number generator was monitored by CME.

DOE Sampling approach

In order to meet the requirements of paragraph 28 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 8/19/ the verification team applied acceptance sampling in the verification (in accordance with para 28).

According to para 30 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 8/19/. The maximum errors associated with the determination have been kept at following level:

- (a) A 10 per cent chance that the DOE will wrongly reject the project participants' or the coordinating/managing entity's records (i.e. reject a set of records of acceptable quality);
- (b) A 10 per cent chance that the DOE will wrongly accept the project participants' or the coordinating/managing entity's records (i.e. accept a set of records which is unacceptable).

Verification team has applied following AQL and UQL level using its own judgement:

0.5% AQL- Acceptable quality level (AQL) or the level of assurance, that is the proportion of acceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the DOE sample records

20% UQL- Unacceptable quality level (UQL), that is the proportion of unacceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the DOE sample records

The verification team selected the sample size as 11 WPS for the purpose of remote survey to check the acceptability of CME's sampling results or otherwise.

Sample Size:

CPA Ref No.	AQL	UQL	Producer Risk	Consumer Risk	Sample Size; Min	Acceptance No.
9948-P1-0004-CP1, 9948-P1-0023 to 9948-P1-0037-CP1	0.5%	20%	10%	10%	11	0

The verification team selected the random samples from CME's sampled units to check the acceptability (or otherwise) of the data for each such record with CME's sample records, and determine if the CME's sample records meet the requirements.

The distribution breakup from sales database is as follows:

Type of WPS	No. of units
Ultra FLO	2,471
Ultra Tab	2,234
Multi-Barrier UV	138

The DOE picked 11 samples randomly (using website www.randomizer.org) of CME's monitored samples (as part of monitoring survey) as per distribution ratio. As per plan 11 (WPS) were required and DOE surveyed 5 samples of Ultra FLO type and 4 samples of Ultra Tab type and 2 sample of Multi-UV barrier type. No inconsistency between the CME results and DOE's observations during the remote survey were found.

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	-	-	-
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 ³	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation	-	-	-

³ 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).

activities			
Component project activities			
Compliance of the CPA implementation with the included CPA design document	-	CAR#02	-
Post-registration changes	-	-	-
<ul style="list-style-type: none"> Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents 	-	-	-
<ul style="list-style-type: none"> Corrections 	-	-	-
<ul style="list-style-type: none"> Changes to the start date-of the crediting period 	-	-	-
<ul style="list-style-type: none"> Inclusion of a monitoring plan 	-	-	-
<ul style="list-style-type: none"> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents 	-	-	-
<ul style="list-style-type: none"> Changes to the project design 	-	-	-
<ul style="list-style-type: none"> 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	-	-	-
<ul style="list-style-type: none"> Data and parameters fixed ex ante or at renewal of crediting period 	-	-	-
<ul style="list-style-type: none"> Data and parameters monitored 	CL#02 CL#03	CAR#01	-
<ul style="list-style-type: none"> Implementation of sampling plan 	CL#01 CL#04	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	-	-
<ul style="list-style-type: none"> Calculation of baseline GHG emissions or baseline net GHG removals by sinks 	-	-	-
<ul style="list-style-type: none"> Calculation of project GHG emissions or actual net GHG removals by sinks 	-	-	-
<ul style="list-style-type: none"> Calculation of leakage GHG emissions 	-	-	-
<ul style="list-style-type: none"> Summary of calculation of GHG emission reductions or net GHG removals by sinks 	-	-	-
<ul style="list-style-type: none"> Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA 	-	-	-
<ul style="list-style-type: none"> Remarks on difference from estimated value in included CPA 	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	04	02	-

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 is an appropriate form and the latest version available at the time of verification/submission for request for issuance. All the sections of the aforesaid
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	form were duly filled as per the guidelines and provided all the relevant details.
Findings	No findings were raised.
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

No FAR was found to be raised during the validation of inclusion of CPAs/03/.

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, Ref No.:9948-P1-0001-CP1	No	01/05/2014	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 2, Version: 3.0, 9948-P1-0002-CP1	No	01/05/2014	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 3, Version: 1.3, 9948-P1-0003-CP1	No	08/05/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 4, Version: 01.2, 9948-P1-0004-CP1	Yes	02/07/2017	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 5, Version: 5.0, 9948-P1-0005-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 6, Version: 5.0, 9948-P1-0006-CP1	No	04/10/2017	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 7, Version: 5.0, 9948-P1- 0007-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 8, Version: 5.0, 9948-P1- 0008-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 9, Version: 5.0, 9948-P1- 0009-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 10, Version: 5.0, 9948-P1- 0010-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 11, Version: 5.0, 9948-P1- 0011-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 12, Version: 5.0, 9948-P1- 0012-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 13, Version: 5.0, 9948-P1- 0013-CP1	No	04/10/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 14, Version: 1.0, 9948-P1- 0014-CP1	No	21/11/2017	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 15, Version: 1.0, 9948-P1- 0015-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 16, Version: 5.0, 9948-P1- 0016-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 17, Version: 5.0, 9948-P1- 0017-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18, Version: 5.0, 9948-P1- 0018-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 19, Version: 5.0, 9948-P1- 0019-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 20, Version: 5.0, 9948-P1- 0020-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 21, Version: 5.0, 9948-P1- 0021-CP1	No	21/11/2017	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 22, Version: 5.0, 9948-P1- 0022-CP1	No	21/11/2017	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 23, Version: 4.0, 9948-P1- 0023-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 24, Version: 4.0, 9948-P1- 0024-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 25, Version: 4.0, 9948-P1- 0025-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 26, Version: 4.0, 9948-P1- 0026-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 27, Version: 4.0, 9948-P1- 0027-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 28, Version: 4.0, 9948-P1- 0028-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 29, Version: 4.0, 9948-P1-0029	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 30, Version: 4.0, 9948-P1- 0030-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 31, Version: 4.0, 9948-P1- 0031-CP1	Yes	18/11/2018	7.0	Yes

