Monitoring report form for CDM programme of activities (Version 03.0)

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

MONITORING REPORT		
Title of the PoA	Impact Carbon Global Safe Water Programme of Activities (PoA)	
UNFCCC reference number of the PoA	9948	
Version numbers of the PoA-DD applicable to this monitoring report	7.0	
Version number of this monitoring report	1.0	
Completion date of this monitoring report	13/03/2020	
Monitoring period number	Second monitoring period	
Duration of this monitoring period	23/05/2017 – 22/05/2019 (both days inclusive)	
Monitoring report number for this monitoring period	2.0	
Coordinating/managing entity	Impact Carbon	
Host Parties	Host Party of the PoA	Is this the host Party of a CPA covered in this monitoring report? (yes/no)
	Rwanda	No
	Uganda	Yes
	Nigeria	No
	Kenya	No
Applied methodologies and standardized baselines	Methodology: AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (Version 4.0) Standardized Baseline: Not applicable	
Sectoral scopes	3: Energy Demand	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by all CPAs covered in this monitoring report in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0 tCO_2e	MS1=59,162 tCO_2e MS2=76,250 tCO_2e Total= 1,35,412 tCO_2e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the CPA-DDs for the CPAs covered in this monitoring report	MS1=441,819 tCO_2e MS2=463,146 tCO_2e Total=904,965 tCO_2e	

PART I Monitoring of programme of activities (PoA)

SECTION A. Description of PoA

A.1. General description of PoA

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The purpose of the PoA is dissemination of low-carbon water purification technologies to households, communities, and institutions in Rwanda, Nigeria, Kenya and Uganda. Households throughout Rwanda, Uganda, Nigeria and Kenya lack access to reliably safe drinking water.

In Rwanda, only 36.8% of the population have access to piped water, with only 9.5% population having access to piped water within their homes[1]. Only 51.8% population uses an appropriate treatment method, with boiling being practiced by 47.0% population for water treatment[2]. 83.3% population uses wood or charcoal for cooking and boiling water[3].

In Nigeria, only 9.6% of the population have access to piped water, with only 2.8% population having access to piped water within their homes[4]. Only 4.9% population uses an appropriate treatment method with boiling being practiced by 2.6% population for water treatment[5]. 66.9% population uses wood or charcoal for cooking and boiling water[6].

In Kenya, only 43.6% of the population have access to piped water, with only 27.8% population having access to piped water within their homes[7]. Only 44.5% population uses an appropriate treatment method with boiling being practiced by 23.7% population for water treatment[8]. 73.3% population uses wood or charcoal for cooking and boiling water[9].

In Uganda, only 22.1% of the population have access to piped water, with only 8.1% population having access to piped water within their homes[10]. Only 44.1% population uses an appropriate treatment method with boiling being practiced by 38.3% population for water treatment[11]. 94.8% population uses wood or charcoal for cooking and boiling water[12].

Thus, the PoA by dissemination of low carbon, low cost water purification technologies aim to address the issue of lack of access to safe drinking water in target countries. In the absence of the project activity, the baseline scenario would be the use of non-renewable woody biomass / fossil fuels for boiling water to make it fit for drinking. The water purification systems (WPS), by replacing the use of non-renewable biomass/ fossil fuel for water boiling, reduce equivalent amount of greenhouse gases (GHG) emissions.

Impact Carbon is the Coordinating/Managing Entity (CME) of the PoA.

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[1] Rwanda Demographic and Health survey Report, March 2016, table 2.5

[2] Rwanda Demographic and Health survey Report, March 2016, table 2.5

[3] Rwanda Demographic and Health survey Report, March 2016, table 2.8

[4] Nigeria Demographic and Health survey Report, June 2014, table 2.1

[5] Nigeria Demographic and Health survey Report, June 2014, table 2.1

[6] Nigeria Demographic and Health survey Report, June 2014, table 2.3

[7] Kenya Demographic and Health survey Report, June 2014, table 2.1

[8] Kenya Demographic and Health survey Report, June 2014, table 2.1

[9] Kenya Demographic and Health survey Report, June 2014, table 2.3

[10] Uganda Demographic and Health survey Report, January 2018, table 2.1

[11] Uganda Demographic and Health survey Report, January 2018, table 2.1

[12] Uganda Demographic and Health survey Report, January 2018, table 2.4

A.1.1. Corresponding generic component project activities (CPAs)

Title and reference number of the corresponding generic CPA	Version of the PoA-DD	Sectoral scopes	Applied methodologies and standardized baselines
CPA type 1: Small-scale technologies for household water consumption, no project emissions Date: 18/04/2017	Version: 7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 2: Technologies for Institutional water consumption, with no project emissions Date: 18/04/2017	Version: 7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 3: Technologies for institutional water consumption, with project emissions Date: 18/04/2017	Version: 7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 4: Technologies for community water consumption, with no project emissions Date: 18/04/2017	Version: 7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 5: Technologies for community water consumption, with project emissions Date: 18/04/2017	Version: 7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4

A.1.2. CPAs included in the PoA

Title and UNFCCC reference number of the CPA	Version of the PoA-DD	Title and reference number of the corresponding generic CPA	Crediting period type and duration	Covered in this monitoring report? (yes/no)
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 1, Version: 3.0, Ref No.:9948-P1-0001-CP1	Version: 3.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 30/05/2014 – 29/05/2021	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 2, Version: 3.0, 9948-P1-0002-CP1	Version: 3.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 30/05/2014 – 29/05/2021	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 3, Version: 1.3, 9948-P1-0003-CP1	Version: 6.1	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 23/05/2017 – 22/05/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 4, Version: 01.2, 9948-P1-0004-CP1	Version: 7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 15/06/2017 – 14/06/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 5, Version: 5.0, 9948-P1-0005-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 6, Version: 5.0, 9948-P1-0006-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 7, Version: 5.0, 9948-P1-0007-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 8, Version: 5.0, 9948-P1-0008-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 9, Version: 5.0, 9948-P1-0009-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 10, Version: 5.0, 9948-P1-0010-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 11, Version: 5.0, 9948-P1-0011-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 12, Version: 5.0, 9948-P1-0012-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 13, Version: 5.0, 9948-P1-0013-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 14, Version: 1.0, 9948-P1-0014-CP1	Version: 7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 15, Version: 1.0, 9948-P1-0015-CP1	Version: 7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 16, Version: 5.0, 9948-P1-0016-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 17, Version: 5.0, 9948-P1-0017-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18, Version: 5.0, 9948-P1-0018-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 19, Version: 5.0, 9948-P1-0019-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe	Version: 7.0	CPA type 2: Technologies for	Renewable	Yes

Water Programme of Activities (PoA): CPA 20, Version: 5.0, 9948-P1-0020-CP1		institutional water consumption, with no project emissions	15/12/2017 – 14/12/2024	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 21, Version: 5.0, 9948-P1-0021-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 22, Version: 5.0, 9948-P1-0022-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 23, Version: 4.0, 9948-P1-0023-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 24, Version: 4.0, 9948-P1-0024-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 25, Version: 4.0, 9948-P1-0025-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 26, Version: 4.0, 9948-P1-0026-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 27, Version: 4.0, 9948-P1-0027-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 28, Version: 4.0, 9948-P1-0028-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 29, Version: 4.0, 9948-P1-0029	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 30, Version: 4.0, 9948-P1-0030-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 31, Version: 4.0, 9948-P1-0031-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 32, Version: 4.0, 9948-P1-0032-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities	Version: 7.0	CPA type 2: Technologies for institutional water	Renewable 18/11/2018 –	No

