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TEMPLATE

MONITORING REPORT

PUBLICATION DATE 14.10.2020

VERSION v. 1.1

RELATED SUPPORT - TEMPLATE GUIDE Monitoring Report v. 1.1

This document contains the following Sections

Key Project Information

0 - Description of project

0 - Implementation of project

0 - Description of monitoring system applied by the project

0 - Data and parameters

0 - Calculation of SDG Impacts

0 - Safeguards Reporting

0 - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

This template has been revised to aid a consistent interpretation and to better support project developers submitting documentation for certification. Please read the accompanying guide to understand how to complete this template accurately.

[TEMPLATE GUIDE Monitoring Report v. 1.1](#)

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Programme of Activity Information – (delete below table if N/A)

| | |
|--|---|
| GS ID of Programme | GS2404 |
| Title of Programme | GS2404 International Water Purification Programme |
| Version of POA-DD applicable to this monitoring report | 07 (13/04/2015) |
| Name and GS ID of fully Validated CPA/VPA's (i.e. non compliance check) | GS2735 CPA 2 Chlorine dispensers in Uganda GS3668 CPA 3 Chlorine Dispensers in Uganda GS5051 Chlorine Dispensers in Uganda - CPA 9 GS5052 Chlorine Dispensers in Uganda – CPA 10 |

Key Project Information

| | |
|--|---|
| GS ID (s) of Project (s) | GS2735 GS3668 GS5051 GS5052 |
| Title of the project (s) covered by monitoring report | GS2735 CPA 2 Chlorine dispensers in Uganda GS3668 CPA 3 Chlorine Dispensers in Uganda GS5051 Chlorine Dispensers in Uganda - CPA 9 GS5052 Chlorine Dispensers in Uganda – CPA 10 |
| Version number of the PDD/VPA-DD (s) applicable to this monitoring report | GS2735: 06.1 (19/03/2019) GS3668: 06.1 (19/03/2019) GS5051: 03 (15/12/2020) GS5052: 03 (15/12/2020) |
| Version number of the monitoring report | 02 |
| Completion date of the monitoring report | 08/06/2023 |
| Date of project design certification | 17/07/2014 (CPA 2) 15/04/2015 (CPA 3) 13/09/2016 (CPA 9) 13/09/2016 (CPA 10) |
| Date of Last Annual Report | Not applicable |

| | |
|---|---|
| Monitoring period number | 7th |
| Duration of this monitoring period | 01/01/2020 to 31/12/2020 (including both days) |
| Project Representative | Pure Water Ltd. |
| Host Country | |
| Activity Requirements applied | <input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A |
| Methodology (ies) applied and version number | AMS-III.AV. "Low greenhouse gas emitting safe drinking water production systems (version 03)" |
| Product Requirements applied | <input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A |

Table 1 - Sustainable Development Contributions Achieved

| Sustainable Development Goals Targeted | SDG Impact | Amount Achieved | Units/ Products |
|---|---|---|-------------------------------|
| SDG 13 Climate Action | Emissions Reductions | Total: 169,658 CPA 2: 51,409 CPA 3: 38,482 CPA 9: 42,768 CPA 10: 36,999 | tCO ₂ / GS CERs |
| SDG 6 Clean Water and Sanitation | Number of people who have clean water access | Total: 723,410 CPA 2: 216,711 CPA 3: 151,662 CPA 9: 202,752 CPA 10: 152,285 | Number |
| SDG 8 Decent Work and Economic Growth | Number of full time and part time jobs provided by the project activities | Total: 32 | Number |

Table 2 – Product Vintages

| | Amount Achieved |
|--|------------------------|
|--|------------------------|

| Start Dates | End Dates | GS CERs | Number of people | Number of jobs |
|-------------|------------|---------|------------------|----------------|
| 01/01/2020 | 31/12/2020 | 169,658 | 723,410 | 32 |

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The PoA seeks to further the access of households and communities to clean and safe drinking water, by promoting low greenhouse gas emitting water purification technologies. This PoA is thus primarily designed for the long-term improvement of the living conditions of local people. The targeted users of such technologies will be households and/or communities. Examples of technologies include, but are not limited to, water filters (e.g., membrane, activated carbon, ceramic filters), solar technologies (Ultra violet disinfection devices, solar water disinfection SODIS), photocatalytic disinfection equipment, pasteurization appliances, chemical disinfection methods (e.g. chlorination), combined treatment approaches (e.g. Flocculation plus disinfection), etc.