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 32, Version: 4.0, 9948-P1- 0032-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 33, Version: 4.0, 9948-P1- 0033-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 34, Version: 4.0, 9948-P1- 0034-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 35, Version: 4.0, 9948-P1- 0035-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 36, Version: 4.0, 9948-P1- 0036-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 37, Version: 4.0, 9948-P1- 0037-CP1	Yes	18/11/2018	7.0	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 38 supported by Republic of Korea, Version: 2.0, 9948-P1- 0038-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 39 supported by Republic of Korea, Version: 2.0, 9948-P1- 0039-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 40 supported by Republic of Korea, Version: 2.0, 9948-P1- 0040-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 41 supported by Republic of Korea, Version: 2.0, 9948-P1- 0041-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 42 supported by Republic of Korea, Version: 2.0, 9948-P1- 0042-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 43 supported by Republic of Korea, Version: 1.0, 9948-P1- 0043-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 44 supported by Republic of Korea, Version: 1.0, 9948-P1- 0044-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 45 supported by Republic of Korea, Version: 1.0, 9948-P1- 0045-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 46 supported by Republic of Korea, Version: 1.0, 9948-P1- 0046-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 47 supported by Republic of Korea, Version: 1.0, 9948-P1- 0047-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 48 supported by Republic of Korea, Version: 1.0, 9948-P1- 0048-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 49 supported by Republic of Korea, Version: 1.0, 9948-P1- 0049-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 50 supported by Republic of Korea, Version: 1.0, 9948-P1- 0050-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 51 supported by Republic of Korea, Version: 1.0, 9948-P1- 0051-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 52 supported by Republic of Korea, Version: 1.0, 9948-P1- 0052-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 53 supported by Republic of Korea, Version: 1.0, 9948-P1- 0053-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 54 supported by Republic of Korea, Version: 1.0, 9948-P1- 0054-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 55 supported by Republic of Korea, Version: 1.0, 9948-P1- 0055-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 56 supported by Republic of Korea, Version: 1.0, 9948-P1- 0056-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 57 supported by Republic of Korea, Version: 1.0, 9948-P1- 0057-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 58 supported by Republic of Korea, Version: 1.0, 9948-P1- 0058-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 59 supported by Republic of Korea, Version: 1.0, 9948-P1- 0059-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 60 supported by Republic of Korea, Version: 1.0, 9948-P1- 0060-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 61 supported by Republic of Korea, Version: 1.0, 9948-P1- 0061-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 62 supported by Republic of Korea, Version: 1.0, 9948-P1- 0062-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 63 supported by Republic of Korea, Version: 1.0, 9948-P1- 0063-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 64 supported by Republic of Korea, Version: 1.0, 9948-P1- 0064-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 65 supported by Republic of Korea, Version: 1.0, 9948-P1- 0065-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 66 supported by Republic of Korea, Version: 1.0, 9948-P1- 0066-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 67 supported by Republic of Korea, Version: 1.0, 9948-P1- 0067-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 68 supported by Republic of Korea, Version: 1.0, 9948-P1- 0068-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 69 supported by Republic of Korea, Version: 1.0, 9948-P1- 0069-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 70 supported by Republic of Korea, Version: 1.0, 9948-P1- 0070-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 71 supported by Republic of Korea, Version: 1.0, 9948-P1- 0071-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 72 supported by Republic of Korea, Version: 1.0, 9948-P1- 0072-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 73 supported by Republic of Korea, Version: 1.0, 9948-P1- 0073-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 74 supported by Republic of Korea, Version: 1.0, 9948-P1- 0074-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 75 supported by Republic of Korea, Version: 1.0, 9948-P1- 0075-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 76 supported by Republic of Korea, Version: 1.0, 9948-P1- 0076-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 77 supported by Republic of Korea, Version: 1.0, 9948-P1- 0077-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 78 supported by Republic of Korea, Version: 1.0, 9948-P1- 0078-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 79 supported by Republic of Korea, Version: 1.0, 9948-P1- 0079-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 80 supported by Republic of Korea, Version: 1.0, 9948-P1- 0080-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 81 supported by Republic of Korea, Version: 1.0, 9948-P1- 0081-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 82 supported by Republic of Korea, Version: 1.0, 9948-P1- 0082-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 83 supported by Republic of Korea, Version: 1.0, 9948-P1- 0083-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 84 supported by Republic of Korea, Version: 1.0, 9948-P1- 0084-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 85 supported by Republic of Korea, Version: 1.0, 9948-P1- 0085-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 86 supported by Republic of Korea, Version: 1.0, 9948-P1- 0086-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 87 supported by Republic of Korea, Version: 1.0, 9948-P1- 0087-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 88 supported by Republic of Korea, Version: 1.0, 9948-P1- 0088-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 89 supported by Republic of Korea, Version: 1.0, 9948-P1- 0089-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 90 supported by Republic of Korea, Version: 1.0, 9948-P1- 0090-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 91 supported by Republic of Korea, Version: 1.0, 9948-P1- 0091-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 92 supported by Republic of Korea, Version: 1.0, 9948-P1- 0092-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 93 supported by Republic of Korea, Version: 1.0, 9948-P1- 0093-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 94 supported by Republic of Korea, Version: 1.0, 9948-P1- 0094-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 95 supported by Republic of Korea, Version: 1.0, 9948-P1- 0095-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 96 supported by Republic of Korea, Version: 1.0, 9948-P1- 0096-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 97 supported by Republic of Korea, Version: 1.0, 9948-P1- 0097-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 98 supported by Republic of Korea, Version: 1.0, 9948-P1- 0098-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 99 supported by Republic of Korea, Version: 1.0, 9948-P1- 0099-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 100 supported By Republic of Korea, Version: 1.0, 9948- P1-0100-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 101 supported By Republic of Korea, Version: 1.0, 9948- P1-0101-CP1	No	26/04/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 102 supported By Republic of Korea, Version: 1.0, 9948- P1-0102-CP1	No	26/04/2019	7.0	NA

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 103 supported By Republic of Korea, Version: 1.0, 9948- P1-0103-CP1	No	11/06/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 104 supported By Republic of Korea, Version: 1.0, 9948- P1-0104-CP1	No	11/06/2019	7.0	NA
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 105 supported By Republic of Korea, Version: 1.0, 9948- P1-0105-CP1	No	11/06/2019	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	<p>The PoA aims at disseminating water purification systems (WPS) technologies to target countries like Rwanda, Nigeria, Uganda, and Kenya for addressing the problem of safe drinking water. For this monitoring period, 15 CPAs of Type 2: Technologies for institutional water consumption, with no project emissions (i.e. from 9948-P1-0023-CP1 to 9948-P1-0037-CP1) and 1 CPA (9948-P1-0004-CP1) of Type 3: Technologies for institutional water consumption, with project emissions were covered under the MR. This monitoring period includes the implementation and monitoring of 16 CPAs from 9948-P1-0004-CP1,9948-P1-0023-CP1 to 9948-P1-0037-CP1 in Kenya. The coordinating and managing entity (CME) is Impact Carbon and Impact Water is the CPA Implementer/15/. Their roles and responsibilities are defined in the signed agreement.</p> <p>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.</p> <p>CPAs covered in the MR involve dissemination of three types of water purification systems:</p> <ol style="list-style-type: none">1. Ultra FLO2. Ultra Tab3. Multi-UV Barrier											
	<table><tr><td>Description</td><td>Ultra FLO</td><td>Ultra Tab</td><td>Multi-UV Barrier</td></tr><tr><td>Size / Dimensions</td><td>Cartridge Length: ~12 cm Cartridge height:</td><td>Strip size: ~13 cm X ~5.5 cm (100 tablets per</td><td>System Height: ~44cm Svstem Length:</td></tr></table>				Description	Ultra FLO	Ultra Tab	Multi-UV Barrier	Size / Dimensions	Cartridge Length: ~12 cm Cartridge height:	Strip size: ~13 cm X ~5.5 cm (100 tablets per	System Height: ~44cm Svstem Length:
	Description	Ultra FLO	Ultra Tab	Multi-UV Barrier								
	Size / Dimensions	Cartridge Length: ~12 cm Cartridge height:	Strip size: ~13 cm X ~5.5 cm (100 tablets per	System Height: ~44cm Svstem Length:								

	~10 cm Cartridge circumference: ~22 cm	packet)	~36 cm System Width: ~19 cm
Application	Piped water	Un-piped water	Piped water
Flow rate	20L/min	1 tablet treats 100 L	5-12 L/min
Capacity/lifespan	340,000 L / 5-year expiry	10,000 L / 5-year expiry	7 years
Fixed or Portable	Fixed	Portable	Fixed
Removal of E. Coli	99 (2-log)	99 (2-log)	99 (4-log)
Watts/Voltage	Not applicable	Not applicable	14

All the deployed systems meet the eligibility requirements of the PoA DD, page 65/1/. The details of the systems were verified from the manufacturer's specification/28/ provided by the CME.

Through the remote audit survey/38/ the installation of WPS claimed by the CME were checked and found to be in-line with the technical description provided in the registered PoA-DD/1/ and Monitoring report/13/.

Also, the verification team checked the implementation status of the project activity through interviewing the CME, CPA implementer, Monitoring personnel and WPS User as defined in the registered PoA DD/1/, and MR/13/.

Interview of the monitoring personnel via skype call involved in the QA/QC procedures revealed that the procedures mentioned in the PoA DD/1/ are being followed and the Training records// regarding the trained personnel were checked.

The project location and coordinates shared by CME were verified using the "<https://www.latlong.net/place/mombasa-kenya-4229.html>" and found to be in-line with the registered PoA-DD/1/ and MR/13/.

Further, based on the review of sales database (presented in ER sheet)/4/, remote survey observations and interview conducted during remote audit survey, 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/.

A remote survey was conducted by the verification team; 11 WPS (5 for Ultra FLO, 4 for Ultra TAB and 2 Muti-barrier UVunits) were surveyed. The uniqueness of the system was 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:

- a) Type of system (UltraFLO / UltraTAB/Multi-barrier UV)
- b) Unique serial number of the units installed / distributed

	<p>c) Date of installation / distribution</p> <p>d) Address and details of school and contact detail (if available) of representative</p> <p>e) Type of School (Boarding / Non-boarding)</p> <p>f) School population count (number of students / staff in boarding / non-boarding category)</p> <p>The information of the was also verified from the CME database/5/ which was cross checked for 11 WPS 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 ERs 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/1/ and found to be correct.</p>
Findings	No findings were raised.
Conclusion	<p>In view of the information's verified through the remote audit survey, 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 153,508 tCO₂e. Justification for this 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 through interviewing the CME, CPA Implementer, Monitoring Personnel and WPS End-users and reviewing the selected sample videos 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 with the CME and other people involved in the project.</p> <p>CPA implementers fill purchase order/14/ to note the details of the institution and provide delivery note/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 by interviewing the monitoring personnel 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 surveyed during remote audit survey 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/Multi-barrier UV) 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 Aquagenx tests (water quality tests) 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 remote 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</p>
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	and survey and test results, in the sales data and monitoring data mentioned in ER calculator /5/. 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 Aquagenx tests and the monitoring survey form filling. The evaluation of the water quality test is done in the country office. The verification team also checked training records of the monitoring & data recording personnel/20/. 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/.
Findings	No findings were raised.
Conclusion	The verification team from the desk review and remote audit survey 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 identified/proposed.

