



**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 | 3.0 | |
| Completion date of this monitoring report | 15/04/2021 | |
| Monitoring period number | Fourth monitoring period | |
| Duration of this monitoring period | 01/01/2020 – 21/03/2020 (both days inclusive) | |
| Monitoring report number for this monitoring period | 2 | |
| 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 | 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 | |
| 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 ₂ e | 10,564 tCO ₂ e |
| 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 | 202,861 tCO ₂ e | |

PART I Monitoring of programme of activities (PoA)

SECTION A. Description of PoA

A.1. General description of PoA

>>

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 homes¹. Only 51.8% population uses an appropriate treatment method, with boiling being practiced by 47.0% population for water treatment². 83.3% population uses wood or charcoal for cooking and boiling water³.

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 homes⁴. Only 4.9% population uses an appropriate treatment method with boiling being practiced by 2.6% population for water treatment⁵. 66.9% population uses wood or charcoal for cooking and boiling water⁶.

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 homes⁷. Only 44.5% population uses an appropriate treatment method with boiling being practiced by 23.7% population for water treatment⁸. 73.3% population uses wood or charcoal for cooking and boiling water⁹.

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 homes¹⁰. Only 44.1% population uses an appropriate treatment method with boiling being practiced by 38.3% population for water treatment¹¹. 94.8% population uses wood or charcoal for cooking and boiling water¹².

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.

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, 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: 7.0 | CPA type 2: Technologies for institutional water consumption, 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: 7.0 | CPA type 3: Technologies for institutional water consumption, with project emissions | Renewable 30/05/2014 – 29/05/2021 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 3, Version: 1.3, 9948-P1-0003-CP1 | Version: 7.0 | 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 02/07/2017 – 01/07/2024 | Yes ¹³ |
| Impact Carbon Global Safe Water Programme of Activities | Version: 7.0 | CPA type 2: Technologies for institutional water | Renewable 04/10/2017 – | No |

¹³The monitoring period covers Ultra Flo, UltraTAB and Multi-barrier UV systems. However, the CERs for the Multi-barrier UV are being claimed in accordance with para 228(b)(i) of PS for PoA version 2.0 considering baseline emissions as 0 for this period in the absence of monitoring of monitoring parameters as per the sampling plan.

| | | | | |
|---|--------------|--|-----------------------------------|----|
| (PoA): CPA 5, Version: 5.0, 9948-P1-0005-CP1 | | consumption, no project emissions | 03/10/2024 | |
| 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, 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, 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, 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, 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, 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, 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, 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, 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 | No |
| 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 | No |
| 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, no project emissions | Renewable 15/12/2017 – 14/12/2024 | No |
| 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, no project emissions | Renewable 15/12/2017 – 14/12/2024 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18, Version: 5.0, | Version: 7.0 | CPA type 2: Technologies for institutional water consumption, no project | Renewable 15/12/2017 – 14/12/2024 | No |

| | | | | |
|---|--------------|--|-----------------------------------|-----|
| 9948-P1-0018-CP1 | | emissions | | |
| 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 consumption, no project emissions | Renewable 15/12/2017 – 14/12/2024 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 20, Version: 5.0, 9948-P1-0020-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no project emissions | Renewable 15/12/2017 – 14/12/2024 | No |
| 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 consumption, no project emissions | Renewable 15/12/2017 – 14/12/2024 | No |
| 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 consumption, no project emissions | Renewable 15/12/2017 – 14/12/2024 | No |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |

| | | | | |
|--|--------------|--|-----------------------------------|-----|
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 33, Version: 4.0, 9948-P1-0033-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, no project emissions | Renewable 18/11/2018 – 17/11/2025 | Yes |
| 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 45 supported by Republic of Korea, Version: 1.0, 9948-P1-0045-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional water consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| 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, 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, 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, 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, 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, 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, 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, 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, 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: | Version: 7.0 | CPA type 2: Technologies for institutional water consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |

| | | | | |
|--|--------------|--|-----------------------------------|----|
| 1.0, 9948-P1-0054-CP1 | | | | |
| 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 65 supported by | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |

| | | | | |
|--|--------------|--|-----------------------------------|----|
| Republic of Korea, Version: 1.0, 9948-P1-0065-CP1 | | emissions | | |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 66 supported by Republic of Korea, Version: 1.0, 9948-P1-0066-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |

| | | | | |
|--|--------------|--|-----------------------------------|----|
| (PoA): CPA 76 supported by Republic of Korea, Version: 1.0, 9948-P1-0076-CP1 | | consumption, no project emissions | 25/04/2026 | |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 77 supported by Republic of Korea, Version: 1.0, 9948-P1-0077-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 consumption, 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 87 supported by Republic of Korea, Version: 1.0, 9948-P1-0087-CP1 | | institutional consumption, no emissions | water project | 26/04/2019 – 25/04/2026 | |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 88 supported by Republic of Korea, Version: 1.0, 9948-P1-0088-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no emissions | water project | Renewable 26/04/2019 – 25/04/2026 | No |
| 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no emissions | water project | 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 consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 99 supported by Republic of Korea, Version: 1.0, 9948-P1-0099-CP1 | Version: 7.0 | CPA type 2: Technologies for institutional consumption, no project emissions | Renewable 26/04/2019 – 25/04/2026 | No |
| 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 consumption, 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 consumption, 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 consumption, 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 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 consumption, with project emissions | Renewable 11/06/2019 – 10/06/2026 | No |
| Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 105 supported by Republic of Korea, Version: 1.0, 9948-P1-0105 | Version: 7.0 | CPA type 3: Technologies for institutional 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 / UltraTAB / 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 / Ultra tab / 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-P1-0023-CP1 to 9948-P1-0037-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-P1-0023-CP1 to 9948-P1-0037-CP1¹⁴. For more detail, refer section E.3 below.