The PoA reduces the use and demand for fossil fuels and non-renewable biomass that would have been used to boil water as a mean of water purification in the absence of the Programme of Activities. This directly leads to reduced greenhouse gas emissions.

All the four small-scale CPAs (CPA 2, CPA 3, CPA 9, and CPA 10) under this PoA and covered by this monitoring report consist of the distribution and installation of chlorine dispensers ("dispensers") in Eastern Uganda.

The CPAs are voluntary initiative undertaken by the coordinating/managing entity (CME) of the PoA, Pure Water Ltd., and implemented on a voluntary basis by Evidence Action.

The CPAs would deliver a long-term contribution to sustainable development in Uganda that without carbon finance would not exist:

Environmental benefits

- Over its lifetime, the CPAs will help significantly reduce Uganda's greenhouse gas emissions.
- The CPAs will help reduce the use of non-renewable biomass from Uganda's forests, assisting the maintenance of existing forest stock, protecting natural forest ecosystems and wildlife habitats.

- The protection of standing forests will ensure the maintenance of watersheds that regulate water table levels and prevent flash flooding.

Social benefits

- Purchasing or collecting firewood or fossil fuels to boil drinking water constitutes a significant expense for the very poorest households and communities. The CPAs will provide access to safe drinking water at no cost to communities, which will reduce expenditures for families.

- Improved access to safe drinking water will reduce child and adult morbidity and mortality, can improve attendance at school, and increase productivity.

- Indoor air pollution due to open and uncontrolled combustion for boiling water is a significant health concern in Uganda. Low greenhouse gas emitting water disinfection technologies such as dispensers tackle this problem by reducing the combustion of wood/fossil fuels.

- The CPAs will alleviate the burden on women and children as they have to spend less time collecting firewood for boiling water. This will provide more opportunities for productive work and to attend school.

Economic benefits

- The CPAs will generate short-term employment for local artisans to install dispensers, and for local people to work as survey enumerators and to deliver chlorine refills to communities.

A.2. Location of project

>>

The physical boundary of CPA 2, 3, 9 and 10 are the communities who use the water points where chlorine dispensers are installed. A database containing the GPS coordinates and unique IDs for all included chlorine dispensers is available at the Evidence Action Uganda country office.

CPA 2

- Budaka district (all sub-counties), N 01° 00' 44.32", E 33° 48' 35.99"
- Kibuku district (all sub-counties), N 01° 04' 12.48", E 33° 59' 50.30"
- Manafwa district (Tsekukulu, Mukoto, Buwabala, Bukhabusi, Bukhaweka, Bupoto, Namabaya, Bumbu and Bukhoko sub-counties), N 00° 52' 40.72", E 34° 18' 51.38"

CPA 3

- Manafwa district (Bubutu, Bukiabi, Bumwoni, Lwakhakha TC, Magale, Namboko, Bugobero, Bukhofu, Bukhusu, Bunabwana, Busukuya, Butiru, Butta, Buwagogo, Kaato, Khabutoola, Manafwa TC, Nalondo, Sibanga, Sisuni and Wesswa sub-counties), N 00° 52' 40.72", E 34° 18' 51.38"
- Mbale district (Bubyangu, Bufumbo, Bukhiende, Lukhonge, Busiu, Bumasikye, Busoba, Nyondo and Busanosub-counties), N 01° 00' 05.18", E 34° 10' 27.76"

CPA 9

- All dispensers are located within Budadiri East and Budadiri West in Sironko District, Bungokho North and Bungokho South in Mbale District, Uganda. Longitude: E 34.1146° – 34.4270°, Latitude: N 0.9866° – 1.2638°

CPA 10

- All dispensers are located within Agule, Pallisa and Butebo, Pallisa District, Uganda.
- Longitude: E 33.5220° – 34.1745°, Latitude: N 1.0837° – 1.3268°

A.3. Reference of applied methodology

>>

AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems (version 03)

This methodology refers to the following methodology and tools:

- AMS-I.E. Switch from Non-Renewable biomass for thermal applications by the user (version 05)
- Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (version 02)
- Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)

A.4. Crediting period of project

>>

All CPAs have renewal crediting period, can be renewed twice, in total 7 x 3 = 21 years.