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 no. and approval date:

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

E.2.3.5. Addition of CPA inclusion template

N/A

E.2.3.6. Change of coordination/managing entity

N/A

E.2.3.7. Changes specific to afforestation and reforestation activities

N/A

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 designed to replace the existing fossil-fuel/non-renewable woody biomass means of purifying water by installing low emission / emission free Water purification systems instead to provide safe drinking water. Impact Water is the implementer of the CPAs and has fully implemented the CPAs with the help of Sales and Distribution Partner (SDP). The same has been verified from the agreement between the CME and CPAI/15/. This monitoring
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period includes the implementation and monitoring of 16 CPAs- CPA 9948-P1-0004-CP1,9948-P1-0023-CP1 to 9948-P1-0037-CP1 in Kenya.

CPA no.		No. of units			Estimated ERs	ERs achieved
		FLO	TAB	Multi-barrier UV		
9948-P1-0004-CP1	15/06/2017 - 14/06/2024	0	0	138	14,802	5,787
9948-P1-0023-CP1	18/11/2018 - 17/11/2025	343	0	0	36,263	12,918
9948-P1-0024-CP1	18/11/2018 - 17/11/2025	275	30	0	36,263	9,835
9948-P1-0025-CP1	18/11/2018 - 17/11/2025	183	122	0	36,263	9,363
9948-P1-0026-CP1	18/11/2018 - 17/11/2025	161	141	0	36,263	8,596
9948-P1-0027-CP1	18/11/2018 - 17/11/2025	261	53	0	36,263	10,012
9948-P1-0028-CP1	18/11/2018 - 17/11/2025	283	31	0	36,263	11,868
9948-P1-0029-CP1	18/11/2018 - 17/11/2025	177	137	0	36,263	9,222
9948-P1-0030-CP1	18/11/2018 - 17/11/2025	29	285	0	36,263	6,585
9948-P1-0031-CP1	18/11/2018 - 17/11/2025	16	298	0	36,263	7,131
9948-P1-0032-CP1	18/11/2018 - 17/11/2025	63	251	0	36,263	8,548
9948-P1-0033-CP1	18/11/2018 - 17/11/2025	102	212	0	36,263	11,135
9948-P1-0034-CP1	18/11/2018 - 17/11/2025	79	235	0	36,263	10,461
9948-P1-	18/11/2018 - 17/11/2025	133	181	0	36,263	11,173

	0035-CP1						
	9948-P1-0036-CP1	18/11/2018 - 17/11/2025	191	121	0	36,263	11,084
	9948-P1-0037-CP1	18/11/2018 - 17/11/2025	175	137	0	36,263	9,790
		Checked from the UN website /12/	Checked from sales data base/5/	Checked from sales data base/5/		Checked from the ER sheet/4/	Checked from the ER sheet/4/
<p>The start date of crediting period, inclusion dates of the CPAs were checked from the UN website /12/. The First WPS Installation dates were checked from the screenshots of salesforce database/49/.</p> <p>As per the registered PoA-DD page 59 “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”. 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 31/12/2019, November 2019 (up to 30/11/2019) are eligible for crediting under the concerned monitoring period. Thus, the CME has considered 30/11/2019 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 CPAs lies between 5,787 tCO₂e –12,918 tCO₂e, which is below the threshold of small-scale activity. It has been confirmed that:</p> <ol style="list-style-type: none"> 1. Each of these CPAs achieves an annual emission reduction equal to or less than 60,000 tCO₂e 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 600tCO₂e 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 the CPA and Impact Water is the CPAI/15/.</p> <p>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 Kenya.</p>							
Findings	No findings were raised.						
Conclusion	<ol 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-DD. b) No specific monitoring equipment had to be installed according to the monitoring plan. c) It is also confirmed, through the remote audit survey and review of the supporting documentation that physical features of the component CPA have 						

	<p>been implemented in accordance with the CPA-DD.</p> <p>d) The CPA was also found to be completely operational in line with the CPA-DD.</p> <p>e) The information provided in the relevant sections of the monitoring report appropriately describes the implementation and operational status of the PoA</p>
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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. There is no temporary deviation applicable to this monitoring period. However, PP had sought temporary deviation during the previous MP for the CPAs under verification. The temporary deviation was submitted along with the issuance request which was published on 21/10/2020. The validation report is version 3.0 dated 21/09/2020/50/.

E.3.2.2. Corrections

N/A

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

Not Applicable

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

Not Applicable

E.3.2.6. Changes to the project design

N/A

E.3.2.7. Changes specific to afforestation and reforestation activities

Not Applicable

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-DDs/2/ were reviewed against the monitoring requirements of the applied methodology AMS-III.AV version 04 /6/ as well as PoA-DD/1/ with reference to the technology involved. Based on this review, it was found that the monitoring plan contained in the CPA DDs/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/1/ and applied methodology AMS-III.AV version 04/6/.
Findings	No findings were raised.
Conclusion	The monitoring plan is in line with the approved methodology AMS III A.V Ver.4/6/, that is included in the CPA-DDs/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 Kenya fall under Case 1. It was checked from CPA DD and study report MICS 2016-2017 that less than 60% of the country has access clean drinking water, hence Case 1 is applied.
Findings	No findings were raised.

Conclusion	The value applied is found to be consistent with the registered CPA-DDs/2/ which is correct and justified.
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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 KJ/L °C and is found to be consistent with the CPA-DD/2/.
Findings	No findings were raised
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 °C which is found consistent with the values in CPA-DD/2/.
Findings	No findings were raised
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

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 °C and is found to be consistent with the CPA-DD/2/.
Findings	No findings were raised
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 KJ/L and is found to be consistent with the CPA-DDs/2/.
Findings	No findings were raised
Conclusion	The value in the MR and ER sheet /13,4/ are consistent with the registered PoA-DD/1/ & CPA-DDs/2/. The applied value is correct and justified.

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 and is found to be consistent with the CPA-DDs/2/.
Findings	No findings were raised
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 2L/Persons/day (for day schools) and 3.5L/persons/day (for boarding schools, prisons) and is found to be consistent with the CPA-DD/2/.
Findings	No findings were raised
Conclusion	The value in the MR and ER sheet /13,4/ are consistent with the registered PoA-

	DD/1/ & CPA-DD/2/. The applied value is correct and justified.
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Emission Factor for electricity generation for source j in year y, $EF_{EL,j,y}$, tCO₂/MWh

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the "Tool 05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, Version 1.0"/39/. The value considered is 1.3 tCO ₂ /MWh and was found to be consistent with the CPA-DD/2/.
Findings	No findings were raised
Conclusion	The value in the MR and ER sheet /13,4/ are consistent with the registered PoA-DD/1/ & CPA-DD/2/. The applied value is correct and justified.

Average technical transmission and distribution losses for providing electricity to source j in year, TDL_{j,y}, Fraction

Means of verification	The value of the parameter is fixed at the time of validation and the value is sourced from the "Tool 05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, Version 1.0"/39/. The value considered is 20% which is a default value sourced from Tool 05 and was found to be consistent with the CPA-DD/2/.
Findings	No findings were raised
Conclusion	The value in the MR and ER 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/year):**

Means of verification	Criteria/Requirements	Assessment/Observations
	Measuring /Reading /Recording frequency	Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	NA
	How were the values in the monitoring report verified?	<p>The value applied is 730,976,558 litres/year.</p> <p>The parameter is a calculated parameter determined through following equation:</p> $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ <p>The formula is correct and in line to the applied methodology/6/, PoA DD/1/ and CPA DDs/2/.</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</p>

		operation is May 1” Thus, for all the systems installed in November, ERs will be claimed in December 2019. The ER sheet/4/ was checked to confirm that the value of 730,976,558 Lt/yr has been applied correctly.
	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 and CAR#01 has been raised and successfully closed.	
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, η_{wb} , fraction

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?	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. The GACC report for Kenya, Market Assessment -Sector Mapping by GVEP International, 2012/16/ and Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited was reviewed to confirm that the all public institutions cook with wood on traditional three stone fire. Therefore, a value of 0.12 efficiency for unimproved stove was applied.
	If applicable, has the reported data been cross-checked with other available data?	Yes. Sampled number of entries (11 WP systems) were surveyed. The head/deputy head teacher 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 boreholes/wells 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	CL#02 and CAR#01 has been raised and successfully closed.	
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_{y,i}, Units

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>The total number of systems reported in the monitoring report are as following:</p> <p>2,471 UltraFLO</p> <p>2,234 UltraTAB</p> <p>138 Multi-Barrier UV</p> <p>The CME keeps purchase order/14/, delivery notes/21/ 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 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>Again, each unit of for Multi-UV Barrier has a UID, each of which has been</p>