B.2. Post-registration changes to PoA

B.2.1. Corrections

>>
N/A

¹⁴ CPA 9948-P1-0004-CP1 has not been monitored, refer section C.3.1 below for the temporary deviation applied.

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 16 CPAs in Kenya (from 9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1), as listed in section A.1.2. These 16 CPAs are deemed homogeneous due to the following:

1. Have the same project boundary/country (i.e. Kenya)
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 16 CPAs only.

SECTION C. Implementation of CPAs**C.1. Description of implemented CPAs**


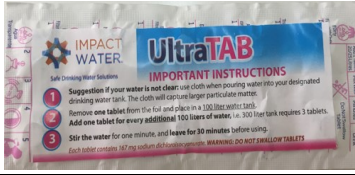

>>

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 / UltraTAB) and Ultraviolet disinfection based WPS (Multi-barrier UV) for use by institutions in Kenya. 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 three types WPS.

| Descriptio n | UltraFlo | UltraTab | Multi-barrier UV |
|-----------------------|---|--|---|
| |  |  |  |
| Size / Dimension s | Cartridge Length: ~12 cm Cartridge height: ~10 cm Cartridge circumference: ~22 cm | Strip size: ~13 cm X ~5.5 cm (10 tablets per strip) | System Height: ~44cm System Length: ~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 | 4,088,232 L / 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 |

The distribution of units under the CPAs are as follows:

| S.No. | CPA Reference No. | UltraFlo | UltraTab | Multi-barrier UV |
|--------------|-------------------|--------------|--------------|------------------|
| 1 | 9948-P1-0004-CP1 | 0 | 0 | 138 |
| 2 | 9948-P1-0023-CP1 | 343 | 0 | 0 |
| 3 | 9948-P1-0024-CP1 | 275 | 30 | 0 |
| 4 | 9948-P1-0025-CP1 | 183 | 122 | 0 |
| 5 | 9948-P1-0026-CP1 | 161 | 141 | 0 |
| 6 | 9948-P1-0027-CP1 | 261 | 53 | 0 |
| 7 | 9948-P1-0028-CP1 | 283 | 31 | 0 |
| 8 | 9948-P1-0029-CP1 | 177 | 137 | 0 |
| 9 | 9948-P1-0030-CP1 | 29 | 285 | 0 |
| 10 | 9948-P1-0031-CP1 | 16 | 299 | 0 |
| 11 | 9948-P1-0032-CP1 | 63 | 251 | 0 |
| 12 | 9948-P1-0033-CP1 | 102 | 212 | 0 |
| 13 | 9948-P1-0034-CP1 | 79 | 235 | 0 |
| 14 | 9948-P1-0035-CP1 | 133 | 181 | 0 |
| 15 | 9948-P1-0036-CP1 | 191 | 121 | 0 |
| 16 | 9948-P1-0037-CP1 | 175 | 163 | 0 |
| Total | | 2,471 | 2,261 | 138 |

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-P1-0004-CP1 | 03/06/2017 | 02/07/2017 |
| 2 | 9948-P1-0023-CP1 | 14/03/2018 | 18/11/2018 |
| 3 | 9948-P1-0024-CP1 | 21/06/2018 | 18/11/2018 |
| 4 | 9948-P1-0025-CP1 | 20/07/2018 | 18/11/2018 |
| 5 | 9948-P1-0026-CP1 | 16/08/2018 | 18/11/2018 |
| 6 | 9948-P1-0027-CP1 | 06/09/2018 | 18/11/2018 |
| 7 | 9948-P1-0028-CP1 | 29/09/2018 | 18/11/2018 |
| 8 | 9948-P1-0029-CP1 | 24/10/2018 | 18/11/2018 |

| S.No. | CPA Reference No. | Date of installation of first unit in the CPA | Crediting Period Start date |
|-------|-------------------|---|-----------------------------|
| 9 | 9948-P1-0030-CP1 | 11/01/2019 | 18/11/2018 |
| 10 | 9948-P1-0031-CP1 | 18/01/2019 | 18/11/2018 |
| 11 | 9948-P1-0032-CP1 | 26/01/2019 | 18/11/2018 |
| 12 | 9948-P1-0033-CP1 | 06/02/2019 | 18/11/2018 |
| 13 | 9948-P1-0034-CP1 | 20/02/2019 | 18/11/2018 |
| 14 | 9948-P1-0035-CP1 | 01/03/2019 | 18/11/2018 |
| 15 | 9948-P1-0036-CP1 | 20/03/2019 | 18/11/2018 |
| 16 | 9948-P1-0037-CP1 | 03/04/2019 | 18/11/2018 |