(PoA): CPA 33, Version: 4.0, 9948-P1-0033-CP1		consumption, with no project emissions	17/11/2025	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 34, Version: 4.0, 9948-P1-0034-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 35, Version: 4.0, 9948-P1-0035-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 36, Version: 4.0, 9948-P1-0036-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 37, Version: 4.0, 9948-P1-0037-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 38 supported by Republic of Korea, Version: 2.0, 9948-P1-0038-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 39 supported by Republic of Korea, Version: 2.0, 9948-P1-0039-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 40 supported by Republic of Korea, Version: 2.0, 9948-P1-0040-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 41 supported by Republic of Korea, Version: 2.0, 9948-P1-0041-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 42 supported by Republic of Korea, Version: 2.0, 9948-P1-0042-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 43 supported by Republic of Korea, Version: 1.0, 9948-P1-0043-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 44 supported by Republic of Korea, Version: 1.0, 9948-P1-0044-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe	Version: 7.0	CPA type 2: Technologies for	Renewable	No

Water Programme of Activities (PoA): CPA 45 supported by Republic of Korea, Version: 1.0, 9948-P1-0045-CP1		institutional water consumption, with no project emissions	26/04/2019 – 25/04/2026	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 46 supported by Republic of Korea, Version: 1.0, 9948-P1-0046-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 47 supported by Republic of Korea, Version: 1.0, 9948-P1-0047-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 48 supported by Republic of Korea, Version: 1.0, 9948-P1-0048-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 49 supported by Republic of Korea, Version: 1.0, 9948-P1-0049-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 50 supported by Republic of Korea, Version: 1.0, 9948-P1-0050-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 51 supported by Republic of Korea, Version: 1.0, 9948-P1-0051-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 52 supported by Republic of Korea, Version: 1.0, 9948-P1-0052-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 53 supported by Republic of Korea, Version: 1.0, 9948-P1-0053-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 54 supported by Republic of Korea, Version: 1.0, 9948-P1-0054-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 55 supported by Republic of Korea, Version: 1.0, 9948-P1-0055-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 56 supported by Republic of Korea, Version: 1.0, 9948-P1-0056-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 57 supported by Republic of Korea, Version: 1.0, 9948-P1-0057-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 58 supported by Republic of Korea, Version: 1.0, 9948-P1-0058-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 59 supported by Republic of Korea, Version: 1.0, 9948-P1-0059-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 60 supported by Republic of Korea, Version: 1.0, 9948-P1-0060-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 61 supported by Republic of Korea, Version: 1.0, 9948-P1-0061-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 62 supported by Republic of Korea, Version: 1.0, 9948-P1-0062-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 63 supported by Republic of Korea, Version: 1.0, 9948-P1-0063-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 64 supported by Republic of Korea, Version: 1.0, 9948-P1-0064-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 65 supported by Republic of Korea, Version: 1.0, 9948-P1-0065-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 66 supported by Republic of Korea, Version:	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No

1.0, 9948-P1-0066-CP1				
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 67 supported by Republic of Korea, Version: 1.0, 9948-P1-0067-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 68 supported by Republic of Korea, Version: 1.0, 9948-P1-0068-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 69 supported by Republic of Korea, Version: 1.0, 9948-P1-0069-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 70 supported by Republic of Korea, Version: 1.0, 9948-P1-0070-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 71 supported by Republic of Korea, Version: 1.0, 9948-P1-0071-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 72 supported by Republic of Korea, Version: 1.0, 9948-P1-0072-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 73 supported by Republic of Korea, Version: 1.0, 9948-P1-0073-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 74 supported by Republic of Korea, Version: 1.0, 9948-P1-0074-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 75 supported by Republic of Korea, Version: 1.0, 9948-P1-0075-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 76 supported by Republic of Korea, Version: 1.0, 9948-P1-0076-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 77 supported by	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project	Renewable 26/04/2019 – 25/04/2026	No

Republic of Korea, Version: 1.0, 9948-P1-0077-CP1		emissions		
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 78 supported by Republic of Korea, Version: 1.0, 9948-P1-0078-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 79 supported by Republic of Korea, Version: 1.0, 9948-P1-0079-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 80 supported by Republic of Korea, Version: 1.0, 9948-P1-0080-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 81 supported by Republic of Korea, Version: 1.0, 9948-P1-0081-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 82 supported by Republic of Korea, Version: 1.0, 9948-P1-0082-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 83 supported by Republic of Korea, Version: 1.0, 9948-P1-0083-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 84 supported by Republic of Korea, Version: 1.0, 9948-P1-0084-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 85 supported by Republic of Korea, Version: 1.0, 9948-P1-0085-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 86 supported by Republic of Korea, Version: 1.0, 9948-P1-0086-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 87 supported by Republic of Korea, Version: 1.0, 9948-P1-0087-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities	Version: 7.0	CPA type 2: Technologies for institutional water	Renewable 26/04/2019 –	No

(PoA): CPA 88 supported by Republic of Korea, Version: 1.0, 9948-P1-0088-CP1		consumption, with no project emissions	25/04/2026	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 89 supported by Republic of Korea, Version: 1.0, 9948-P1-0089-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 90 supported by Republic of Korea, Version: 1.0, 9948-P1-0090-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 91 supported by Republic of Korea, Version: 1.0, 9948-P1-0091-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 92 supported by Republic of Korea, Version: 1.0, 9948-P1-0092-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 93 supported by Republic of Korea, Version: 1.0, 9948-P1-0093-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 94 supported by Republic of Korea, Version: 1.0, 9948-P1-0094-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 95 supported by Republic of Korea, Version: 1.0, 9948-P1-0095-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 96 supported by Republic of Korea, Version: 1.0, 9948-P1-0096-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 97 supported by Republic of Korea, Version: 1.0, 9948-P1-0097-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 98 supported by Republic of Korea, Version: 1.0, 9948-P1-0098-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe	Version: 7.0	CPA type 2: Technologies for	Renewable	No

Water Programme of Activities (PoA): CPA 99 supported by Republic of Korea, Version: 1.0, 9948-P1-0099-CP1		institutional water consumption, with no project emissions	26/04/2019 – 25/04/2026	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 100 supported By Republic of Korea, Version: 1.0, 9948-P1-0100-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 101 supported By Republic of Korea, Version: 1.0, 9948-P1-0101-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 102 supported By Republic of Korea, Version: 1.0, 9948-P1-0102-CP1	Version: 7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 103 supported by Republic of Korea, Version: 1.0, 9948-P1-0103	Version: 7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 11/06/2019 – 10/06/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 104 supported by Republic of Korea, Version: 1.0, 9948-P1-0104	Version: 7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 11/06/2019 – 10/06/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 10 supported by Republic of Korea, Version: 1.0, 9948-P1-0105	Version: 7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 11/06/2019 – 10/06/2026	No

A.2. Coordinating/managing entity

>>
Impact Carbon

SECTION B. Implementation of PoA

B.1. Description of implemented PoA

>>

1. Operational and Management Framework

Impact Carbon is the Coordinating and Managing Entity (CME) for the PoA and Impact Water is CPA Implementer of the CPAs. The Implementation of the PoA followed the following management system:

1. The CME / CPA implementer (CPAI) provided guidance / training / instructions to local sales and distribution partner (SDP) to collect requisite sales / installation data. The SDP sales staff compiled the list of units installed / distributed along with other required information and transferred the same to the electronic database management system at regular intervals managed by CME / CPAI.