		<p>listed in the database and ERs have been claimed.</p> <p>The entries in database were checked to confirm the total number presented in the MR. 11 WPS samples were remotely surveyed also, to confirm that the details of the entries in the database/5/ are correct.</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. Sampled number of entries (11) were checked with the purchase order/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	CL#02 and CAR#01 has been raised and successfully closed.	
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, $N_{y,i}$, Persons/units

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 numbers are mentioned for each school in the sales database. For the 11 samples checked by the DOE during the remote audit survey through e-meeting, the same numbers were checked and found to be correct.</p> <p>The CME has also applied formula in the ER sheet/4/ to ensure that the $N_{y,i}$ multiplied by $R_{y,i}$ does not 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 459 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-P1-0004, 9948-P1-0023-CP1 to 9948-P1-0037-CP1) /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 remote survey 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#02 and CAR#01 has been raised and successfully closed.	
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, Proportion

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	Aquagenx testing kits

	Calibration details	Not Applicable.
	How were the values in the monitoring report verified?	<p>The CME used Aquagenx testing kits to monitor the E. coli value for sampled institutions.</p> <p>The Head teachers/ Deputy Head teachers of the schools interviewed by the DOE during the remote survey confirmed that they were visited by monitoring team for the tests.</p> <p>The monitoring forms/18/ Aquagenx testing kits photographs showing achieved results /30/ for all the institutions were checked by the verification team to confirm the monitoring parameter value. It was found that all the tests gave positive results confirming safe drinking water except four sampled schools. For all the institutions were checked to ascertain that all the tests gave positive results confirming safe drinking water Hence, the applied value of 0.93 was found acceptable.</p>
	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 found to be trained as confirmed from 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	CL#02 and CAR#01 has been raised and successfully closed.	
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?	The sampled systems were checked by the CME's monitoring team to

		<p>monitor the operational status of the WPS units installed in the institutions as checked from the monitoring survey forms/18/.</p> <p>The Head teachers/ dy. Head teachers of the schools visited by the CME representative during the monitoring survey were confirmed to the DOE through the remote audit survey that the monitoring team visits the school regularly for the monitoring.</p> <p>94.65% of the institutions from the total institution visited by the CME representative during the monitoring survey were found to be operational.</p> <p>Thus, the applied value of 94.65% was found correct and acceptable.</p>
	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 remote audit survey visit videos.
	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 found to be trained as confirmed from 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	CL#02 and CAR#01 has been raised and successfully closed.	
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, f_{NRB}, 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?	The PoA applies CDM SSC methodology AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0)/6/. The applied methodology, on page 6, refers to determining f _{NRB} as per the relevant provisions of "AMS-I.E: Switch from Non-Renewable

	<p>Biomass for Thermal Applications by the User”/6/.</p> <p>Further, it states that “If the displaced fuel is fossil fuel use a default value of 1.0. If a mixture of woody biomass and fossil fuels is used in the absence of the project activity, a weighted average value (e.g. based on energy content of fuels consumed) should be used”/6/.</p> <p>“AMS-I.E: Switch from Non Renewable Biomass for Thermal Applications by the User” version 5.0, page 2, states that $f_{NRB,y}$ can be established as non-renewable biomass using survey methods or government data or approved default country specific fraction of non-renewable woody biomass (f_{NRB}) values available on the CDM website/25/. Also, as per Clarification on monitoring the quantity of biomass and the fraction of non-renewable biomass under AMS-I.E. (submitted 17 Jun 11): SSC_543, the value of $f_{NRB,y}$ can be fixed ex ante at the beginning of each crediting period/45/.</p> <p>The CME therefore, fixed the value of f_{NRB} for Kenya through EB67 Annex 22 /46/ (extension SSC 37 Annex 14th, approved in EB68)/47/ as stated in the registered PoA-DD/1/ at page 69, 82 and 100, 115. However, the $f_{NRB,y}$ was listed as monitoring parameter to allow determination of a weighted average value in case a mixture of woody biomass and fossil fuels is used in the absence of the project activity in line with AMS III.AV. version 4.0, page 6/6/.</p> <p>The PoA-DD version 7.0 (Section B.7.1.)/1/ states the $f_{NRB,y}$ as a calculated parameter which has a formula:</p> $f_{NRB,y} = [\text{Default } f_{NRB} \text{ value}] * [\% \text{ of users using NRB}] + [1.0^4] * [\% \text{ of users using fossil fuels}]$ <p>The aforesaid formula only keeps the % of users (using NRB / fossil fuel) as a variable and considers f_{NRB} values as a constant (default for NRB and 1.0 for fossil fuel). Thus, the parameter is listed as monitoring parameter only because of the variability attributed to % users using a given baseline fuel type.</p>
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⁴ In line with page 6 of AMS III.AV. - If the displaced fuel is fossil fuel use a default value of 1.0

		<p>Since the default value of f_{NRB} has been considered as a constant, the expiry of f_{NRB} value is deemed not applicable to the PoA and included CPAs. Besides, no other method to determine the value f_{NRB} is found listed under section B.7.1 of the registered PoA DD/1/.</p> <p>Additionally, the CME will not apply the updated value of f_{NRB}(i.e., if the host country DNA publish a new value) within this crediting period as it is bound by the requirement stated in the PoA DD(page 69, 82 and 100,115)/1/. This also confirms that only % of users is variable in the monitored parameter.</p> <p>The parameter is determined by sourcing a default value from UNFCCC SSC WG 37th Meeting Report for Kenya /26/ and multiplying it with the percentage of population using non-renewable woody biomass / fossil fuel.</p> <p>The Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17 mentions 95% schools in Kenya using wood fuel/16/.</p> <p>The value has been calculated using the default value of 0.92 UNFCCC SSC WG 37th Meeting Report for Kenya /26/ combined with the national data. The final value has been calculated to 0.924, which was applied in the ER calculation sheet/4/. The applied value was found to be correct.</p> <p>Thus, in-line to para 346 of the VVS for PoA it was confirmed that CME has followed the registered monitoring plan stated in the registered PoA-DD/1/, included CPA-DDs/2/ and the applied methodology for monitoring the parameter.</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#02,CL#03 and CAR#01 have been raised and successfully closed.	

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.
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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	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>The parameter is determined by sourcing a default value from AMS-I.E /25/ and multiplying it with the the % population using non-renewable woody biomass / fossil fuel.</p> <p>The Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17 mentions 95% schools in Kenya using wood fuel/16/.</p> <p>Therefore, a value 95% users using non-renewable woody biomass / fossil was multiplied with default value of 81.6 and 5% users using fossil fuel (Natural Gas) was multiplied by 56.1 sourced from AMS-I.E./25/ to give the final value = 80.33, which was applied in the ER calculation sheet/4/. The applied value was found to be correct.</p> <p>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?	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.
Findings	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
	CL#02 and CAR#01 has been raised and successfully closed.	
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?	<p>The institutions of sampled WPS were visited by the CME's monitoring team to check the existence of public distribution network with safe drinking water as checked from the monitoring survey forms/18/.</p> <p>Head teachers of the schools visited by the CME representative during the monitoring survey were confirmed to the DOE through the telephonic interview that the monitoring team visits the school regularly for the monitoring.</p> <p>All the institutions of the sampled WPS visited by the CME representative during the remote survey were found do not have any access to public distribution network of safe drinking water. Their source of water was found to be Borewell. 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.</p> <p>Thus, the applied value of 0 was found acceptable for the current verification.</p>
	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 remote survey results.
	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 found to be trained as confirmed from 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	CL#02 and CAR#01 has been raised and successfully closed.	
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/.

Quantity of electricity consumed by the project electricity consumption source j in year y, $EG_{PJ,j,y}$, MWh/yr

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?	The capacity of the disinfection was found to be 14 watts as checked from the WPS manufacturer specification for Multi-barrier UV/28/. Thus, taking an assumption a technology was operational for 24 hours a day and 365 days in a year. Thus, the applied value of 0.1226 was found to be conservative and acceptable for the current verification.
	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	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 and CAR#01 has been raised and successfully closed.	
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	<p>The monitoring has been carried out in accordance with the monitoring plan contained in the revised approved PoA DD/1/ and CPA DDs/2/.</p> <p>Sampling Design/Target Population/Sampling Frame/Reliability:</p> <p>The CME has applied single sampling plan for all of the 16 CPAs. According to the 'Sampling and Survey standards,' version 8.0/19/, the sampling plan applied by the PP for the following CPAs are found to be appropriate. As per the sampling plan stated in the PoA DD/1/, a minimum 90% confidence interval and a 10% margin of error requirement is achieved for the sampled parameters. When a single sampling plan covers a group of CPAs or when monitoring is conducted biennially (every two years), confidence/precision of 95/10 for the sample size calculation is applicable. Since the sampling has been done across the CPAs, the CME has taken 95/10 as the confidence precision levels which is found to be in line with the registered</p>
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monitoring plan/1,2/.