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 ₂ e |
|--------------|-------------------|--|
| 1 | 9948-P1-0004-CP1 | -5 |
| 2 | 9948-P1-0023-CP1 | 527 |
| 3 | 9948-P1-0024-CP1 | 307 |
| 4 | 9948-P1-0025-CP1 | 407 |
| 5 | 9948-P1-0026-CP1 | 455 |
| 6 | 9948-P1-0027-CP1 | 458 |
| 7 | 9948-P1-0028-CP1 | 775 |
| 8 | 9948-P1-0029-CP1 | 674 |
| 9 | 9948-P1-0030-CP1 | 481 |
| 10 | 9948-P1-0031-CP1 | 802 |
| 11 | 9948-P1-0032-CP1 | 760 |
| 12 | 9948-P1-0033-CP1 | 903 |
| 13 | 9948-P1-0034-CP1 | 984 |
| 14 | 9948-P1-0035-CP1 | 988 |
| 15 | 9948-P1-0036-CP1 | 988 |
| 16 | 9948-P1-0037-CP1 | 1,060 |
| Total | | 10,564 |

C.2. Location of CPAs

>>

The CPA covers the geographical boundary of Kenya. Kenya lies between 5.03° to -4.65° north latitude and between 34.03° to 41.9° east longitude and has a land area of 581,309 sq. km. The map of Kenya, 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

>>

The following temporary deviations have been applied:

1. Description: In line with para 228(b)(i) of PS for PoA version 2.0, the baseline emissions for Multi-barrier UV Systems for the requested monitoring period (01/01/2020 to 21/03/2020) are considered as 0 tCO₂e.
 - a. Nature of temporary deviation: Monitoring data not available to calculate baseline emissions
 - b. Applicability: 01/01/2020 to 21/03/2020
 - c. CPAs: 9948-P1-0004-CP1
2. Description: In line with para 228(b)(ii) of PS for PoA version 2.0, the project emissions for Multi-barrier UV Systems for the requested monitoring period (01/01/2020 to 21/03/2020) have been considered according to the maximum capacity for the entire non-conforming monitoring period.
 - a. Nature of temporary deviation: Maximization of project emissions due to consumption of electricity.
 - b. Applicability: 01/01/2020 to 21/03/2020
 - c. CPAs: 9948-P1-0004-CP1
3. Description: Systems that were consumed fully/discontinued prior to the start of monitoring period (operational days = 0) have not been considered for sampling and ER calculations and their ERs have been considered as 0.
 - a. Nature of temporary deviation: No service level as systems deemed not functional
 - b. Applicability: 01/01/2020 to 21/03/2020
 - c. CPAs: 9948-P1-0004-CP1, 9948-P1-0023-CP1 to 9948-P1-0037-CP1

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 / UltraTAB / 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 / UltraTAB / 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 |
|--|---|
| 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-DDs |
| Value(s) applied | Case 1 |
| Choice of data or measurement methods and procedures | Established ex-ante in the registered CPA-DDs |

| | |
|---------------------------|-----------------------------------|
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|--|-----------------------------------|
| Data/Parameter | WH |
| Unit | kJ/L.°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/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|--|-----------------------------------|
| Data/Parameter | T _f |
| Unit | °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/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|--|-----------------------------------|
| Data/Parameter | T _i |
| Unit | °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/parameter | Calculation of baseline emissions |
| Additional comments | - |

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

| | |
|-----------------------|--------------------|
| Data/Parameter | L |
| 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/parameter | Calculation of leakage emissions |
| Additional comments | - |

| | |
|--|--|
| Data/Parameter | $R_{y,i}$ |
| 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 institutions) and 2 (for non-boarding institutions). 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/parameter | Calculation of baseline emissions |
| Additional comments | $N_{y,i}$ multiplied by $R_{y,i}$ shall not exceed the maximum output of the technology |

| | |
|--|---|
| Data/Parameter | $EF_{EL,j,y}$ |
| 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 | <p>Default value from the "Tool Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation".</p> <p>Scenario A: Electricity system</p> <p>In this case, project participants may choose among the following options:</p> <p>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 ($EF_{EL,j/k/l,y} = EF_{grid,CM,y}$).</p> <p>Option A2: Use the following conservative default values:</p> <p>A value of 1.3 tCO₂/MWh if</p> <p>(a) Scenario A applies only to project and/or leakage electricity consumption sources but not to baseline electricity consumption sources; or</p> <p>(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.</p> <p>Option A2 will be used.</p> |
| Purpose of data/parameter | To calculate project emissions |
| Additional comments | To be considered only in the case the water purification device consumes electricity |

| | |
|-----------------------|--|
| Data/Parameter | $TDL_{j,y}$ |
| 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/parameter | To calculate project emissions |
| Additional comments | To be considered only in the case the water purification device consumes electricity. |