CPA 2: 17/07/2014 – 16/07/2021

CPA 3: 15/04/2015 – 14/04/2022

CPA 9: 13/09/2016 – 12/09/2023

CPA 10: 13/09/2016 – 12/09/2023

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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B.1.1 Forward Action Requests

>>

Not applicable. No FARs from previous monitoring period.

B.2. Post-Design Certification changes

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B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

>>

No temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline.

B.2.2. Corrections

>>

No corrections were made to the registered CPA DDs.

B.2.3. Changes to start date of crediting period

>>

No changes were made to the start date of the crediting period.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

>>

No permanent changes were made to the monitoring plan, applied methodology or applied standardized baseline.

B.2.5. Changes to project design of approved project

>>

No Change was made to the project design during this monitoring period.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

>>

Evidence Action had the responsibility to monitor and record all relevant parameters for CPA 2, 3, 9 and 10. The procedure is in line with the monitoring plan described in the CPA-DD.

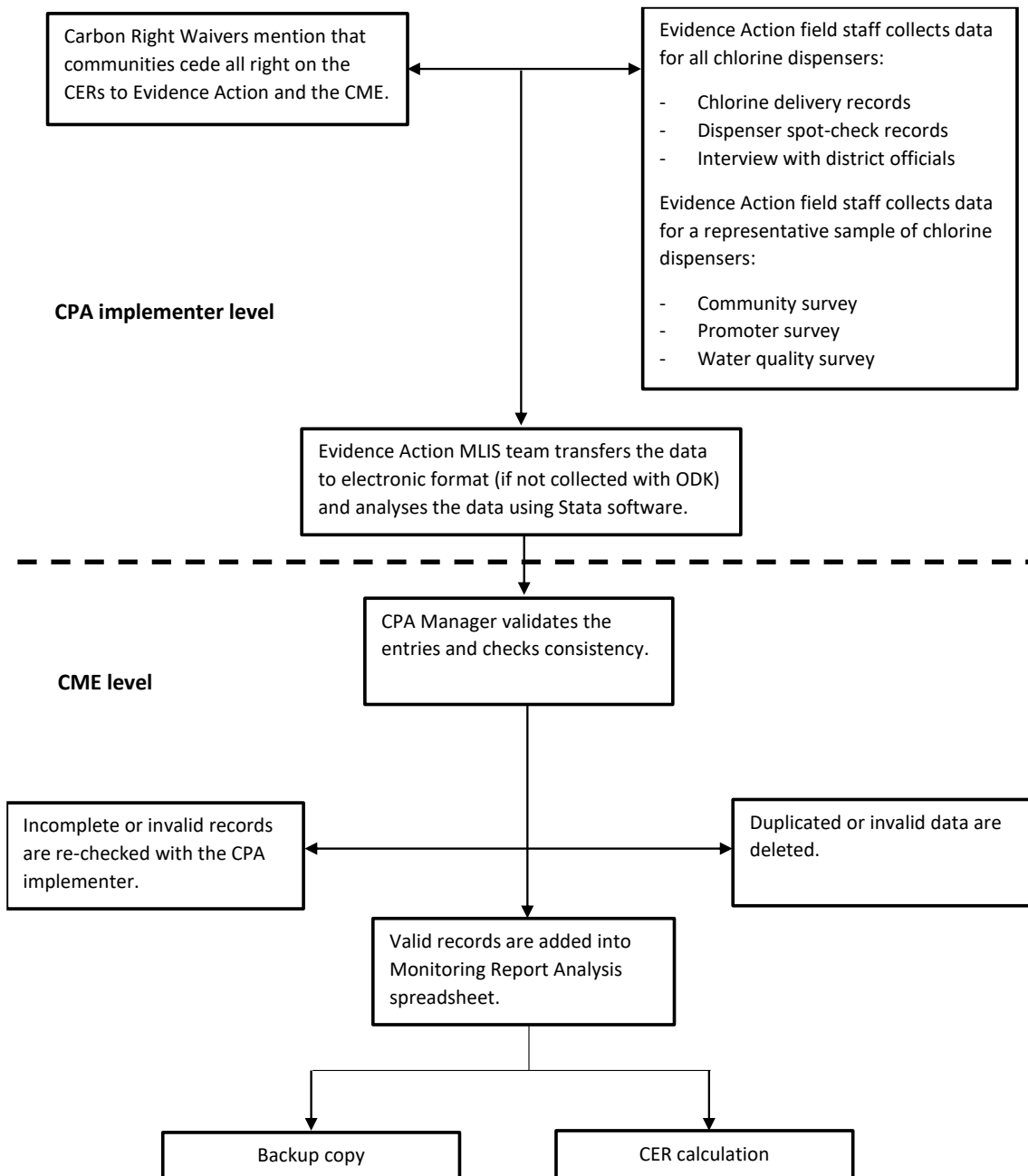


Figure: Records and documentation control process for CPA 2, 3, 9 and 10

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

>>

SDG 13:

| | |
|--|--|
| Data/Parameter | EF _{projected_fossilfuel} |
| 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 | AMS-I.E for NRB displacement, IPCC for other fossil fuel displaced |
| Value(s) applied | 81.6 |
| Choice of data or measurement methods and procedures | As per AMS-I.E, this value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|--|-----------------------------------|
| Data/Parameter | WH |
| Unit | kJ/L °C |
| Description | Specific heat of water |
| Source of data | AMS-III.AV version 03 |
| Value(s) applied | 4.186 |
| Choice of data or measurement methods and procedures | Default value |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|------------------|-----------------------|
| Data/Parameter | T _f |
| Unit | °C |