The target population for the parameters stated above are Water purification systems⁵ installed / distributed in institutions and recorded in the project sales database

Sampling Frame:

There are three different type of units under the CPAs. 2,471 UltraFLO units, 2,234 UltraTAB units and 138 Multi-barrier UV have been listed in the sales database. However, the parameters for monitoring are homologous (i.e. implemented in schools). Thus, the CME has applied a common sampling for all the parameters monitored which was found acceptable.

Sampling Method and selection:

The CME has applied Stratified Random Sampling by dividing the population into three strata (UltraFLO, UltraTAB, Multi-barrier UV). The samples have been chosen randomly from three stratas as checked from screenshots of random generator online website -Stat Trek/32/ and the excel sheets with random numbers/33/.

Sample Size for Parameter of Interest:

The sampling is applied to the following monitoring parameters:

- Water Quality- Aquagenx Tests
- Operational Units
- Existence of public distribution network of safe drinking water

The sample size is chosen using the equation inline to CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities.

In this regard, sample size calculation spreadsheet /4/ was checked and found correct as per registered monitoring plan. The complete details are given in E.3 section of Monitoring Report/13/.

Implementation of Sampling Survey and Field Test Records:

Based on interviews with the CME and surveyors during the remote survey, in addition to simply asking this question to the end users, the surveyors were also trained to evaluate to results of Aqua-genix tests. Therefore, the implementation of surveys and tests was considered reliable. The surveyors also took photos of the school name, test results which were checked during the desk-review by the verification team.

Monitoring survey (by CME) duration:

The monitoring survey (field survey / tests) was carried out by CME representatives between following duration for the current monitoring period.

CPA Ref.No.	Technology	From	To
9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1	Water Purification systems	07/01/2020	04/02/2020

Reliability and precision calculation:

The verification team has verified the ER calculation spreadsheets /4/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under "Standard for sampling and surveys for CDM project activities and Programme of Activities" /19/ and confirms that the calculation of achieved reliability was done correctly.

⁵ 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.

	All parameters of interest are included in the ER spreadsheet for the revised approved CPAs. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the ER calculation sheets /4/ corresponding to final Monitoring Report /13/, which were also found correct. Thus, the verification team confirms that required precision has been met and the results are reliable.
Findings	CL#01 and CL#04 have been raised and successfully closed.
Conclusion	The verification team has found out that the sampling plan applied is found to be in-line with the monitoring plan mentioned in the registered PoA-DD/1/ and CPA-DDs/2/ and Sampling and survey standards, ver.8/19/

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

Means of verification	No monitoring equipment is required as outlined 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-DDs/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> <table border="1"> <tr> <td>BE_y</td><td>Baseline emissions during the year y in (tCO₂e)</td></tr> <tr> <td>QPW_y</td><td>Quantity of purified water in year y (Liters/yr).</td></tr> <tr> <td>SEC</td><td>Specific energy consumption required to boil one litre of water (kJ/L)</td></tr> <tr> <td>$f_{NRB,y}$</td><td> <p>Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable.</p> <p>For biomass, the default values of f_{NRB} shall be used from EB67. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of biomass and other fuels (e.g. fossil fuels) are used, a weighted average renewability factor shall be applied.</p> </td></tr> <tr> <td>$EF_{\text{projected_fossilfuel}}$</td><td> <p>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> </td></tr> </table> <p>Specific energy consumption (SEC) i.e. energy required to boil one litre of water is</p>	BE_y	Baseline emissions during the year y in (tCO ₂ e)	QPW_y	Quantity of purified water in year y (Liters/yr).	SEC	Specific energy consumption required to boil one litre of water (kJ/L)	$f_{NRB,y}$	<p>Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable.</p> <p>For biomass, the default values of f_{NRB} shall be used from EB67. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of biomass and other fuels (e.g. fossil fuels) are used, a weighted average renewability factor shall be applied.</p>	$EF_{\text{projected_fossilfuel}}$	<p>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>
BE_y	Baseline emissions during the year y in (tCO ₂ e)										
QPW_y	Quantity of purified water in year y (Liters/yr).										
SEC	Specific energy consumption required to boil one litre of water (kJ/L)										
$f_{NRB,y}$	<p>Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable.</p> <p>For biomass, the default values of f_{NRB} shall be used from EB67. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of biomass and other fuels (e.g. fossil fuels) are used, a weighted average renewability factor shall be applied.</p>										
$EF_{\text{projected_fossilfuel}}$	<p>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>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> <p>And QPW_y is calculated through the following equation:</p> $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ <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 November, 2019 ERs will be claimed in December 2019. The end date of the monitoring period is 31/12/2019.</p> <p>Thus, only 365 days have been considered for ER calculation. The approach was found to be conservative and in line with PoA DD/1/.</p> <p>The applicable formula is :</p> $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ <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</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>The calculations for all the CPAs 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 with the applied methodology/6/.</p> <p>All the parameters are assessed in detail under section E.3.4. of this report.</p>
Findings	None.
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. Appropriate emission factors, IPCC default factors and other reference values were correctly applied. 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.

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

Means of verification	<p>The project activity involves no emissions for type 2 CPAs 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. The project emissions for type 3 CPAs were found to be calculated as follows:</p> $PE_y = T_{y,i} \times EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$ <p>The calculations for all the CPAs (9948-P1-0004-CP1) 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>
Findings	None.
Conclusion	The project emissions have not been considered for Type 2 CPAs and have been considered for Type 3 CPAs. 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 remote survey 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> $\text{Leakage} = BE_y \times (1 - 95\%)$ <p>The calculations for all the CPAs (9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1) 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 8,088 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 from the remote survey where all the evidence and records that validated the stated figures were checked and found acceptable.</p>
Findings	None.
Conclusion	<p>The verification team confirms that</p> <ul style="list-style-type: none"> a) The complete data was available and is duly reported. 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); c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed. d) The total number of ERs achieved (on account of water purifiers installation) during the current monitoring period were 153,508 tCO₂e.

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
9948-P1-0004-CP1	6,110	17	306	0	5,787	5,787
9948-P1-0023-CP1	13,598	-	680	0	12,918	12,918
9948-P1-0024-CP1	10,353	-	518	0	9,835	9,835
9948-P1-0025-CP1	9,856	-	493	0	9,363	9,363
9948-P1-0026-CP1	9,049	-	453	0	8,596	8,596
9948-P1-0027-CP1	10,539	-	527	0	10,012	10,012
9948-P1-0028-CP1	12,493	-	625	0	11,868	11,868
9948-P1-0029-CP1	9,708	-	486	0	9,222	9,222
9948-P1-0030-CP1	6,932	-	347	0	6,585	6,585
9948-P1-0031-CP1	7,507	-	376	0	7,131	7,131
9948-P1-0032-CP1	8,998	-	450	0	8,548	8,548
9948-P1-0033-CP1	11,722	-	587	0	11,135	11,135
9948-P1-0034-CP1	11,012	-	551	0	10,461	10,461
9948-P1-0035-CP1	11,762	-	589	0	11,173	11,173
9948-P1-0036-CP1	11,668	-	584	0	11,084	11,084
9948-P1-0037-CP1	10,306	-	516	0	9,790	9,790
Total	161,613	17	8,088	0	153,508	153,508

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 Kenya for the monitoring period 23/05/2019-31/12/2019 (including both days) amount to 153,508 tCO₂.</p> <p>Verified and certified emission reductions as per commitment period:</p> <table> <tr> <td>Commitment period</td><td>Amount</td></tr> <tr> <td>Upto 31/12/2012 (1st commitment period)</td><td>0 tCO₂e</td></tr> <tr> <td>From 01/01/2013</td><td>153,508 tCO₂</td></tr> </table>	Commitment period	Amount	Upto 31/12/2012 (1 st commitment period)	0 tCO ₂ e	From 01/01/2013	153,508 tCO ₂
Commitment period	Amount						
Upto 31/12/2012 (1 st commitment period)	0 tCO ₂ e						
From 01/01/2013	153,508 tCO ₂						

Findings	None.
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.