E.2. Data and parameters monitored

| | |
|---------------------------------------|--|
| Data/Parameter | QPW _y |
| Unit | Litres/yr |
| Description | Quantity of purified water in year y (litres) |
| Measured/calculated/default | Calculated |
| Source of data | Calculated based on information in Project sales database and sampling surveys |
| Value(s) of monitored parameter | 50,387,712 |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Annually |
| Calculation method (if applicable) | Calculated through Equation (1.a) For Case 1: $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365^{15} \times Water\ Quality_i \times Operational\ Units_i)$ |
| QA/QC procedures | - |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|---------------------------------------|--|
| Data/Parameter | η_{wb} |
| Unit | Fraction |
| Description | Efficiency of water boiling system being replaced |
| Measured/calculated/default | Calculated using the default value as per AMS-III.AV combined with national or regional data |
| Source of data | Default values as per AMS-III.AV ver.4.0 combined with national data GACC - Kenya Market Assessment - Sector Mapping by GVEP International, 2012, page 47 and Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17 |
| Value(s) of monitored parameter | 0.12 |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Continuously |

¹⁵ Instead of 365 days, school days as per academic school calendar issued by “Ministry of Education, Kenya” have been considered for ER calculations. Please refer column AV:BC in “MP4 Sales Database” tab of ER calculator for details.

| | | |
|---------------------------------------|--|--|
| Calculation method (if applicable) | The efficiency of baseline water boiling systems used by target population | |
| | Baseline Water Boiling System | Default Efficiency Value as per AMS.III.AV |
| | Unimproved biomass burning stove (UBBS) | 0.1 |
| | Other biomass burning stove (OBBS) | 0.2 |
| | Fossil fuel stove (FFS) | 0.5 |
| | The type of baseline water boiling systems used by target population | |
| | Baseline Water Boiling System | Percentage |
| | Unimproved biomass burning stove (UBBS) | 95.0 |
| | Other biomass burning stove (OBBS) | 0.0 |
| | Fossil fuel stove (FFS) | 5.0 |
| QA/QC procedures | - | |
| Purpose of data/parameter | Calculation of baseline emissions | |
| Additional comments | - | |

| | |
|---------------------------------------|---|
| Data/Parameter | $T_{y,i}$ |
| Unit | Number of units |
| Description | Total distributed water purification systems |
| Measured/calculated/default | Measured |
| Source of data | Project Sales database |
| Value(s) of monitored parameter | 4,870 UltraFLO: 2,471 UltraTAB: 2,261 Multi-barrier UV:138 |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Continuously |
| Calculation method (if applicable) | The total number of units by technology type and date deployed in each specific CPA is tracked in the in the Project Database.) |
| QA/QC procedures | Project Sales Database is cross-checked with paper records to ensure transparent and robust data. |
| Purpose of data/parameter | Calculation of baseline emissions |

| | |
|---------------------|--|
| Additional comments | In case of Ultra tabs, parameter $T_{y,i}$ is the number of institutions where UltraTABS are being supplied. Thus, each school receiving Ultra tab will be counted as one unit, for the purpose of determining $T_{y,i}$ |
| | Thus, number of institutions supplied with UltraTABS and total number of UltraTABS supplied to each of these institutions is monitored. |
| | The value mentioned above under “Value(s) of monitored parameter” is the total number of Multi-Barrier UV, UltraFlo and UltraTAB systems distributed/installed across various CPAs covered in this monitoring report. |
| | The total number of Multi-Barrier UV, UltraFLO and UltraTAB systems on which credits are being claimed is 0, 550 and 935 respectively. Kindly refer section C.3.1 above for more details |

| | |
|---------------------------------------|--|
| Data/Parameter | $N_{y,i}$ |
| Unit | Persons/equipment |
| Description | The average population serviced by water purification systems in year y |
| Measured/calculated/default | Measured |
| Source of data | Project Sales database |
| Value(s) of monitored parameter | 412 ¹⁶ |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Continuously |
| Calculation method (if applicable) | At the time of installation/distribution, the number of people using the unit is recorded in the sales receipt (PO / delivery note). |
| 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/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|---------------------------------------|--|
| Data/Parameter | Water Quality _i |
| Unit | Proportion |
| Description | Water quality measurement |
| Measured/calculated/default | Measured |
| Source of data | Sampling surveys |
| Value(s) of monitored parameter | 0.94 |
| Monitoring equipment | Aquagenx testing kits |
| Measuring/reading/recording frequency | Annually |
| Calculation method (if applicable) | Aquagenx testing kits were used to monitor E.Coli as the indicator organism to test the quality of water |
| QA/QC procedures | Monitoring staff with prior experience of testing water quality was used |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

¹⁶ This value is the average value across all the CPAs covered in this monitoring report. However, the ERs for each CPA have been calculated separately as mentioned in section F below. Thus, for each CPA, the corresponding $N_{y,i}$ value has been used for ER calculations. Refer ER Calculator (tab ‘ERs Summary’) for details.