| Description | Final temperature |
| Source of data | AMS-III.AV version 03 |
| Value(s) applied | 100 |

| | |
|--|---|
| Choice of data or measurement methods and procedures | Default value. Boiling point of water at standard conditions. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|--|-----------------------------------|
| Data/Parameter | T _i |
| Unit | °C |
| Description | Initial temperature |
| Source of data | AMS-III.AV version 03 |
| Value(s) applied | 20 |
| Choice of data or measurement methods and procedures | Default value |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|--|--|
| Data/Parameter | WHE |
| Unit | kJ/L |
| Description | Latent heat of water evaporation |
| Source of data | AMS-III.AV version 03 |
| Value(s) applied | 2,260 |
| Choice of data or measurement methods and procedures | Default value. The latent heat required to boil one liter of water for five minutes is assumed to be equivalent to latent heat for the evaporation of 1% of the water volume (WHO recommends a minimum duration of five minutes of water boiling) ¹ |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

¹ WHO guidelines for Emergency Treatment of drinking water at point of the use

| | |
|--|---|
| Data/Parameter | η_{wb} |
| Unit | - |
| Description | Efficiency of the water boiling system being replaced |
| Source of data | Baseline survey |
| Value(s) applied | 10.83% (CPA 2), 10.92% (CPA 3), 10.65% (CPA 9) and 10.44% (CPA 10) |
| Choice of data or measurement methods and procedures | 0.10 default value is used if the replaced system or the system that would have been used is a three stone fire or a conventional system for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system i.e. without a grate as well as a chimney; for the rest of the systems using woody biomass 0.20 default value will optionally be used. 0.50 default value will be used if the replaced system or the system that would have been used is a fossil fuel combusting system. Use weighted average values if more than one type of system is encountered. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | The water boiling systems and the fuel used in the baseline have been established ex-ante via a baseline survey. |