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
9948-P1-0004-CP1	5,787	14,802
9948-P1-0023-CP1	12,918	36,263
9948-P1-0024-CP1	9,835	36,263
9948-P1-0025-CP1	9,363	36,263
9948-P1-0026-CP1	8,596	36,263
9948-P1-0027-CP1	10,012	36,263
9948-P1-0028-CP1	11,868	36,263
9948-P1-0029-CP1	9,222	36,263
9948-P1-0030-CP1	6,585	36,263
9948-P1-0031-CP1	7,131	36,263
9948-P1-0032-CP1	8,548	36,263
9948-P1-0033-CP1	11,135	36,263
9948-P1-0034-CP1	10,461	36,263
9948-P1-0035-CP1	11,173	36,263
9948-P1-0036-CP1	11,084	36,263
9948-P1-0037-CP1	9,790	36,263
Total	153,508	558,747

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

Means of verification	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 that were installed/distributed. Considering, there is no increase in ERs no further justification was sought. The quantitative details of actual values of achieved ERs for the CPA and value estimated in the CPA- DDs/2/ is presented in the next table.
Findings	None.
Conclusion	The actual emission reductions achieved in any of specific CPAs are not higher than the estimated quantity of ERs in the CPA-DDs/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, assessment is not 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 3rd 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.
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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 second independent verification of the emission reductions for the registered CDM PoA 9948 "Impact Carbon Global Safe Water Programme of Activities (PoA)" for the third monitoring period 23/05/2019 – 31/12/2019 (both days included) as reported in the Monitoring Report (final) Version 3 dated 26/10/2020 /13/. 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/11/ specified by UNFCCC and complies with the instructions to follow of CDM VVS-PoA Version 02/9/.

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)/6/.

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 3/13/ dated 26/10/2020 and corresponding ER sheets for the monitoring period 23/05/2019 – 31/12/2019 (including both days) amount as 153,508 tCO₂e. Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 02/8/.

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 23/05/2019 – 31/12/2019 (MP 03 Batch 04) are fairly stated in the Monitoring Report (final) Version 3 dated 26/10/2020.

ESPL, based on outcome of verification activities, certify in writing that, during the monitoring period 23/05/2019 – 31/12/2019 (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 **153,508** 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
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	Rahi Sahni		
Education	M.Sc Environment Science and Technology, Bharati Vidyapeeth University, Pune		
Experience	6 months		
Field	Climate Change and Environment		
Approved Roles			
Team Leader	NO		
Validator	Yes		
Verifier	Yes		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Reviewed by	Shreya Garg	Date	09/04/2020
Approved by	Anshika Gupta	Date	09/04/2020

Competence Statement	
Name	Virginia Njeri
Country	Kenya
Education	Diploma (Business Management)

Experience	7 Years		
Field	Administration		
Approved Roles			
Team Leader	No		
Validator	No		
Verifier	No		
Methodology Expert	No		
Local expert	Kenya		
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	Vaishali Vatsa		
Education	M.Sc. (Environmental Studies and Resource Management), TERI University		
Experience	4 months		
Field	Climate Change		
Approved Roles			
Team Leader	NO		
Validator	Yes		
Verifier	Yes		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	NO		
Reviewed by	Shreya Garg	Date	30/12/2019
Approved by	Anshika Gupta	Date	02/01/2020

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, ACM0003		
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	23/10/2019
Approved by	Anshika Gupta	Date	23/10/2019

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Impact Carbon	Registered PoA-DD Revised Approved PoA-DD Revised Approved PoA-DD	Version 3.0, Dated:24/03/2014 Version 6.1, Dated: 15/02/2017 Version 7.0, Dated: 18/04/2017	CME
2	Impact Carbon	Registered CPA-DD-04 Registered CPA-DD-23 Registered CPA-DD-24 Registered CPA-DD-25 Registered CPA-DD-26 Registered CPA-DD-27 Registered CPA-DD-28 Registered CPA-DD-29 Registered CPA-DD-30 Registered CPA-DD-31 Registered CPA-DD-32 Registered CPA-DD-33 Registered CPA-DD-34 Registered CPA-DD-35 Registered CPA-DD-36 Registered CPA-DD-37	Version 1.2, Dated: 08/05/2017 Version 4.0, Dated: 13/11/2018	Other
3	Carbon check India Pvt Ltd.	CPA Inclusion Report (9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1)	Version 3, Dated: 10/05/2017, Version 7, Dated: 18/04/2017	Other
4	Impact Carbon	ER sheet	Corresponding to the current monitoring period	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/view	Others

13	Impact Carbon	Monitoring Report (Final)	Version 03 Dated: 26/10/2020	CME
14	Impact Carbon	Purchase Orders	Various	CME
15	Impact Carbon	Agreement between CME and CPA Implementer	Dated: 15/01/2019	CME
16	GACC	GACC Kenya Market Assessment -Sector Mapping by GVEP International, 2012	Dated:14/10/2016	CME
17	DHS	DHS Report, Kenya	2014	CME
18	Impact Carbon	Monitoring forms (Scanned and filled)	Various (November 2019-December 2019)	CME
19	UNFCCC	Standards for Sampling and survey for CDM PoA	Version 8.0	Others
20	Impact Carbon	Training Records	Various	CME
21	Impact Carbon	Delivery Notes	Multiple Dates	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	MICS	Kenya Integrated Household Budget Survey, March 2018 by Kenya National Bureau of Statistics, table 3.10	https://sun-connect-news.org/fileadmin/DATEIEN/Dateien/News/KNBS_-_Basic_Report.pdf	CME
24	WHO	WHO Technical Notes on Drinking -Water sanitation and Hygiene	https://www.who.int/water_sanitation_health/emergencies/WHO_TN_10_Hygiene_promotion_in_emergencies.pdf?ua=1	CME
25	UNFCCC	AMS-I.E.	Version 5.0	Other
26	UNFCCC	UNFCCC SSC WG 37 th Meeting Report for Kenya	http://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf	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 Aquagenx test	-	CME
31	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programme of activities	Version 4.0	Other
32	Stat Trek	Screenshot- Stat trek	-	CME
33	Impact Carbon	Random number -excel sheet	-	CME
34	Impact Carbon	Site-exemption Clarification Mail	16/03/2020	CME
35	Impact Carbon	Emission Reduction Purchase Agreement	2016-2020	CME
36	Impact Carbon	Water Quality test Photographs	-	CME
37	Impact Carbon	Complaint Log (Sample)	-	CME
38	Impact Carbon	Remote Survey Files Selected Sample Videos, Interview video of the school representative	05/06/2020	CME
39	UNFCCC	Tool 05: Baseline, project	Version 1.0	Others

		and/or leakage emissions from electricity consumption and monitoring of electricity generation		
40	Carbon check	PRC Report	https://cdm.unfccc.int/PRCContainer/DB/prcp445611461/view , https://cdm.unfccc.int/PRCContainer/DB/prcp266525508/view	Other
41	NY TIMES	https://www.nytimes.com/2020/03/24/world/asia/india-coronavirus-lockdown.html		Other
42	BBC NEWS	https://www.bbc.com/news/world-asia-india-52024239	-	Other
43	Bureau of Immigration	Advisory: Travel and Visa restrictions	13/03/2020	Other
44	worldometers	https://www.worldometers.info/coronavirus/worldwide-graphs/	-	Other
45	UNFCCC	SSC 543 https://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/03200	07/10/2011	Other
46	UNFCCC	EB 67 Annex 22 https://cdm.unfccc.int/filestorage/H/2/9/H29X6EKQMJU7RY85DIT4ZPFAL3O1GW/eb67_rep_an22.pdf?t=d0N8cWgzbWRjfD DR814Bisnm06WBhXFLNZu0	11/05/2012	Other
47	UNFCCC	EB68 - meeting report https://cdm.unfccc.int/filestorage/8/i/KYQVI5N0ABEJX3T68ZDF1M7RCGU9SW.pdf/eb68_report%20v01.1?t=QXZ8cWgzbWZtfDB2p0F4x0TF7eAJLmYt1_vy	20/07/2012	Other
48	UNFCCC	https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html	-	Other
49	Impact Carbon	Salesforce database screenshots confirming first installation dates.	-	CME
50	ESPL	PRC validation report for temporary deviation	version 3.0 dated 21/09/2020	Other

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

Table 1. Remaining FAR from validation and/or previous verification
No FAR from Previous Verification/ validation.

Table 2. CL from this validation

CL ID	01	Section no.	E.3.4.3	Date : 03/06/2020
Description of CL				

1.	Please clarify when was the sampling conducted in order to confirm whether the monitoring frequency for parameters monitoring through sampling are in accordance with the registered monitoring plan (of also refer e.g., CPA DD 04 Section B.5.3 para (a)) given the monitored data worksheet in the ER does not contain the date the survey was carried out. In MR, it is indicated that it was carried out in January 2020 to February 2020 without specifying the actual start date and end date. (para 263c of CDM PS PoA V2).
Project participant response	
Date: 15/06/2020	
1.	The duration of monitoring has been specified in section E.3 of the revised MR. The revised MR is being submitted.
Documentation provided by project participant	
PoA 9948_MP3_Norway 2 Kenya MR ver2.0 15062020	
DOE assessment	
Date: 23/06/2020	
1.	CME has now submitted all the monitoring survey forms for the current monitoring period. All the forms have been reviewed to check the monitoring survey dates which was found to be lying between 07/01/2020 to 04/02/2020.(Closed)
Thus, the CL stands Closed.	