2. The SDP operated and managed the electronic database with information on units installed / distributed under the CPAs, as received from the sales staff. The electronic database contains the following information for each installation / distribution:
   - Type of system (UltraFLO / Multi-barrier UV)
   - Unique serial number of the units installed / distributed
   - Date of installation / distribution
   - Address and details of institute and contact detail (if available) of representative
   - Type of Institute (Boarding / Non-boarding)
   - Institute population count (number of students(people) / staff in boarding / non-boarding category)

3. The CME / CPAI ensured that end users (institute) are aware of, and have agreed, that their unit (Ultra Flo / Multi-barrier UV) is being subscribed to the PoA through informational material, trainings, social media and in contractual agreements.

4. The CME / CPAI ensured that there is no double counting of any unit in the electronic database by means of unique serial number (product ID) associated with each unit.

5. The CME / CPAI coordinated all ex-post monitoring activities in the PoA. The CME / CPAI:
   - Implemented the monitoring plan,
   - Determined the sample size as per sampling plan and identified the samples to be monitored (a single sampling plan has been applied to CPA 9948-P1-0002-CP1, 9948-P1-0014-CP1 to 9948-P1-0022-CP1 as detailed in section E.3 below)
   - Provided monitoring templates and training to the SDP for field monitoring

6. SDP recorded the following key parameters in a CPA Monitoring Record as per templates provided by CME /CPAI. Key monitored parameters were:
   - Operational Status of sampled WPS (in use / out of use)
   - Output Water Quality of sampled WPS units (Safe / unsafe)
   - Presence of safe public distribution network

7. The CME / CPAI, with support from external experts, checked and reviewed the monitoring data and calculated the emission reductions based on precision / reliability levels achieved for the monitored parameters prepared the monitoring report.

2. Sampling Approach

A single sampling plan has been carried out for CPA 9948-P1-0002-CP1, 9948-P1-0014-CP1 to 9948-P1-0022-CP1. For more detail, refer section E.3 below.

B.2. Post-registration changes to PoA

B.2.1. Corrections

>>
N/A

B.2.2. Inclusion of monitoring plan

>>
N/A

B.2.3. 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

B.2.4. Changes to programme design

>>
Two changes to the programme design have been made to the registered PoA and approved prior to this monitoring period.

PRC request number	Approval Status	Date of Approval	Description
PRC-9948-002	Approved	03 Jul 17	Expansion of PoA Boundary to include Host Country Nigeria
PRC-9948-001	Approved	08 May 17	Expansion of PoA Boundary to include Host Country Kenya

B.2.5. Changes specific to afforestation or reforestation activities

>>
N/A

PART II Monitoring of CPAs

>>
This Monitoring report covers 10 CPAs in Uganda (from 9948-P1-0002-CP1, 9948-P1-0014-CP1 to 9948-P1-0022-CP1), as listed in section A.1.2. These 10 CPAs are deemed homogeneous due to the following:

1. Have the same project boundary/country (i.e. Uganda)
2. End users of the project technology/equipment have comparable socioeconomic conditions (institution)

Thus, these CPAs have been sub-grouped for monitoring purposes. The following sections of the monitoring report present information pertaining to these 10 CPAs only.

SECTION C. Implementation of CPAs

C.1. Description of implemented CPAs

>>

a) Purpose of the specific-case CPA(s) and the measures taken for GHG emission reductions or net GHG removals by sinks –

Purpose: The CPAs involve installation / distribution of Chlorination based WPS (UltraFLO) and Ultraviolet disinfection based WPS (Multi-barrier UV) for use by institutions in Uganda. The WPSs installed / distributed under the CPAs reduce dependency on the conventional water purification technique (i.e. boiling). Boiling water involves using non-renewable biomass (charcoal and fuelwood) based traditional cook stoves (unimproved) or fossil fuel (coal, kerosene) based stoves. Transition to the project WPSs reduces greenhouse gas emissions by avoidance of non-renewable / fossil fuel for boiling water in the baseline.

b) Description of the technology employed and installed equipment and/or infrastructure

The CPAs involve following two types of WPS.

Description	**UltraFlo** 	**Multi-barrier UV** 
Size / Dimensions	Cartridge Length: ~12 cm Cartridge height: ~10 cm Cartridge circumference: ~22 cm	System Height: ~44cm System Length: ~36 cm System Width: ~19 cm

Application	Piped water	Piped water
Flow rate	20L/min	Small UV: 2-4 L/min Large UV:6-8 L/min
Capacity/lifespan	340,000 L / 5-year expiry	Small UV: 2,044,116 Large UV: 4,088,232
Fixed or Portable	Fixed	Fixed
Removal of E. Coli	99 (2-log)	99 (4-log)
Watts/Voltage	Not applicable	14

The distribution of units under the CPAs are as follows:

S.No.	CPA Reference No.	UltraFlo		Multi-barrier UV	
		MS1	MS2	MS1	MS2
1	9948-P1-0002-CP1	0	0	567	567
2	9948-P1-0014-CP1	0	0	56	56
3	9948-P1-0015-CP1	0	0	57	57
4	9948-P1-0016-CP1	0	12	0	0
5	9948-P1-0017-CP1	0	11	0	0
6	9948-P1-0018-CP1	0	11	0	0
7	9948-P1-0019-CP1	0	11	0	0
8	9948-P1-0020-CP1	0	11	0	0
9	9948-P1-0021-CP1	0	11	0	0
10	9948-P1-0022-CP1	0	11	0	0
Total		0	78	680	939

c) Relevant dates for the specific-case CPA(s) (e.g. construction, commissioning, continued operation periods, etc.);

S.No.	CPA Reference No.	Date of installation of first unit in the CPA	Crediting Period Start date
1	9948-P1-0002-CP1	21-06-2014	30-05-2014
2	9948-P1-0014-CP1	01-12-2017	15-12-2017
3	9948-P1-0015-CP1	14-06-2018	15-12-2017
4	9948-P1-0016-CP1	14-06-2018	15-12-2017
5	9948-P1-0017-CP1	06-07-2018	15-12-2017
6	9948-P1-0018-CP1	18-07-2018	15-12-2017
7	9948-P1-0019-CP1	20-07-2018	15-12-2017
8	9948-P1-0020-CP1	26-07-2018	15-12-2017
9	9948-P1-0021-CP1	31-07-2018	15-12-2017
10	9948-P1-0022-CP1	08-08-2018	15-12-2017

d)Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period for the specific-case CPA(s), including information on how double counting is avoided

Each of the installed systems have a unique ID to avoid double counting. This ID is also mentioned in the Salesforce (the data management system in the PoA) along with the name, address, location and contact details of the institution / institution where the system is installed/distributed. This ensures that each WPS unit can be uniquely identified and double counting is avoided.