| | |
|---------------------------------------|---|
| Data/Parameter | Operational Units _i |
| Unit | Percentage |
| Description | Percentage of the monitoring period in which the unit of each technology type are in use |
| Measured/calculated/default | Measured |
| Source of data | Sampling surveys |
| Value(s) of monitored parameter | 94.02% |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Once per verification |
| Calculation method (if applicable) | Sampling Survey has been done to determine the number of water purification system still in operation by field survey by a dedicated team |
| QA/QC procedures | Enumerators were trained to assess the use of system at the time of survey |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|---------------------------------------|--|
| Data/Parameter | $f_{NRB,y}$ |
| 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. |
| Measured/calculated/default | Calculated using the default value of f_{NRB} from UNFCCC CDM Data combined with national or regional data |
| Source of data | Default value of f_{NRB} from UNFCCC SSC WG 37 th Meeting Report for Kenya extension of EB 67 annex 22 as per para 3 of SSC WG 37 annex 14) ¹⁷ combined with national data (Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17). |
| Value(s) of monitored parameter | 0.9240 |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Continuously |
| Calculation method (if applicable) | Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17 mentions % schools in Kenya using woodfuel as 95%. $f_{NRB,y} = [\text{Default } f_{NRB} \text{ value}] * [\% \text{ of users using NRB}] + [1.0] * [\% \text{ of users using fossil fuels}]$ Thus, $f_{NRB,y} = 0.92 * 95\% + 1.00 * 5\% = 0.9240$ |
| QA/QC procedures | - |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|-----------------------|-------------------------------------|
| Data/Parameter | $EF_{\text{projected_fossilfuel}}$ |
| Unit | tCO ₂ /TJ |

¹⁷ http://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf

| Description | Emission factor as per AMS-I.E. procedures when NRB is displaced or the emission factor of the fossil fuel substituted | | | | | | | | | | | | | | | | | |
|--|---|-----------------|---------|------------------------------------|-----------------|--------|-------------------|---------------------------|---------|--------------------------|-------|-------------------|------------------------|-------|------|-------------------|-------|------|
| Measured/calculated/default | Calculated using the default value of EF _{NRB} from UNFCCC CDM combined with national or regional data | | | | | | | | | | | | | | | | | |
| Source of data | AMS-I.E. as referenced by AMS-III.AV Version 4 for EF _{NRB} and IPCC default values for fossil fuels combined with national data (Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17) | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter | 80.33 | | | | | | | | | | | | | | | | | |
| Monitoring equipment | - | | | | | | | | | | | | | | | | | |
| Measuring/reading/recording frequency | Continuously | | | | | | | | | | | | | | | | | |
| Calculation method (if applicable) | <table><tr><th>Emission Factor for Baseline Fuels</th><th>Emission Factor</th><th>Source</th></tr><tr><td>EF_{NRB}</td><td>81.60</td><td>AMS I.E</td></tr><tr><td>EF_{Naturalgas}</td><td>56.10</td><td>IPCC</td></tr><tr><td>EF_{Kerosene}</td><td>71.90</td><td>IPCC</td></tr><tr><td>EF_{LPG}</td><td>63.10</td><td>IPCC</td></tr></table> | | | Emission Factor for Baseline Fuels | Emission Factor | Source | EF _{NRB} | 81.60 | AMS I.E | EF _{Naturalgas} | 56.10 | IPCC | EF _{Kerosene} | 71.90 | IPCC | EF _{LPG} | 63.10 | IPCC |
| | Emission Factor for Baseline Fuels | Emission Factor | Source | | | | | | | | | | | | | | | |
| | EF _{NRB} | 81.60 | AMS I.E | | | | | | | | | | | | | | | |
| | EF _{Naturalgas} | 56.10 | IPCC | | | | | | | | | | | | | | | |
| | EF _{Kerosene} | 71.90 | IPCC | | | | | | | | | | | | | | | |
| | EF _{LPG} | 63.10 | IPCC | | | | | | | | | | | | | | | |
| | Biomass fuel market study, by EU-Nakuru County Sanitation Programme and Turnaround Africa Limited, 2016, page 17 mentions % schools in Kenya using woodfuel as 95%. | | | | | | | | | | | | | | | | | |
| | <table><tr><th>Fuel Type</th><th>Percentage</th></tr><tr><td>NRB</td><td>95.0</td></tr><tr><td>Fossil Fuel – Natural Gas</td><td>5.0</td></tr><tr><td>Fossil Fuel – Kerosene</td><td>0.0</td></tr><tr><td>Fossil Fuel – LPG</td><td>0.0</td></tr></table> | | | Fuel Type | Percentage | NRB | 95.0 | Fossil Fuel – Natural Gas | 5.0 | Fossil Fuel – Kerosene | 0.0 | Fossil Fuel – LPG | 0.0 | | | | | |
| | Fuel Type | Percentage | | | | | | | | | | | | | | | | |
| | NRB | 95.0 | | | | | | | | | | | | | | | | |
| Fossil Fuel – Natural Gas | 5.0 | | | | | | | | | | | | | | | | | |
| Fossil Fuel – Kerosene | 0.0 | | | | | | | | | | | | | | | | | |
| Fossil Fuel – LPG | 0.0 | | | | | | | | | | | | | | | | | |
| EF _{projected_fossilfuel} = [EF _{NRB}]*[% of users using NRB] + [EF _{Natural Gas}] * [% of users using Natural Gas] + [EF _{Kerosene}] * [% of users using Kerosene] + [EF _{LPG}] * [% of users using LPG] | | | | | | | | | | | | | | | | | | |
| To apply a conservative estimate of CERs, all fossil fuel used is assumed to be Natural Gas, as this fuel has the lowest emission factor. | | | | | | | | | | | | | | | | | | |
| Thus, EF _{projected_fossilfuel} = 81.6 * 95% + 56.1 * 5% = 80.33 | | | | | | | | | | | | | | | | | | |
| QA/QC procedures | - | | | | | | | | | | | | | | | | | |
| Purpose of data/parameter | Calculation of baseline emissions | | | | | | | | | | | | | | | | | |
| Additional comments | - | | | | | | | | | | | | | | | | | |