CL ID	02	Section no.	E.3.4.2	Date :	03/06/2020
Description of CL					
<p>1. Considering that η_{wb} is defined as data to be monitored and the question is also listed under monitored data worksheet (column P and Q), why the responses were not captured or reported? The parameter defines the default value depending upon the baseline device. How the type of baseline device was not identified as part of monitoring survey in spite of having question for that? Please clarify?</p> <p>2. Several parameters under Section E.2 define multiple frequencies as permitted by registered monitoring plan. However, it is not clear what has been following in the current monitoring period? para 263c of CDM PS PoA V2)</p> <p>3. Several parameters e.g., $EC_{pj,i,y}$ defines multiple sources of data viz., manufacturers' specifications, surveys or direct monitoring. Therefore, it is not clear which one(s) are/were used in the current monitoring period. (para 263d of CDM PS PoA V2)</p>					
Project participant response					Date: 15/06/2020
<p>1. The question listed under monitored data worksheet (column P and Q) captures the likelihood of project users boiling water after treatment by the project devices. If any of the sampled user is found boiling water after water treatment by project device, appropriate discounts need to be applied to emission reduction calculations (given boiling water after purification by project device will neutralize the baseline emissions avoided by the corresponding project device). No sample users were found boiling water after treatment with project device. Hence the columns P and Q don't show any response as they are only attributed to post project device treatment boiling cases.</p> <p>Additionally, please refer page number 82 and 115 of the registered PoA-DD which states the following:</p> <p><i>Default values as per AMS-III.AV combined with survey, national, or regional data to determine the percent of users using different types of water boiling systems in the baseline scenario.</i></p> <p>Thus, % users using unimproved biomass burning stove, other biomass burning stove and/or fossil fuel stove in Kenya has been updated as the per the Global Alliance for Clean Cookstoves, Kenya report and a weighted average value has been applied to determine η_{wb}. This remains the most recent national data available. Hence determination of η_{wb} value is in line with the registered PoA-DD.</p> <p>2. The monitoring frequencies under section E.2 of the MR have been revised as per the monitoring frequency followed for various monitoring parameters in the current monitoring period. The revised MR is being submitted.</p> <p>3. The source of data of $EC_{pj,i,y}$ and other monitoring parameters have been revised in the MR. Only the source of data used in the current monitoring period is mentioned under section E.2 of the revised MR. The revised MR is being submitted.</p>					
Documentation provided by project participant					

PoA 9948_MP3_Norway 2 Kenya MR ver2.0 15062020	
DOE assessment	Date: 23/06/2020
<p>1. CME has stated that no users were found boiling water after treatment with project device. Hence the columns P and Q do not show any response as they are only attributed to post project device treatment boiling cases. Therefore, no discounts were needed to be applied to emission reduction calculations.</p> <p>CME has applied the weighted average value of % users using unimproved biomass burning stove other biomass burning stove or fossil fuel stove in Kenya to determine nwb value in-line to the Source of data of the parameter mentioned on page 82 and 115 of the registered PoA-DD (Version 7.0) . Thus, the clarification provided by the CME of using the default value for the monitored parameter as all the end-users were found using unimproved biomass burning stove as confirmed from the monitoring sheet as well as survey forms. The approach for the determination of nwb value was found to be in-line with the measurement methods and procedure mentioned in the registered PoA-DD (on page 83).</p> <p>2. The MR has been revised to mention only the chosen frequency. The frequency is in line with the applied methodology and registered PoA DD. Thus, the revisions to the MR were found to be correct and were accepted by the verification team.</p> <p>3. The MR has been revised to mention only the chosen source of the parameter. The source now mentioned in the MR was provided to the verification team as an evidence. The source is in line with the applied methodology and registered PoA DD. Thus, the revisions to the MR were found to be correct and were accepted by the verification team.</p> <p>Thus, the CL is closed</p>	

CL ID	03	Section no.	E.3.4.2	Date : 15/10/2020		
Description of CL						
<p>1. As per revised PoA-DD dated 18/04/2017, monitoring plan under Generic CPA-DD section of PoA-DD (section B.7.1) and monitoring plan of specific CPA-DDs (section B.5.1) considered during the current verification, the parameter 'Fraction of non-renewable biomass (fNRB)' is mentioned as monitoring parameter. As per the monitoring procedure in the specific CPA-DDs for this parameter the CME mentioned that it will use the DNA approved value of fNRB as a monitored value during the monitoring period. However, it should be noted that fNRB value for Kenya has expired on 18 Sept. 2017 (refer https://cdm.unfccc.int/DNA/fNRB/index.html) and no further submission was made by the DNA to update this value.</p> <p>CME is requested to clarify how is the monitoring of the parameter has been conducted in accordance to the registered monitoring plan stated under the included CPA-DDs and the revised PoA-DD (Version 7.0).</p> <p>2. Since the parameter fNRB is listed as a monitored parameter, the CME shall clarify if the default value of fNRB can be updated in future (within this crediting period), if a new value of fNRB is published by the host country DNA. Please justify your answer.</p>						
Project participant response				Date: 16/10/2020		
<p>1.</p> <p>a) Page 69 (for CPA type 2) and page 100 (for CPA type 3) of the registered PoA-DD dated 18/04/2017 states the following:</p> <table border="1"> <tr> <td>fNRB,y</td> <td>Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable. For biomass, the default values of fNRB shall be used from EB67⁶. A survey,</td> </tr> </table>					fNRB,y	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable. For biomass, the default values of fNRB shall be used from EB67⁶ . A survey,
fNRB,y	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable. For biomass, the default values of fNRB shall be used from EB67⁶ . A survey,					

⁶ The fNRB value for Kenya was provided in SSC WG 37th Meeting, Annex 14, deemed as extension of EB 67 annex 22 as per para 3 of SSC WG 37 annex 14, available at:

https://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf

	national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of biomass and other fuels (e.g. fossil fuels) are used, a weighted average renewability factor shall be applied.
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- b) Also, page 82 (for CPA type 2) and page 115 (for CPA type 3) of the registered PoA-DD dated 18/04/2017 states the following in parameter table for fNRB,y

Data/Parameter	fNRB,y
Source of data	EB 67 Annex 22 Default Values for Fraction of Non-Renewable Biomass for Least Developed Countries and Small Island Developing States, combined with survey, national, or regional data to determine the percent of users using woody biomass and fossil fuel in the baseline scenario. If the displaced fuel is fossil fuel use the default value of 1.0. If a mixture of woody biomass and fossil fuels is used in the absence of the project activity a weighted average value should be used, using surveys or national data.
Measurement methods and procedures	The type of baseline fuel(s) used by target population will be determined via survey, national, or regional data. Parameter will be determined using the default values from EB67 Annex 22 for woody biomass and from the methodology for fossil fuels: If a mixture of woody biomass and fossil fuels is used in the absence of the project activity a weighted average value shall be applied, calculated through the following formula: $fNRB,y = [\text{Default } fNRB \text{ value}] * [\% \text{ of users using NRB}] + [1.0] * [\% \text{ of users using fossil fuels}]$

Thus, from the aforesaid it is confirmed that the registered PoA-DD and its monitoring plan mandate the CME to use the default value of fNRB as approved by EB67, Annex 22 and the continuous or at least biennial monitoring, as per PoA-DD, only requires monitoring the % of users using NRB and % of users using fossil fuels to update the weighted average value of fNRB,y.

This is further substantiated by the CPA-DDs in section B.5.1, as follows:

Data/Parameter	fNRB,y
Source of data	Value used is default value from UNFCCC CDM Data ⁷
Measurement methods and procedures	CDM Default value taken in line with PoA-DD page 82, and assumptions made, as suitable. % of schools/ institutions using Woody Biomass = 95% (Assumed) % of schools/ institutions using fossil fuels = 5% (Assumed) NRB value for Woody Biomass = 92% NRB value for Fossil Fuel = 100% $fNRB,y = \{(0.92 \times 0.95) + (1.0 \times 0.05)\} = 0.924$

In the table above, while the % users using NRB/fossil fuel is mentioned as “assumed” but the NRB values are fixed in line with the formula defined in registered PoA-DD (and hence not mentioned as assumed).

Thus, from the registered PoA-DD and included CPA-DDs, it is confirmed that monitoring of fNRB,y only requires determining the % of users using NRB / fossil fuels in the baseline and updating the applicable weighted average fNRB,y. The use of default fNRB values is in line with the registered monitoring plan.

This is also in-line with the approach defined for other similar monitoring parameters EF_{projected_fossilfuel} and η_{wb} where default values have been fixed and the parameters are being updated based on % users using fuel type or stove type respectively.