Serial No.	CPA Reference No.	Emission Reductions tCO_2e	
		MS1	MS2
1	9948-P1-0002-CP1	57,162	51,417
2	9948-P1-0014-CP1	975	11,137
3	9948-P1-0015-CP1	1,025	10,231
4	9948-P1-0016-CP1	-	562
5	9948-P1-0017-CP1	-	505
6	9948-P1-0018-CP1	-	424
7	9948-P1-0019-CP1	-	526
8	9948-P1-0020-CP1	-	467
9	9948-P1-0021-CP1	-	502
10	9948-P1-0022-CP1	-	479
Total		59,162	76,250

C.2. Location of CPAs

>>

The CPA covers the geographical boundary of Uganda. Uganda lies between 4°N and 2°S latitude and between 29° and 35°east longitude. The map of Uganda, for reference purpose, is as follows:

C.3. Post-registration changes to CPAs

C.3.1. Temporary deviations from the monitoring plans in the included CPA-DDs, applied methodologies, standardized baselines or other methodological regulatory documents

>>

N/A

C.3.2. Corrections

>>

N/A

C.3.3. Changes to the start date of the crediting period

>>

N/A

C.3.4. Inclusion of monitoring plan

>>
N/A

C.3.5. Permanent changes to the included monitoring plans, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>
N/A

C.3.6. Changes to project design

>>
N/A

C.3.7. Changes specific to afforestation or reforestation CPA

>>
N/A

SECTION D. Description of monitoring system of CPAs

>>
The monitoring system under the CPAs involve following elements to ensure that the CME has unbiased, accurate and reliable monitoring information for the purposes of ex-post ER calculations.

1. **Total Sales Record:** The total sales record documents information of the WPS (UltraFLO Multi-barrier UV) implemented in the beneficiary institution. The total sales record is kept electronically with supporting evidence in form of paper records and/or SMS tracking records. The Total Sales Record contains information related to WPS system, including the following, but not limited to:
   a) Type of system (UltraFLO / Multi-barrier UV)
   b) Unique serial number of the units installed / distributed
   c) Date of installation / distribution
   d) Address and details of institute and contact detail (if available) of representative
   e) Type of Institute (Boarding / Non-boarding)
   f) Institute population count (number of students(people) / staff in boarding / non-boarding category)

2. **Other performance parameters:** The other monitoring parameters are determined via ex-post monitoring surveys on sampling basis or using published literature/data/national reports etc. as detailed in section E.2 and E.3 below.

SECTION E. Data and parameters

E.1. Data and parameters fixed ex ante

Data/Parameter	Case1 or Case 2
Data unit	-
Description	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).
Source of data	Registered CPA-DD, page 12
Value(s) applied	Case 1
Choice of data or measurement methods and procedures	Established ex-ante in the registered CPA-DDs
Purpose of data	Calculation of baseline emissions

Additional comment	

Data/Parameter	WH
Data unit	Kj/L.^{o}C
Description	Specific Heat of Water
Source of data	AMS-III.AV Version 4
Value(s) applied	4.186
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	T_f
Data unit	^{o}C
Description	Final Temperature
Source of data	AMS-III.AV Version 4
Value(s) applied	100
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	T_i
Data unit	^{o}C
Description	Initial Temperature
Source of data	AMS-III.AV Version 4
Value(s) applied	20
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
***Additional** comment*	-

Data/Parameter	WHE
Data unit	Kj/L
Description	Latent Heat of Water Evaporation
Source of data	AMS-III.AV Version 4
Value(s) applied	2,260
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	L
Data unit	-
Description	Leakage
Source of data	AMS-I.E. Version 5
Value(s) applied	0.95

Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of leakage emissions
Additional comment	-

Data/Parameter	$R_{y,i}$
Data unit	Liters / person / day
Description	Average volume of drinking water per person per day
Source of data	WHO Minimum water quantity needed for domestic use in emergencies.
Value(s) applied	3.5 (for boarding schools, prisons) and 2 (for day schools). Refer ER calculator for details
Choice of data or measurement methods and procedures	Fixed ex-ante in the registered PoA-DD / CPA-DDs
Purpose of data	Calculation of baseline emissions
Additional comment	$N_{y,i}$ multiplied by $R_{y,i}$ shall not exceed the maximum output of the technology

Data/Parameter	$EF_{EL,j,y}$
Data unit	tCO_2/MWh
Description	Emission factor for electricity generation for source j in year *y* (tCO_2/MWh)
Source of data	As per the "Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"
Value(s) applied	1.3
Choice of data or measurement methods and procedures	Default value from the "Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" **Scenario A: Electricity system** In this case, project participants may choose among the following options: Option A1: Calculate the combined margin emission factor of the applicable electricity system, using the procedures in the latest approved version of the Tool to calculate the emission factor for an electricity system ($EF_{EL,j/k/l,y} = EF_{grid,CM,y}$). Option A2: Use the following conservative default values: A value of 1.3 tCO_2/MWh if (a) Scenario A applies only to project and/or leakage electricity consumption sources but not to baseline electricity consumption sources; or (b) Scenario A applies to both baseline and project (and/or leakage) electricity consumption sources; and the electricity consumption of the project and leakage from sources is greater than the electricity consumption of the baseline sources. Option A2 will be used.
Purpose of data	To calculate project emissions
Additional comment	To be considered only in the case the water purification device consumes electricity

Data/Parameter	$TDL_{j,y}$
Data unit	Fraction
Description	Average technical transmission and distribution losses for providing electricity to source j in year y
Source of data	As per the "Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"
Value(s) applied	20%

Choice of data or measurement methods and procedures	Default value from the "Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"
Purpose of data	To calculate project emissions
Additional comment	To be considered only in the case the water purification device consumes electricity.

E.2. Data and parameters monitored

Data/Parameter	QPW_y
Data unit	Litres/yr
Description	Quantity of purified water in year *y* (litres)
Source of data	Calculated (Refer ER calculator)
Value(s) applied	Monitoring Event: MS1 — QPW_y: 307,556,153 Monitoring Event: MS2 — QPW_y: 396,485,521 Total: 704,041,674
Measurement methods and procedures	Calculated through Equation (1.a) For Case 1: $QPW_y = \Sigma (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times Water\ Quality_i \times Operational\ Units_i)$
Monitoring frequency	Annual or at least biennial
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	

Data/Parameter	η_{wb}
Data unit	Fraction
Description	Efficiency of water boiling system being replaced
Source of data	MP#1 Monitoring Report, section E.2, page 16
Value(s) applied	0.1172
Measurement methods and procedures	-
Monitoring frequency	Continuously or at least biennial or using values established in last monitoring period.
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	The monitoring parameter ηwb is calculated based on "AMS III.AV ver 4 default efficiency value for various stove types combined with survey, national, or regional data to determine the percentage of users using different type of cooking technology in line with registered PoA-DD, page 72 and 82. In MP#1, CME had used national data to determine the percentage of users using different cooking technology (refer MP1 MR, section E.2, page 17).