SDG 13:

| | |
|--|---|
| Data/Parameter | f_{NRB} |
| Unit | - |
| Description | Non Renewable Biomass factor |
| Source of data | EB 67 Report Annex 22 |
| Value(s) applied | 82% |
| Choice of data or measurement methods and procedures | Fraction of woody biomass used in the absence of the project activity in year y for Uganda as per "Information note: Default values of fraction of non-renewable biomass for least developed countries and small island developing states (version 01.0)" |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|------------------|--|
| Data/Parameter | L_p |
| Unit | Liters/refill (chemical disinfection) |
| Description | Capacity of the water purification equipment |
| Source of data | Manufacturer's specifications / Water Point Verification |
| Value(s) applied | 32,971 (CPA 2), 32,680 (CPA 3), 33,115 (CPA 9) and 33,293 (CPA 10) |

| | |
|--|--|
| Choice of data or measurement methods and procedures | Manufacturer specifications of maximal amount of water treated based on one refill (5 liter chlorine solution) and dosage (3 ml dose treats 20 liters of water if turbidity is below 10 NTU and 6 ml if turbidity is above 10 NTU) |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | For the sake of conservativeness the specifications are adjusted for chlorine losses during refills (Refill%) and chlorinated water used for other purposes than drinking (Drink%). |

SDG 13:

| | |
|--|---|
| Data/Parameter | POP _P |
| Unit | - |
| Description | Number of persons supplied with purified water from each of the functional project appliances |
| Source of data | Water Point Verification |
| Value(s) applied | 301 (CPA 2), 286 (CPA 3), N/A (CPA 9) and 336 (CPA 10) |
| Choice of data or measurement methods and procedures | <p>As part of the Water Point Verification conducted by Evidence Action prior to the dispenser installation, the number of households using each water point of each CPA was established as below²:</p> <p>For CPA 2: POP_P = 53.8 households * 5.6 people/household = 301 For CPA 3: POP_P = 51.2 households * 5.6 people/household = 286 For CPA 10: POP_P = 60 households * 5.6 people/household = 336</p> <p>CPA9 falls to case 2 project and the number of persons supplied with purified water from each of the functional project appliances (POP_y) is to be monitored.</p> <p>However, to enhance the accuracy and completeness of the monitoring program, Evidence Action performed a population check survey in 2020 and voluntarily updated the POP_y of CPA 2, 3, 9 and 10.</p> |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

² Uganda Household Survey 2009/2010, average household size for Eastern Uganda

| | |
|--|--|
| Data/Parameter | DW _{POP} |
| Unit | Liters/person/day |
| Description | Average volume of drinking water per person per day |
| Source of data | Official data, WHO, minimum water quantity needed |
| Value(s) applied | 3.5 |
| Choice of data or measurement methods and procedures | Official data used on average volumes of drinking water per person per day in emergency situation published by World Health Organization. Conservative value as according to AMS-III.AV Version 03 a value of 5.5 liters per person per day shall not be exceeded. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|--|---|
| Data/Parameter | POP _{Boiling} |
| Unit | - |
| Description | Proportion of total population attended by the project that is serviced at households/buildings where water boiling would have been the purification practice. |
| Source of data | Baseline Survey |
| Value(s) applied | 85.9% (CPA 9) CPA 2, 3 and 10 fall under Case 1 per paragraph 3(a) in AMS-III.AV version 03 and thus POP _{Boiling} does not need to be considered. |
| Choice of data or measurement methods and procedures | Survey |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | The project activity falls under Case 1 per paragraph 3(a) in AMS-III.AV version 03 and thus POP _{Boiling} does not need to be considered. For Case 2, total project population needs to be adjusted for the fraction of the population serviced by the project equipment at households/buildings for which it can be demonstrated through documentation or survey that the practice of water purification would have been water boiling. According to the applied methodology, the application of Case 1 or Case 2 should be re-assessed at the beginning of each crediting period. As this is the 6th monitoring period of the 1st crediting period for all CPAs. Therefore, the case category is not need to be reassessed during this monitoring period. |

SDG 13:

| | |
|--|---|
| Data/Parameter | Ex-ante determined parameters for the project emissions from fossil fuel combustion |
| Unit | - |
| Description | Parameters to be determined ex ante for the calculation of project emissions from fossil fuel combustion as per the tool. |
| Source of data | - |
| Value(s) applied | No consumption of fossil fuel by chlorine dispenser |
| Choice of data or measurement methods and procedures | - |
| Purpose of data/parameter | Calculation of project emissions |
| Additional comments | - |