| | |
|---------------------------------------|---|
| Data/Parameter | Existence of public distribution network of safe drinking water |
| Unit | Percentage |
| Description | Existence of public distribution network of safe drinking water in year y |
| Measured/calculated/default | Measured |
| Source of data | Sampling Surveys |
| Value(s) of monitored parameter | 0 |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Annually |
| Calculation method (if applicable) | Sampling Surveys were conducted to assess existence of public distribution network of safe drinking water |
| QA/QC procedures | - |

| | |
|---------------------------|-----------------------------------|
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

| | |
|---------------------------------------|--|
| Data/Parameter | EC _{p,j,y} |
| Unit | MWh/yr |
| Description | Quantity of electricity consumed by the project electricity consumption source j in year y |
| Measured/calculated/default | Calculated |
| Source of data | Manufacturers' specifications |
| Value(s) of monitored parameter | 0.027 (Assuming a UV disinfection system with 14-watt capacity being used 24 hours a day for entire monitoring period (81 days) as a conservative measure) |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Annually |
| Calculation method (if applicable) | 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 |
| 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/parameter | Calculation of project emissions |
| Additional comments | - |

E.3. Implementation of sampling plan

>>

A single sampling plan was carried out for CPAs 9948-P1-0023-CP1 to 9948-P1-0037-CP1 (covered in this monitoring report).

a) Description of implemented single sampling design

(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)

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

Where:

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

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

Where,

g_i = weight of strata i in the population

p_i = expected proportion of strata i in the population

k = total number of strata in the population

Stratified Random Sampling was applied by dividing the population into two strata (UltraFLO, UltraTAB 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", version 8.0.

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 sample size determined:

| Sample Size - Operational Units _i | | | |
|---|-----------------------------------|-----------------------------------|----------------------------|
| WPS Type(Sampling Frame) | Total Sales (Sampling Frame Size) | expected operational rate (%) | Calculated Sample Size (n) |
| UltraFlo | 550 | 95% | 12 |
| UltraTab | 935 | 95% | 19 |
| Sample size determination | | | |
| Estimated Operation Units _i (p) | | | 95% |
| Estimated Standard Deviation of Operation Units _i (SD) | | | 21.8% |
| $V = (SD/p)^2$ | | | 0.05 |
| Sample Size required (Operation Units _i) | | | 30 |
| Sample Size - Water Quality _i | | | |
| WPS Type (Sampling Frame) | Total Sales (Sampling Frame Size) | expected water quality (Fraction) | Calculated Sample Size (n) |
| UltraFLO | 550 | 0.95 | 12 |
| UltraTAB | 935 | 0.95 | 19 |
| Sample size determination | | | |
| Estimated Water Quality _i (p) | | | 0.95 |
| Estimated Standard Deviation of Water Quality _i (SD) | | | 0.218 |
| $V = (SD/p)^2$ | | | 0.05 |
| Sample Size required (Water Quality _i) | | | 30 |
| Sample Size - Safe water distribution network | | | |
| WPS Type (Sampling Frame) | Total Sales (Sampling Frame Size) | expected SWDN (%) | Calculated Sample Size (n) |
| UltraFLO | 550 | 95% | 12 |
| UltraTab | 935 | 95% | 19 |
| Sample size determination | | | |
| Estimated SWDN (p) | | | 95% |
| Estimated Standard Deviation of SWDN (SD) | | | 21.8% |
| $V = (SD/p)^2$ | | | 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 Aquagenx test kits. The monitoring (Surveys and Water Quality Tests) were conducted from 03-08-2020 to 11-08-2020.

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

| Sampling Constants | Values |
|------------------------------|------------|
| Monitoring period start date | 01-01-2020 |
| Monitoring period end date | 21-03-2020 |
| 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 | 94.02% | achieved |
| 2 | Water Quality _i | 0.94 | 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