Data/Parameter	$T_{y,i}$
Data unit	Number
Description	Total distributed water purification systems
Source of data	Project Sales database
Value(s) applied	Monitoring Event: MS1 — UltraFlo: 0 — Multi-barrier Uv: 680 Monitoring Event: MS2 — UltraFlo: 78 — Multi-barrier Uv: 939

Measurement methods and procedures	The total number of units by technology type and date deployed in each specific CPA is tracked in the in the Project Database.
Monitoring frequency	Continuous
QA/QC procedures	Project Sales Database is cross-checked with paper records to ensure transparent and robust data.
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	$N_{y,i}$
Data unit	Persons/equipment
Description	The average population serviced by water purification systems
Source of data	Project Sales database
Value(s) applied	Monitoring Event: $N_{y,i}$ MS1: 580 MS2: 566
Measurement methods and procedures	At the time of sale, the number of people using the unit is recorded in the sales receipt (PO / delivery note) .
Monitoring frequency	Continuously
QA/QC procedures	$N_{y,i}$ multiplied by $R_{y,i}$ shall not exceed the maximum output of the unit [per unit].
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	Water Quality$_i$
Data unit	Fraction
Description	Water quality measurement
Source of data	Sampling surveys
Value(s) applied	Monitoring Event: Water Quality$_i$ MS1: 0.98 MS2: 0.95
Measurement methods and procedures	Aquagenix testing kits were used to monitor E.Coli as the indicator organism to test the quality of water
Monitoring frequency	Annual or at least biennial
QA/QC procedures	Monitoring staff with prior experience of testing water quality was used
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	Operational Units$_i$
Data unit	Percentage
Description	Percent of the monitoring period in which the units are in use
Source of data	Sampling surveys
Value(s) applied	Monitoring Event: Water Quality$_i$ MS1: 95% MS2: 96%
Measurement methods and procedures	Surveys were conducted on sample of units for UltraFLO and Multi-barrier UV to check their operational status
Monitoring frequency	At least once per verification or biennially

QA/QC procedures	Enumerators were trained to assess the use of system at the time of survey
Purpose of data	Calculation of baseline emissions
Additional comment	

Data/Parameter	$f_{NRB,y}$
Data unit	Fraction
Description	Fraction of woody biomass saved by the project activity in year, y, that can be established as non-renewable biomass using national or local statistics, survey results, studies, maps or other sources of information, such as remote-sensing data.
Source of data	MP#1 Monitoring Report, section E.2, page 16
Value(s) applied	0.8304
Measurement methods and procedures	-
Monitoring frequency	Continuously or at least biennial or using values established in last monitoring period.
QA/QC procedures	
Purpose of data	Calculation of baseline emissions
Additional comment	The monitoring parameter fNRB,y, is calculated based on "EB 67 Annex 22 Default Values for fNRB for LDCs and SIDS combined with survey, national, or regional data to determine the percentage of users using given fuel type (biomass / fossil fuels) in line with registered PoA-DD page 69 and 82. In MP#1, CME had used national data to determine the percentage users using biomass/ fossil fuel (refer MP#1 MR, section E.2, page 16).

Data/Parameter	$EF_{projected\_fossilfuel}$
Data unit	tCO_2/TJ
Description	Emission factor as per AMS-I.E. procedures when NRB is displaced or the emission factor of the fossil fuel substituted
Source of data	MP#1 Monitoring Report, section E.2, page 17
Value(s) applied	80.12
Measurement methods and procedures	-
Monitoring frequency	Continuously or at least biennial or using values established in last monitoring period.
QA/QC procedures	
Purpose of data	Calculation of baseline emissions
Additional comment	The monitoring parameter EFprojected_fossilfuel, is calculated based on "AMS I.E as referenced by AMS III.AV ver 4 for fNRB and IPCC Default Values for fossil fuels combined with survey, national, or regional data to determine the percentage of users using given fuel type (biomass / fossil fuels) in line with registered PoA-DD page 69 and 84. In MP#1, CME had used national data to determine the percentage users using biomass/ fossil fuel (refer MP#1 MR, section E.2, page 18).

Data/Parameter	Existence of public distribution network of safe drinking water
Data unit	Fraction
Description	Existence of public distribution network of safe drinking water in year *y*
Source of data	Survey Records
Value(s) applied	0
Measurement methods and procedures	Sampling Surveys were conducted to assess existence of safe drinking water public distribution network
Monitoring frequency	Annual or at least biennial
QA/QC procedures	-

Purpose of data	Calculation of baseline emissions
Additional comment	-

Data/Parameter	$EC_{PJ,j,y}$
Data unit	MWh/yr
Description	Quantity of electricity consumed by the project electricity consumption source j in year y
Source of data	Manufacturers' specifications, surveys, or direct monitoring
Value(s) applied	0.1226 (Assuming a UV disinfection system with 14 watt capacity being used 24 hours a day for 365 days a year as conservative measure)
Measurement methods and procedures	As per the "Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation". Electricity Consumption may be directly monitored or Manufacturers' specifications may be used to calculate electricity consumed by assuming that the technology is operating 24 hours a day all year or applying manufacturers' specification to user reported operation hours
Monitoring frequency	Annual or at least biennial as per the monitoring requirements in the methodology.
QA/QC procedures	If surveys are conducted annually, they will meet 90/10 confidence and precision, if they are conducted biennially, they will meet 95/10 confidence and precision.
Purpose of data	Calculation of project emissions
Additional comment	-

E.3. Implementation of sampling plan

>>

A single sampling plan was carried out for CPAs 9948-P1-0002-CP1, 9948-P1-0014-CP1 to 9948-P1-0022-CP1 (covered in this monitoring report).

a) Description of implemented single sampling design

The monitoring period has been covered under two annual monitoring sessions. The first monitoring session(MS#1) covers the monitoring period from 23/05/2017 to 22/05/2018 and the second monitoring session(MS#2) covers the monitoring from 23/05/2018 to 22/05/2019.

The following applies to both monitoring sessions:

(i) Sampling Design

Due to the large number of WPS installed / distributed under these CPAs, it was not economically feasible to monitor each individual WPS unit distributed. Therefore, representative sampling-based monitoring approach was adopted as part of CPA-wide sampling plan. The sampling was therefore based on 95/10 confidence/precision levels:

(ii)Objectives and Reliability Requirements

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

Sl. No.	**Parameter**	**Description of parameter**
1	Water Quality$_i$	Water quality measurement of project WPS
2	Operational Units$_i$	Monitoring to check the operational status of project WPS.
3	Existence of public distribution network of safe drinking water	Existence of public distribution network of safe drinking water in year y

(iii)Target Population

The target population for the parameters stated above are WPS Units installed / distributed in institutions and recorded in the project sales database.

(iv)Sampling Frame:

The target population are WPS Units installed / distributed in institutions and recorded in the project sales database. The parameters for monitoring are homologous (i.e. implemented in institutions), hence a common sampling was followed for all the parameters monitored.