SDG 13:

| | |
|--|---|
| Data/Parameter | Ex-ante determined parameters for the project emissions from electricity consumption |
| Unit | - |
| Description | Parameters to be determined ex ante for the calculation of project emissions from electricity consumption as per the tool |
| Source of data | - |
| Value(s) applied | No consumption of electricity by chlorine dispenser |
| Choice of data or measurement methods and procedures | - |
| Purpose of data/parameter | Calculation of project emissions |
| Additional comments | - |

SDG 13:

| | |
|--|---|
| Data/Parameter | Leakage |
| Unit | - |
| Description | Fractional increase in NRB usage by households outside the project boundary |
| Source of data | AMS-I.E Version 5 |
| Value(s) applied | 0.95 |
| Choice of data or measurement methods and procedures | - |
| Purpose of data/parameter | Calculation of leakage |
| Additional comments | - |

D.2 Data and parameters monitored

>>

SDG 13:

| | | | | | |
|---------------------------------------|---|--------|--------|--------|--------|
| Data/Parameter | QPW _y | | | | |
| Unit | Liters | | | | |
| Description | Quantity of purified water in year y | | | | |
| Measured/calculated/default | Calculated | | | | |
| Source of data | <p>Derived from the capacity of the equipment established by the manufacturers' specifications, the number of functional project appliances, average number of refills per functional dispenser and two adjustment factors of Refill% and Drink%.</p> $QPW_y = L_P * N_y * Refill\# * Refill\% * Drink\%$ | | | | |
| Value(s) of monitored parameter | | CPA2 | CPA3 | CPA9 | CPA10 |
| | QPW _y | 257,39 | 194,27 | 210,57 | 178,57 |
| | | 6,660 | 9,022 | 1,927 | 9,705 |
| Monitoring equipment | N/A | | | | |
| Measuring/reading/recording frequency | At least annually | | | | |
| Calculation method (if applicable) | N/A | | | | |
| QA/QC procedures | N/A | | | | |
| Purpose of data/parameter | Calculation of baseline emissions | | | | |
| Additional comments | QPW _y is subject to a cap derived from the population serviced by the project equipment POP _p multiplied by the average volume of drinking water per person per day based on official data. | | | | |

SDG 13 & SDG 6:

| | |
|-----------------------------|---|
| Data/Parameter | N _y |
| Unit | - |
| Description | Number of functional chlorine dispensers in monitoring period |
| Measured/calculated/default | Measured |

| Source of data | <p>Periodical physical inspection of each device (spot-checks).</p> <p>N_y is derived from regular functionality checks. In case a dispenser was found to be non-functional, the status of the respective dispenser was recorded as "non-functional" in the central database. In addition, dispensers that had no reported chlorine deliveries were also assumed to be non-functional.</p> <p>N_y was determined by multiplying the total number of eligible dispensers by the fraction of functional dispensers at the cut-off date (31/12/2020).</p> | | | | | | | | | | | | | | | |
|---------------------------------------|--|-------|-------|-------|------|-------|-------|-------|-----|-------|-----|--------------------|-------|-------|-------|-------|
| Value(s) of monitored parameter | <table border="1"> <thead> <tr> <th></th> <th>CPA2</th> <th>CPA3</th> <th>CPA9</th> <th>CPA10</th> </tr> </thead> <tbody> <tr> <td>N_y</td> <td>1,089</td> <td>966</td> <td>1,152</td> <td>665</td> </tr> <tr> <td>% of functionality</td> <td>94.9%</td> <td>95.5%</td> <td>96.4%</td> <td>81.0%</td> </tr> </tbody> </table> | | CPA2 | CPA3 | CPA9 | CPA10 | N_y | 1,089 | 966 | 1,152 | 665 | % of functionality | 94.9% | 95.5% | 96.4% | 81.0% |
| | CPA2 | CPA3 | CPA9 | CPA10 | | | | | | | | | | | | |
| N_y | 1,089 | 966 | 1,152 | 665 | | | | | | | | | | | | |
| % of functionality | 94.9% | 95.5% | 96.4% | 81.0% | | | | | | | | | | | | |
| Monitoring equipment | Physical inspection of all dispensers in rotation. | | | | | | | | | | | | | | | |
| Measuring/reading/recording frequency | Annually | | | | | | | | | | | | | | | |
| Calculation method (if applicable) | N/A | | | | | | | | | | | | | | | |
| QA/QC procedures | In case a dispenser was not operating and has not been replaced at the cut-off date (31/12/2020), it was excluded from the emission reduction calculation for the whole monitoring period. | | | | | | | | | | | | | | | |
| Purpose of data/parameter | Calculation of baseline emissions | | | | | | | | | | | | | | | |
| Additional comments | - | | | | | | | | | | | | | | | |