| Sample Size - Operational Units _i | | | |
|--|-----------------------------------|---------------------------|------------------------------------|
| Monitoring Results | | | |
| WPS Type (Sampling Frame) | Total Sales (Sampling Frame Size) | Monitored Sample Size (n) | Monitored Operational Rate (%) |
| UltraFlo | 550 | 25 | 96.00% |
| UltraTab | 935 | 28 | 92.86% |
| Reliability Check | | | |
| Samples Monitored | | | 53 |
| Monitored Operation Units _i (p) | | | 94.02% |
| Standard Error of Operation Units _i | | | 3.33% |
| Relative precision (Margin of error) | | | 6.95% |
| Result | | | Ok, acceptable |
| Lower Bound confidence value | | | not applicable |
| | | | |
| Sample Size - Water Quality _i | | | |
| Monitoring Results | | | |
| WPS Type (Sampling Frame) | Total Sales | Monitored Sample Size (n) | Monitored Water Quality (Fraction) |
| UltraFLO | 550 | 24 | 0.96 |
| UltraTab | 935 | 26 | 0.92 |
| Reliability Check | | | |
| Samples Monitored | | | 50 |
| Monitored Water Quality _i (p) | | | 0.94 |
| Standard Error of Water Quality _i | | | 0.04 |
| Relative precision (Margin of error) | | | 7.46% |
| Result | | | Ok, acceptable |
| Lower Bound confidence value | | | not applicable |
| | | | |
| Sample Size - Safe water distribution network | | | |
| Monitoring Results | | | |
| WPS Type (Sampling Frame) | Total Sales (Sampling Frame Size) | Monitored Sample Size (n) | Monitored SWDN (%) |
| UltraFlo | 550 | 24 | 0% |
| UltraTab | 935 | 26 | 0% |
| Reliability Check | | | |
| Samples Monitored | | | 50 |
| Monitored SWDN (p) | | | 0.00% |
| Standard Error of SWDN | | | 0.00% |
| Relative precision (Margin of error) | | | 0.00% |
| Result | | | Ok, acceptable |
| Lower Bound confidence value | | | not applicable |

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 be 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 follows¹⁸:

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

Equation (1.a)

| | |
|---------|--|
| QPW_y | $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ $= 77 \times 355 \times 2.17 \times 48^{19} \times 0.94 \times 94.02\%$ $= 2,514,007 \text{ L.}$ |
|---------|--|

| | |
|------------------------------|--|
| 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) |
| $T_{y,i}$ | Average volume of drinking water per person per day (Liters/person/day) |
| $R_{y,i}$ | Percent of units that meet water quality requirements |
| $\text{Operational Units}_i$ | Percent of the monitoring period in which the units are in use |

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

Equation (2)

| | |
|-----|--|
| SEC | $= [WH \times (T_f - T_i) + 0.01 \times WHE] / n_{wb}$ $= [4.186 \times (100 - 20) + 0.01 \times 2260] / 0.12$ $= 2,979 \text{ kJ/L.}$ |
|-----|--|

Where

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

Step 3: Calculate baseline emissions. Equation (1)

| | |
|--------|---|
| BE_y | $= QPW_y \times SEC \times f_{NRB,y} \times EF_{\text{projected_fossilfuel}} \times 10^{-9}$ $= 2,514,007 \times 2979 \times 0.9240 \times 80.33 \times 10^{-9}$ $= 555 \text{ tCO}_2\text{e}$ |
|--------|---|

¹⁸ The illustrated calculation pertains to CPA 9948-P1-0023-CP1 only. Please refer ER Calculator (tab 'ERs Summary') for calculation for each CPA.

¹⁹ Instead of 365 days, 48 days have been applied as the systems in CPA-23 were deemed operational for 48 days in the monitoring period (due to progressive sales and accounting for school holidays during the monitoring period) for 9948-P1-0023-CP1. Please refer column AV:BC in "MP4 Sales Database" tab of ER calculator for details.

Where,

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

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

>>

$PE_y = 0$, for type 2 CPAs

For type 3 CPA²⁰

| | |
|--------|--|
| PE_y | $= PE_y = T_{y,i} \times EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$ $= 113 \times 0.027 \times 1.30 \times (1 + 0.20)$ $= 5 \text{ tCO}_2\text{e}$ |
|--------|--|

F.3. Calculation of leakage emissions

>>

Leakage has been calculated using a default 95% leakage adjustment factor to baseline emissions²¹.

| | |
|-------|---|
| L_y | $= BE_y \times (1 - 0.95)$ $= 555 \times (1 - 0.95)$ $= 28 \text{ tCO}_2\text{e}$ |
|-------|---|

| | |
|--------|--|
| L_y | Leakage emission during the year y in (tCO ₂ e) |
| BE_y | Baseline emissions during the year y in (tCO ₂ e) |

²⁰ The illustrated project emissions calculation pertains to CPA 9948-P1-0004-CP1 only (type 3 CPA - UV technology). Please refer ER Calculator (tab 'ERs Summary') for details.

²¹ The illustrated leakage emissions calculation pertains to CPA 9948-P1-0023-CP1 only. Please refer ER Calculator (tab 'ERs Summary') for calculation for each CPA.