(v)Sampling Method

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

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

Where,

n = number of WPS to be sampled

N = Total number of WPS in the population

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

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

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

Where:

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

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

Where,

g_i = weight of strata i in the population

p_i = expected proportion of strata i in the population

k = total number of strata in the population

Stratified Random Sampling was applied by dividing the population into three strata (UltraFLO, and Multi-barrier UV). The expected parameter values (proportion) were determined based on project developer's knowledge and experience as per para 12(b) and 12(c) of the "Standard: Sampling and surveys for CDM project activities and programmes of activities"

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

and ensure that the desired precision / confidence is achieved. The following tables demonstrate the same size determined for different parameters in the two monitoring sessions:

Sample size calculations for MS#1

Sample Size - Operational Units$_i$			
Stove Model (Sampling Frame)	**Total Sales (Sampling Frame Size)**	**expected operational proportion (SoF)**	**Calculated Sample Size (n)**
Multi-barrier UV	680	0.95	30
Sample size determination			
Estimated Operation Units (p)			0.95
Estimated Standard Deviation of Operational Units (SD)			0.218
V = (SD/p)^2			0.05
Sample Size required (Operational Units)			30

Sample Size - Water Quality$_i$			
WPS Type (Sampling	**Total Sales (Sampling Frame**	**expected water quality**	**Calculated Sample Size (n)**
Multi-barrier UV	680	0.95	30
Sample size determination			
Estimated Water Quality (p)			0.95
Estimated Standard Deviation of Water Quality (SD)			0.218
V = (SD/p)^2			0.05
Sample Size required (Water Quality)			30

Sample Size - Safe water distribution network			
Stove Model (Sampling Frame)	**Total Sales (Sampling Frame Size)**	**expected operational proportion (SoF)**	**Calculated Sample Size (n)**
Multi-barrier UV	680	0.95	30
Sample size determination			
Estimated SWDN (p)			0.95
Estimated Standard Deviation of SWDN (SD)			0.218
V = (SD/p)^2			0.05
Sample Size required (SWDN)			30

Sample size calculations for MS#2

Sample Size - Operational Unitsi			
Stove Model (Sampling Frame)	**Total Sales (Sampling Frame Size)**	**expected operational proportion (SoF)**	**Calculated Sample Size (n)**
UltraFlo	78	0.95	3
Multi-barrier UV	939	0.95	28
Sample size determination			
Estimated Operation Units (p)			0.95
Estimated Standard Deviation of Operational Units (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (Operational Units)			30

Sample Size - Water Quality$_i$			
WPS Type (Sampling	**Total Sales (Sampling Frame**	**expected water quality**	**Calculated Sample Size (n)**
UltraFLO	78	0.95	3
Multi-barrier UV	939	0.95	28
Sample size determination			
Estimated Water Quality (p)			0.95
Estimated Standard Deviation of Water Quality (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (Water Quality)			30

Sample Size - Safe water distribution network			
Stove Model (Sampling Frame)	**Total Sales (Sampling Frame Size)**	**expected operational proportion (SoF)**	**Calculated Sample Size (n)**
UltraFLO	78	0.95	3
Multi-barrier UV	939	0.95	28
Sample size determination			
Estimated SWDN (p)			0.95
Estimated Standard Deviation of SWDN (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (SWDN)			30

b) Collected data (electronic spreadsheets may be attached and referenced)

Data was collected by the Impact Water team. The team is well trained for the usage related surveys and water quality tests given prior experience of monitoring WPS devices. Surveyors visited the institute, did visual inspections and interviewed institution representatives to assess usage (operational status) and existence of safe drinking water public distribution network via a monitoring questionnaire. The Monitoring team also collected water samples for water quality testing using Aquagenix test kits. The MS#1 (Surveys and Water Quality Tests) were conducted during November 2018 to December 2018 and the MS#2 (Surveys and Water Quality Tests) were conducted during November 2019 to December 2019.

c) Analysis of the collected data

Data obtained from the surveys / tests were used to estimate proportions values for the parameters described above. The values were then being factored into the emissions reduction calculations.

Summary of Results for MS#1

Sampling Constants	Values
Effective Monitoring period start date	23-05-2017
Monitoring period end date	22-05-2018
Monitoring frequency (years)	1
Level of sampling	PoA
Confidence (%) (90 or 95)	95%
Margin of Error (%)	10%
Z value	1.96

Sl. No.	Parameter	value	Reliability / precision
1	Operational Units$_i$	95.45%	achieved
2	Water Quality$_i$	97.62%	achieved
3	Existence of public distribution network of safe drinking water	0.00	achieved

Summary of Results for MS#2

Sampling Constants	Values
Effective Monitoring period start date	23-05-2018
Monitoring period end date	22-05-2019
Monitoring frequency (years)	1
Level of sampling	PoA
Confidence (%) (90 or 95)	95%
Margin of Error (%)	10%
Z value	1.96

Sl. No.	Parameter	value	Reliability / precision
1	Operational Units$_i$	95.71%	achieved
2	Water Quality$_i$	95.50%	achieved
3	Existence of public distribution network of safe drinking water	0.00	achieved

d) Demonstration of whether the required confidence/precision has been met

The following tables demonstrate the status of precision/confidence for each of the monitored parameters of MS#1 and MS#2:

Precision attained for various parameters in MS#1

Sample Size - Operational Units$_i$			
Monitoring Results			
WPS Type (Sampling Frame)	**Sampling frame size**	**Monitored Sample Size**	**Monitored Usage (%)**
Multi-barrier UV	680	44	95%
Reliability Check			
Samples Monitored			44
Monitored W_Q (p)			95%
Standard Error of Uy			3.04%
Relative precision (Margin of error)			0.16%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - Water Quality$_i$			
Monitoring Results			
WPS Type (Sampling	**Sampling frame size**	**Monitored Sample Size**	**Monitored Water Quality (%)**
Multi-barrier UV	680	42	98%
Reliability Check			
Samples Monitored			42
Monitored Water Quality (p)			97.62%
Standard Error of Water Quality			2.28%
Relative precision (Margin of error)			0.12%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - Safe water distribution network			
Monitoring Results			
WPS Type (Sampling Frame)	**Sampling frame size**	**Monitored Sample Size**	**Monitored SWDN (%)**
Multi-barrier UV	680	42	0%
Reliability Check			
Samples Monitored			42
Monitored SWDN (p)			0.00%
Standard Error of SWDN			0.00%
Relative precision (Margin of error)			#DIV/0!
Result			#DIV/0!
Lower Bound confidence value			#DIV/0!

Precision attained for various parameters in MS#2

Sample Size - Operational Units$_i$			
Monitoring Results			
WPS Type (Sampling Frame)	**Sampling frame size**	**Monitored Sample Size**	**Monitored Usage (%)**
UltraFlo	78	7	100%
Multi-barrier UV	939	43	95%
Reliability Check			
Samples Monitored			50
Monitored W_Q (p)			96%
Standard Error of Uy			2.90%
Relative precision (Margin of error)			0.15%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - Water Quality$_i$			
Monitoring Results			
WPS Type (Sampling	**Sampling frame size**	**Monitored Sample Size**	**Monitored Water Quality**
UltraFLO	78	7	100%
Multi-barrier UV	939	41	95%
Reliability Check			
Samples Monitored			48
Monitored Water Quality (p)			95.50%
Standard Error of Water Quality			3.04%
Relative precision (Margin of error)			0.16%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - Safe water distribution network			
Monitoring Results			
WPS Type (Sampling Frame)	**Sampling frame size**	**Monitored Sample Size**	**Monitored SWDN (%)**
UltraFlo	78	7	0%
Multi-barrier UV	939	41	0%
Reliability Check			
Samples Monitored			48
Monitored SWDN (p)			0.00%
Standard Error of SWDN			0.00%
Relative precision (Margin of error)			#DIV/0!
Result			#DIV/0!
Lower Bound confidence value			#DIV/0!

e) Demonstration of whether the samples were randomly selected and are representative of the population

WPS were selected randomly from each stratum, after arranging them in chronological order by date of sale and assigning a serial number to each institute. Random numbers were used to identify the samples to the monitored. This approach ensured that the entire population had an equal chance of being selected, and hence samples picked are representative of the population.