SDG 13:

| | |
|-----------------------------|--|
| Data/Parameter | Refill# |
| Unit | - |
| Description | Average number of refills per functional dispenser per year |
| Measured/calculated/default | Measured |
| Source of data | <p>Number of chlorine containers delivered to promoters (chlorine delivery & stock records)</p> <p>When new chlorine is delivered to a promoter, the number of containers delivered and the number of containers in stock are recorded.</p> <p>Refill# was determined by adding up all chlorine used during the monitoring period. For calculating Refill# only dispensers recorded as 'functional' at the cut-off date were considered.</p> |

| | | | | |
|---------------------------------------|--|------|------|-------|
| Value(s) of monitored parameter | CPA2 | CPA3 | CPA9 | CPA10 |
| | Refill# | 7.27 | 6.31 | 6.52 |
| Monitoring equipment | N/A | | | |
| Measuring/reading/recording frequency | At least annually | | | |
| Calculation method (if applicable) | Based on chlorine delivery records and number of functional dispensers | | | |
| QA/QC procedures | Evidence Action regularly monitored the consumption of chlorine through the chlorine usage data to ensure the chlorine delivery/consumption is reasonable. Refill# is determined by adding up chlorine consumption at all chlorine dispensers functional during the monitoring period. Chlorine usage at non-functional dispensers was assumed to be always 0. The CME made a consistency check for the results. | | | |
| Purpose of data/parameter | Calculation of baseline emissions | | | |
| Additional comments | - | | | |

SDG 13:

| | |
|---------------------------------------|---|
| Data/Parameter | Refill% |
| Unit | % |
| Description | Fraction of delivered chlorine available for use in dispenser |
| Measured/calculated/default | Measured |
| Source of data | Promoter survey. Survey question: "From the time that you receive the jerrican of chlorine to the time that the chlorine is put into the dispenser, is any chlorine lost?" |
| Value(s) of monitored parameter | 99.78% |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency | At least annually |
| Calculation method (if applicable) | N/A |
| QA/QC procedures | The CME made a consistency check for the results. In case of any data error for a specific result, the result would be set as "0". |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|---------------------------------------|--|
| Data/Parameter | Drink% |
| Unit | % |
| Description | Fraction of water treated with the dispenser that is actually drunk |
| Measured/calculated/default | Measured |
| Source of data | Interview question included in water quality survey. Survey question: "What is your primary use for chlorinated water?" and "How much of your chlorinated water is used for [primary use]?" |
| Value(s) of monitored parameter | 98.80% |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency | Clustered sampling was undertaken for the Drink% monitoring; during this monitoring period, Drink% was surveyed from all the households who use the dispensers to purify their drinking water for the selected clusters. CPA 2, 3, 9 and 10: Annual |
| Calculation method (if applicable) | N/A |
| QA/QC procedures | The CME made a consistency check for the results. In case of any data error for a specific result, the result would be set as "0". |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|---------------------------------------|---|
| Data/Parameter | Water quality |
| Unit | - |
| Description | Water quality |
| Measured/calculated/default | Measured |
| Source of data | Sampling surveys |
| Value(s) of monitored parameter | 95.19% |
| Monitoring equipment | Hach Color Wheel for Total Chlorine Residual (TCR) and IDEXX machine for E.coli |
| Measuring/reading/recording frequency | Clustered sampling was undertaken for the water quality monitoring. Water samples were collected from all the households who use the dispensers to purify their drinking water for the selected clusters, and tested for E.coli by Evidence Action. CPA 2, 3, 9 and 10: Annual |