Thus, as per the registered PoA/CPA-DD, the % of users using NRB / fossil fuel in Kenya has been updated

The SSCWG presented an information note giving default f_{NRB} values for various countries which was approved in EB67 as Annex 22 (refer EB meeting 67 meeting report, para 92). In EB 67, The EB further requested the secretariat, in consultation with the SSC WG, to continue to determine f_{NRB} factors for Parties with 10 or less registered CDM project activities as of 31 December 2010 and recommend to the Board default values for application in these countries (EB 67 meeting report, para 93). The SSC WG published another information note in SSC WG 37 (annex 14) providing default f_{NRB} value for Kenya which was subsequently approved in EB68 (refer EB68 meeting report, para 106).

⁷ https://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf (Extension of EB 67 annex 22 as per para 3 of SSC WG 37 annex 14).

as per national data and a weighted average value has been applied to determine $f_{NRB,y}$ in the monitoring report.

No change in the MR is deemed required, given it is fully compliant with registered PoA-DD wrt $f_{NRB,y}$.

- Any more recent default value of f_{NRB} published / endorsed than that stated in the PoA-DD (EB67, annex 22) can only be changed at the time of renewal of the PoA and will be valid for the subsequently included CPAs only because the POA-DD has mandated use of EB67 Annex 22 values on page 69, 82 and 100,115.

Documentation provided by project participant

-

DOE assessment

Date: 16/10/2020

- The PoA applies CDM SSC methodology AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0). The applied methodology, on page 6, refers to determining f_{NRB} as per the relevant provisions of "AMS-I.E: Switch from Non-Renewable Biomass for Thermal Applications by the User".

Further, it states that "If the displaced fuel is fossil fuel use a default value of 1.0. If a mixture of woody biomass and fossil fuels is used in the absence of the project activity, a weighted average value (e.g. based on energy content of fuels consumed) should be used".

"AMS-I.E: Switch from Non Renewable Biomass for Thermal Applications by the User" version 5.0, page 2, states that $f_{NRB,y}$ can be established as non-renewable biomass using survey methods or government data or approved default country specific fraction of non-renewable woody biomass (f_{NRB}) values available on the CDM website. Also, as per Clarification on monitoring the quantity of biomass and the fraction of non-renewable biomass under AMS-I.E. (submitted 17 Jun 11): SSC_543, the value of $f_{NRB,y}$ can be fixed ex ante at the beginning of each crediting period.

The CME therefore, fixed the value of f_{NRB} for Kenya through EB67 Annex 22 (extension SSC 37 Annex 14th, approved in EB68) as stated in the registered PoA-DD at page 69, 82 and 100, 115 for CPA type 2 and CPA type 3 respectively. However, the $f_{NRB,y}$ was listed as monitoring parameter to allow determination of a weighted average value in case a mixture of woody biomass and fossil fuels is used in the absence of the project activity in line with AMS III.AV. version 4.0, page 6.

The PoA-DD version 7.0 (Section B.7.1.) states the $f_{NRB,y}$ as a calculated parameter which has a formula:

$$f_{NRB,y} = [\text{Default } f_{NRB} \text{ value}] * [\% \text{ of users using NRB}] + [1.0^8] * [\% \text{ of users using fossil fuels}]$$

The aforesaid formula only keeps the % of users (using NRB / fossil fuel) as a variable and considers f_{NRB} values as a constant (default for NRB and 1.0 for fossil fuel). Thus, the parameter is listed as monitoring parameter only because of the variability attributed to % users using a given baseline fuel type.

Since the default value of f_{NRB} has been considered as a constant, the expiry of f_{NRB} value is deemed not applicable to the PoA and included CPAs. Besides, no other method to determine the value f_{NRB} is found listed under section B.7.1 of the registered PoA DD.

This approach of monitoring the $f_{NRB,y}$ parameter has also been clearly stated under the monitoring plan of the included CPA-DDs (B.5.1.).

Thus, in-line to para 346 of the VVS for PoA it was confirmed that CME has followed the registered monitoring plan stated in the revised approved PoA-DD version 7.0, included CPA-DDs and the applied methodology AMS-III.AV. version 4.0, for monitoring the parameter.

The verification report version 2.0 dated 16/10/2020 has also been revised to reflect the opinion on the revised information.

- The CME will not apply the updated value of f_{NRB} within this crediting period as it is bound by the requirement stated in the PoA DD. This also confirms that only % of users are variable in the monitored parameter.

Thus, CL#03 stands closed.

⁸ In line with page 6 of AMS III.AV. - If the displaced fuel is fossil fuel use a default value of 1.0

CL ID	04	Section no.	E.3.4.3.	Date : 22/10/2020
Description of CL				
<p>1. It is not clear how the CME calculated the reliability/achieved precision. For example, the formula in spreadsheet Sample size calculation in cells D27 and D28 are not in line with the provision as per the appendix 4 of the Guideline: Sampling and surveys for CDM project activities and PoAs (v.4), as it is observed that the formula in cell D27 does not include z-value but include a factor 0.5, and formula in cell D28 compares the achieved precision with z-value. Refer to paragraphs 346 – 347 of the VVS for PoA v2.1 (Open)</p>				
Project participant response				Date: 26/10/2020
The formulae have been corrected				
Documentation provided by project participant				
PoA 9948 MP3 MR4 Kenya ER Sheet ver 3.0 26102020				
PoA 9948 MP3 MR4 Kenya MR ver 3.0 26102020				
DOE assessment				Date: 26/10/2020
<p>The ER sheet has been corrected to link the cells D27 with z-value and compare D28 with margin of error % in cell B6 of worksheet titled 'Sample Size Calculation'. The reliability is still attained and the total ERs are unaffected.</p> <p>The, CL stands closed.</p>				

Table 3. CAR from this validation

CAR ID	01	Section no.	E.3.4.2	Date : 03/06/2020
Description of CAR				
<p>1. There are inconsistencies in the value of multiple monitored parameters under section E.2. of the MR (Version 1.1, Dated:22/04/2020) Achieved ERs mentioned in the MR (Version 1.1) was found to be inconsistent with the ER sheet (Tab: ER summary; Cell: U21).</p> <p>2. Value of monitored parameter 'QPW' mentioned on page 20 of the Monitoring Report (Version 1.1) was found to be inconsistent with the ER sheet (Title: PoA 9948_MP3_Norway 2 Kenya; Version 1.0; Tab: ERs Summary; Cell: U8)</p>				
Project participant response				Date: 15/06/2020
<p>1. Value of monitored parameters have been rectified in revised MR. The value of monitored parameters mentioned in the revised MR is now consistent with the submitted ER Sheet. The ER volume also has been rectified in the revised MR to be consistent with the ER Sheet. Revised MR and ER Sheet are being submitted.</p> <p>2. Value of monitored parameter "QPW_y" has been rectified in revised MR. The value of QPW_y mentioned in the revised MR is now consistent with the ER Sheet. Revised MR and ER Sheet are being submitted.</p>				
Documentation provided by project participant				
PoA 9948_MP3_Norway 2 Kenya MR ver2.0 15062020				
PoA 9948_MP3_MR4_Norway 2 Kenya ER Sheet ver 2.0 15062020				
DOE assessment				Date: 23/06/2020
<p>1. CME has updated the value of monitored parameters in section E.2 MR version 2.0. The value of monitored parameters in the MR version 2.0 has been found consistent with the ER Sheet.</p> <p>2. CME has updated the value of monitored parameter "QPW_y" in the section E.2 of MR version 2.0. The value of QPW_y has been updated to 730,976,558 in the MR version 2.0 which is found consistent with ER Sheet (spreadsheet ERs Summary, Cell U8).</p> <p>Thus, the CAR stands closed.</p>				

CAR ID	2	Section No.		Date : 22/10/2020
Description of CAR				

CDM-PoA-VCR-FORM

Date of first WPS unit installation for each of the CPA mentioned under section C.1.(c) of MR Version 1 under each of the CPA was found to be inconsistent with the dates mentioned under column F of the sales database sheet (embedded in emission reduction sheet Version 2.1).(Open)	
Project participant response	Date : 26/10/2020
The MR has been revised to be consistent with ER calculator.	
Documentation provided by project participant	
PoA 9948 MP3 MR4 Kenya ER Sheet ver 3.0 26102020 PoA 9948 MP3 MR4 Kenya MR ver 3.0 26102020	
DOE assessment	Date: 26/10/2020
The inconsistency has been corrected in the MR now and the dates in the ER sheet have also been checked with the salesforce screenshots.	
The CAR stands closed.	

Table 4. FAR from this validation

FAR ID	NA	Section No.	NA	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

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Document information

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