SECTION F. Calculation of emission reductions or net anthropogenic removals

F.1. Calculation of baseline emissions or baseline net removals

>>

Emission reductions are calculated as follows[13]:

Step 1: Calculate the quantity of purified water in year y (QPW_y)

Equation (1.a)

For MS#1

QPW_y	$QPW_y = \Sigma(T_{y,i} x N_{y,i} x R_{y,i} x 365 \times Water\ Quality_i \times Operational\ Units_i)$ = 567 x 594 x 2.67 x 354[14] x 0.98 x 0.95 = 297,060,130 L.

For MS#2

QPW_y	$QPW_y = \Sigma(T_{y,i} x N_{y,i} x R_{y,i} x 365 \times Water\ Quality_i \times Operational\ Units_i)$ = 567 x 594 x 2.67 x 324[15] x 0.95 x 0.96 = 267,258,666 L.

Where,

QPW_y	Quantity of purified water for drinking for all technologies type i in year y (Liters)
$N_{y,i}$	The average population serviced by water purification systems (person/equipment)
$T_{y,i}$	
$R_{y,i}$	Average volume of drinking water per person per day (Liters/person/day)
Water Quality$_i$	Percent of units that meet water quality requirements
Operational Units$_i$	Percent of the monitoring period in which the units are in use

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

Equation (2)
For MS#1

SEC	= [WH × (T_f-T_i) + 0.01 × *WHE]/n_{wb}* = [4.186x(100-20)+0.01x2260]/0.1172 = 3050.17 kJ/L.

For MS#2

SEC	= [WH × (T_f-T_i) + 0.01 × *WHE]/n_{wb}* = [4.186x(100-20)+0.01x2260]/0.1172 = 3050.17 kJ/L.

Where,

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

Step 3: Calculate baseline emissions.Equation (1)

[13] The example calculation pertains to CPA 9948-P1-0002-CP1 only for MS#1 as well as for MS#2. Please refer ER Calculator (tab 'ERs Summary MS1' and ERs Summary MS2') for calculation for each CPA.

[14] Instead of 365 days 354 days have been applied for CPA 9948-P1-0002-CP1 as the systems were deemed operational for 354 days in the monitoring session 1(MS#1) (due to progressive sales).

[15] Instead of 365 days 324 days have been applied for CPA 9948-P1-0002-CP1 as the systems were deemed operational for 324 days in the monitoring session 2(MS#2) (due to progressive sales).

For MS#1

BE_y	$= QPW_y \times SEC \times f_{NRB,y} \times EF_{projected\_fossilfuel} \times 10^{-9}$ = 297,060,130 x 3050.17 x 0.8304 x 80.12 x 10^{-9} = 60,286 tCO_2e

For MS#2

BE_y	$= QPW_y \times SEC \times f_{NRB,y} \times EF_{projected\_fossilfuel} \times 10^{-9}$ = 267,258,666 x 3050.17 x 0.8304 x 80.12 x 10^{-9} = 54,238 tCO_2e

Where,

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

F.2. Calculation of project emissions or actual net removals

>>

PE_y = 0, for type 2 CPAs

For type 3 CPA

For MS#1

PE_y	$=PE_y = T_{y,i} \times EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$ =567 * 0.1226 * 1.30 * (1+0.20) =109 tCO_2e

For MS#2

PE_y	$=PE_y = T_{y,i} \times EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$ =567 * 0.1226 * 1.30 * (1+0.20) =109 tCO_2e

F.3. Calculation of leakage emissions

>>

Leakage has been calculated using a default 95% leakage adjustment factor to baseline emissions.

For MS#1

L_y	= BE_y * (1-0.95) = 60,286 * (1-0.95) = 3,015 tCO_2e

For MS#2

L_y	= BE_y * (1-0.95) = 54,238 * (1-0.95) = 2,712 tCO_2e

L_y Leakage emission during the year y in (tCO_2e)
BE_y Baseline emissions during the year y in (tCO_2e)

F.4. Calculation of emission reductions or net anthropogenic removals

In Case of MS#1

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO_2e)	Project GHG emissions or actual net GHG removals (t CO_2e)	Leakage GHG emissions (t CO_2e)	GHG emission reductions or net anthropogenic GHG removals (t CO_2e)		
				Before 01/01/2013	From 01/01/2013	Total amount
9948-P1-0002-CP1	60,286	109	3,015	0	57,162	57,162
9948-P1-0014-CP1	1,038	11	52	0	975	975
9948-P1-0015-CP1	1,091	11	55	0	1,025	1,025
9948-P1-0016-CP1	-		-	0	-	-
9948-P1-0017-CP1	-		-	0	-	-
9948-P1-0018-CP1	-		-	0	-	-
9948-P1-0019-CP1	-		-	0	-	-
9948-P1-0020-CP1	-		-	0	-	-
9948-P1-0021-CP1	-		-	0	-	-
9948-P1-0022-CP1	-		-	0	-	-
Total	62,415	131	3,122	0	59,162	59,162

In Case of MS#2

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO_2e)	Project GHG emissions or actual net GHG removals (t CO_2e)	Leakage GHG emissions (t CO_2e)	GHG emission reductions or net anthropogenic GHG removals (t CO_2e)		
				Before 01/01/2013	From 01/01/2013	Total amount
9948-P1-0002-CP1	54,238	109	2,712	0	51,417	51,417
9948-P1-0014-CP1	11,762	36	589	0	11,137	11,137
9948-P1-0015-CP1	10,808	36	541	0	10,231	10,231
9948-P1-0016-CP1	592		30	0	562	562
9948-P1-0017-CP1	532		27	0	505	505
9948-P1-0018-CP1	447		23	0	424	424
9948-P1-0019-CP1	554		28	0	526	526
9948-P1-0020-CP1	492		25	0	467	467
9948-P1-0021-CP1	529		27	0	502	502
9948-P1-0022-CP1	505		26	0	479	479
Total	80,459	181	4,028	0	76,250	76,250

F.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the included CPA-DDs

In case of MS#1

CPA UNFCCC reference number	Amount achieved during this monitoring period ($t CO_2e$)	Amount estimated ex ante for this monitoring period in the CPA-DD ($t CO_2e$)
9948-P1-0002-CP1	57,162	15,365
9948-P1-0014-CP1	975	4,676
9948-P1-0015-CP1	1,025	4,676
9948-P1-0016-CP1	-	59,586
9948-P1-0017-CP1	-	59,586
9948-P1-0018-CP1	-	59,586
9948-P1-0019-CP1	-	59,586
9948-P1-0020-CP1	-	59,586
9948-P1-0021-CP1	-	59,586
9948-P1-0022-CP1	-	59,586
Total	59,162	441,819