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

| CPA UNFCCC reference number | Baseline GHG emissions or baseline net GHG removals (t CO ₂ e) | Project GHG emissions or actual net GHG removals (t CO ₂ e) | Leakage GHG emissions (t CO ₂ e) | GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e) | | |
|-----------------------------|---|--|---|---|-----------------|---------------|
| | | | | Before 01/01/2013 | From 01/01/2013 | Total amount |
| 9948-P1-0004-CP1 | - | 5 | - | 0 | -5 | -5 |
| 9948-P1-0023-CP1 | 555 | - | 28 | 0 | 527 | 527 |
| 9948-P1-0024-CP1 | 324 | - | 17 | 0 | 307 | 307 |
| 9948-P1-0025-CP1 | 429 | - | 22 | 0 | 407 | 407 |
| 9948-P1-0026-CP1 | 479 | - | 24 | 0 | 455 | 455 |
| 9948-P1-0027-CP1 | 483 | - | 25 | 0 | 458 | 458 |
| 9948-P1-0028-CP1 | 816 | - | 41 | 0 | 775 | 775 |
| 9948-P1-0029-CP1 | 710 | - | 36 | 0 | 674 | 674 |
| 9948-P1-0030-CP1 | 507 | - | 26 | 0 | 481 | 481 |
| 9948-P1-0031-CP1 | 845 | - | 43 | 0 | 802 | 802 |
| 9948-P1-0032-CP1 | 800 | - | 40 | 0 | 760 | 760 |
| 9948-P1-0033-CP1 | 951 | - | 48 | 0 | 903 | 903 |
| 9948-P1-0034-CP1 | 1,036 | - | 52 | 0 | 984 | 984 |
| 9948-P1-0035-CP1 | 1,041 | - | 53 | 0 | 988 | 988 |
| 9948-P1-0036-CP1 | 1,040 | - | 52 | 0 | 988 | 988 |
| 9948-P1-0037-CP1 | 1,116 | - | 56 | 0 | 1,060 | 1,060 |
| Total | 11,132 | 5 | 563 | 0 | 10,564 | 10,564 |

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

| CPA UNFCCC reference number | Amount achieved during this monitoring period (t CO ₂ e) | Amount estimated ex ante for this monitoring period in the CPA-DD (t CO ₂ e) |
|-----------------------------|---|---|
| 9948-P1-0004-CP1 | -5 | 5,716 |
| 9948-P1-0023-CP1 | 527 | 13,143 |
| 9948-P1-0024-CP1 | 307 | 13,143 |
| 9948-P1-0025-CP1 | 407 | 13,143 |
| 9948-P1-0026-CP1 | 455 | 13,143 |
| 9948-P1-0027-CP1 | 458 | 13,143 |
| 9948-P1-0028-CP1 | 775 | 13,143 |
| 9948-P1-0029-CP1 | 674 | 13,143 |
| 9948-P1-0030-CP1 | 481 | 13,143 |
| 9948-P1-0031-CP1 | 802 | 13,143 |
| 9948-P1-0032-CP1 | 760 | 13,143 |
| 9948-P1-0033-CP1 | 903 | 13,143 |
| 9948-P1-0034-CP1 | 984 | 13,143 |
| 9948-P1-0035-CP1 | 988 | 13,143 |
| 9948-P1-0036-CP1 | 988 | 13,143 |

| | | |
|------------------|---------------|----------------|
| 9948-P1-0037-CP1 | 1,060 | 13,143 |
| Total | 10,564 | 202,861 |

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

>>

The ex-ante estimate for the monitoring period has been calculated as follows:

For CPA 9948-P1-0004-CP1

Ex-ante ER_{MP4} = Ex-ante ER as per CPA-DD (section B.4.4) * duration of monitoring period / days in a year

$$= 25,831^{22} * (81^{23}/366)$$

$$= 5,716 \text{ tCO}_2\text{e}$$

For CPA 9948-P1-0023-CP1 to CPA 9948-P1-0037-CP1

Ex-ante ER_{MP4} = Ex-ante ER as per CPA-DD * duration of monitoring period / days in a year

$$= 59,387^{24} * (81^{25}/366)$$

$$= 13,143 \text{ tCO}_2\text{e}$$

F.6. Remarks on increase in achieved emission reductions

>>

N/A

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

>>

The emission reductions are lower than the ex-ante estimates substantiating that the CPAs remain below the limit of type III category (60,000 tCO₂ per annum).

²² Ex-ante ER for year 3 as per CPA-DD (Section D.6.4)

²³ Number of monitoring days in Year 3 = Days(21-03-2020,01-01-2020)+1 = 81

Total Number of days in Year 3 (02-07-2019 to 01-07-2020) = 366

²⁴ Ex-ante ER for year 2 as per CPA-DD (Section B.4.4)

²⁵ Number of monitoring days in Year 2 = Days(21-03-2020,01-01-2020)+1 = 81

Total Number of days in Year 2 (18-11-2019 to 17-11-2020) = 366

Appendix 1: Contact information (Additional)

| Entity responsible for completing the CDM-PoA-MR-FORM | |
|---|--|
| Organization name | Climate Secure India Private Limited |
| Street/P.O. Box | Club Road |
| Building | Pragati Apartments |
| City | West Delhi |
| State/Region | Delhi |
| Postcode | 110063 |
| Country | India |
| E-mail | info@climate-secure.com |
| Website | www.climate-secure.com |
| Contact Person | Rohit Lohia |

- - - - -

Document information

| Version | Date | Description |
|--|--------------|---|
| 03.0 | 31 May 2019 | Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM 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: <ul style="list-style-type: none"> • 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. |
| Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report, programme of activities | | |