In case of MS#2

CPA UNFCCC reference number	Amount achieved during this monitoring period ($t CO_2e$)	Amount estimated ex ante for this monitoring period in the CPA-DD ($t CO_2e$)
9948-P1-0002-CP1	51,417	15,365
9948-P1-0014-CP1	11,137	15,340
9948-P1-0015-CP1	10,231	15,340
9948-P1-0016-CP1	562	59,586
9948-P1-0017-CP1	505	59,586
9948-P1-0018-CP1	424	59,586
9948-P1-0019-CP1	526	59,586
9948-P1-0020-CP1	467	59,586
9948-P1-0021-CP1	502	59,586
9948-P1-0022-CP1	479	59,586
Total	76,250	463,146

F.5.1. Explanation of calculation of "amount estimated ex ante for this monitoring period in the CPA-DD"

>>
The ex-ante estimate[16] for the monitoring period has been calculated as follows:
In case of MS#1
= Ex-ante ER as per CPA-DD (Section B.4.4) * effective duration of monitoring period / 365

[16] The ex-ante example calculation pertains to CPA 9948-P1-0002-CP1 only for both monitoring sessions. Please refer ER Calculator (tab 'Ex Ante Calculation MS1' and 'Ex Ante Calculation MS2') for calculation for other CPA.

= (15,365/[17]*(7[18]/365)) + (15,365[19]*(358[20]/365))
= 15,365

In case of MS#2
= Ex-ante ER as per CPA-DD (Section B.4.4) * effective duration of monitoring period / 365
= (15,365/[21]*(7[22]/365)) + (15,365[23]*(358[24]/365))
= 15,365

F.6. Remarks on increase in achieved emission reductions

>>
The emission reductions achieved in the monitoring period for CPA 9948-P1-002-CP1 is much more than the value estimated in ex-ante calculation in both monitoring sessions.

In case of MS#1

Monitoring session 1(MS#1)	**Amount achieved during this monitoring period ($t CO_2e$)**	**Amount estimated ex ante for this monitoring period in the CPA-DD ($t CO_2e$)**
23-05-2017 to 22-05-2018	57,162	15,365

In case of MS#

Monitoring session 1(MS#2)	**Amount achieved during this monitoring period ($t CO_2e$)**	**Amount estimated ex ante for this monitoring period in the CPA-DD ($t CO_2e$)**
23-05-2018 to 22-05-2019	51,417	15,365

[17] Ex-ante ER for year 3 as per CPA-DD (Section B.4.3)

[18] Number of monitoring days in Year 3 = Days(29-05-2017,23-05-2017)+1 = 7

Total Number of days in Year 3 = 365

[19] Ex-ante ER for year 4 as per CPA-DD (Section B.4.3)

[20] Number of monitoring days in Year 4 = Days(22-05-2018,30-05-2017)+1 = 358

Total Number of days in year 4= 365

[21] Ex-ante ER for year 4 as per CPA-DD (Section B.4.3)

[22] Number of monitoring days in Year 4 = Days(29-05-2018,23-05-2018)+1 = 7

Total Number of days in Year 4 = 365

[23] Ex-ante ER for year 5 as per CPA-DD (Section B.4.3)

[24] Number of monitoring days in Year 5 = Days(22-05-2019,30-05-2018)+1 = 358

Total Number of days in year 5= 365

A Comparison of the ex-ante parameter values that differ from ex-post monitored values in case of monitoring session 1(MS#1) is given below:

Data/Parameter	Data Unit	Ex-ante	Ex-Post
Ty,i	Number	525	567
Operational rate	Fraction	0.90	0.95
Ry,i	L/person/day	2.00	2.67
Ny,i	persons/technology	275	594
Water Qualityi	Fraction	0.90	0.98
ηwb	Fraction	0.12	0.1172
fNRB	Fraction	0.83	0.8304
EFprojected_fossilfuel	tCO2e/TJ	80.2	80.12

Thus, the comparison above shows that the ex-post increase in CERs is primarily on account of $R_{y,i}$ and $N_{y,i}$. The Ny,i alone has increased ~2.16 times the ex-ante value (=594/275). The increase in Ny,I is attributed to the fact the WPS systems are installed in small, medium and large sized schools (student count range: 50 to 4500).

Similarly, weighted average Ry,i based on the propration of boarding and non-boarding persons is also 2.67 which is ~33.5% higher than the ex-ante assumed value of 2.0. While Ry,i is an ex-ante fixed parameter, the value has increased ex-post as it has been averaged over the WPS population based on share of boarding and non-boarding population in the project shools/ institutions.
The operational rate and water quality ex-post have increased ~1.1 times as compared to ex-ante value.
Thus, the combined effect of these two parameters is ~3.3 times the ex-ante value whereas the expost ERs that have increased only by 3.7 times the ex-ante values (=57,162/15,365).

A Comparison of the ex-ante parameter values that differ from ex-post monitored values in case of monitoring session 2(MS#2) is given below:

Data/Parameter	Data Unit	Ex-ante	Ex-Post
Ty,i	Number	525	567
Operational rate	Fraction	0.90	0.96
Ry,i	L/person/day	2.00	2.67
Ny,i	persons/technology	275	594
Water Qualityi	Fraction	0.90	0.95
ηwb	Fraction	0.12	0.1172
fNRB	Fraction	0.83	0.8304
EFprojected_fossilfuel	tCO2e/TJ	80.2	80.12

Thus, the comparison above shows that the ex-post increase in CERs is primarily on account of Ry,i and Ny,i. The Ny,i alone has increased ~2.16 times the ex-ante value (=594/275). The increase in Ny,I is attributed to the fact the WPS systems are installed in small, medium and large sized schools (student count range: 50 to 4500).

Similarly, weighted average Ry,i based on the propration of boarding and non-boarding persons is also 2.67 which is ~33.5% higher than the ex-ante assumed value of 2.0. While Ry,i is an ex-ante fixed parameter, the value has increased ex-post as it has been averaged over the WPS

population based on share of boarding and non-boarding population in the project shools/ institutions.
The operational rate and water quality ex-post have increased ~1.1 times as compared to ex-ante value.
Thus, the combined effect of these two parameters is ~3.3 times the ex-ante value whereas the expost ERs that have increased only by 3.3 times the ex-ante values (=51,417/15,365).

F.7. Remarks on scale of small-scale CPAs

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The emission reductions are lower than the ex-ante estimates substantiating that the CPAs are below the limit of type III category (60,000, per annum equivalent to 60,000 tCO_2e for the monitoring period).

Appendix 1: Contact information (Additional)

Entity responsible for completing the CDM-PoA-MR-FORM	
Organization name	Climate-Secure Services
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Document information

Version	*Date*	*Description*
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for programmes of activities" (CDM-EB93-A07-STAN); • Add a section on remarks on the observance of the scale limit of small-scale CPAs during the crediting periods; • Add "changes specific to afforestation or reforestation activities/CPA" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R PoAs between two commitment periods; • Make structural and editorial improvements.
02.0	7 June 2017	Revision to: • Ensure consistency with version 01.0 of the "CDM project standard for programmes of activities (CDM-EB93-A07-STAN); • Make editorial improvements.
01.0	1 April 2015	Initial publication.

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