| | |
|------------------------------------|---|
| Calculation method (if applicable) | The fraction of households with sufficient water quality was established as the number of water samples with E.coli below 10 CFU/100 ml divided by the number of total water samples. |
| QA/QC procedures | The fraction of water quality measurements providing water of insufficient quality shall be excluded from the calculation of emission reductions. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13:

| | |
|---------------------------------------|--|
| Data/Parameter | Existence of public distribution network supplying safe drinking water |
| Unit | - |
| Description | Existence of public distribution network supplying safe drinking water to the project boundary in year y |
| Measured/calculated/default | Interviews |
| Source of data | Interviews with the local officials at the district bureau to determine if a piped water supply exists for the sub-counties included in the CPA. |
| Value(s) of monitored parameter | 0 (no households need to be discounted) |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency | Annual |
| Calculation method (if applicable) | N/A |
| QA/QC procedures | Emission reductions related to those households will be discounted accordingly considering the number of households linked to the network and the date the network became operational. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | - |

SDG 13 & SDG 6:

| | |
|-----------------------------|---|
| Data/Parameter | POP _y |
| Unit | - |
| Description | Number of persons supplied with purified water from each of the functional project appliances |
| Measured/calculated/default | measured |
| Source of data | Survey |

| | |
|---------------------------------------|--|
| Value(s) of monitored parameter | 175 (CPA 9) |
| Monitoring equipment | Survey |
| Measuring/reading/recording frequency | CPA 9: annually Not applicable to CPA 2, 3 and 10 as they fall to Case 1 projects. |
| Calculation method (if applicable) | N/A |
| QA/QC procedures | The fraction of water quality measurements providing water of insufficient quality shall be excluded from the calculation of emission reductions. |
| Purpose of data/parameter | Calculation of baseline emissions |
| Additional comments | <p>Number of persons supplied with purified water from each chlorine dispenser (POP_y) of Case 2 CPAs, i.e. CPA9, which should be checked annually and once every two years, respectively. For other CPAs which fall under Case 1, as per paragraph 3(a) in AMS-III.AV version 03, POP_y is an ex-ante determined value and does not need to be updated.</p> <p>However, to enhance the accuracy and completeness of the monitoring program, Evidence Action performed a population check survey and voluntarily updated the POP_y of CPA 2, 3 and 10 in 2020.</p> <p>During the survey, the number of households that were using the dispensers for drinking water purification was identified. The household size was also updated based on most recent public data³. The number of households using each water point of each CPA was established as below:</p> <p>For CPA 2: POP_p = 40.8 households * 4.9 people/household = 199 For CPA 3: POP_p = 32.2 households * 4.9 people/household = 157 For CPA 9: POP_y = 36.0 households * 4.9 people/household = 176 For CPA 10: POP_p = 46.8 households * 4.9 people/household = 229</p> <p>The updated POP_y for each CPA (CPA 2, 3, 9 and 10) is considered conservative and therefore adopted during this monitoring period.</p> |

³ Uganda Household Survey 2016/2017, average household size for rural Uganda

SDG 13:

| | |
|---------------------------------------|---|
| Data/Parameter | Monitoring parameters for the project emissions from fossil fuel combustion |
| Unit | - |
| Description | Parameters to be monitored for the calculation of project emissions from fossil fuel combustion as per the tool |
| Measured/calculated/default | - |
| Source of data | - |
| Value(s) of monitored parameter | No consumption of fossil fuel by chlorine dispensers. |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | - |
| Calculation method (if applicable) | - |
| QA/QC procedures | - |
| Purpose of data/parameter | Used to quantify project emissions |
| Additional comments | To be considered only in the case the water purification devices consume fossil fuels. |

SDG 13:

| | |
|---------------------------------------|--|
| Data/Parameter | Monitoring parameters for the project emissions from electricity consumption |
| Unit | - |
| Description | Parameters to be monitored for the calculation of project emissions from electricity consumption as per the tool |
| Measured/calculated/default | - |
| Source of data | - |
| Value(s) of monitored parameter | No consumption of electricity by chlorine dispensers. |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | - |
| Calculation method (if applicable) | - |
| QA/QC procedures | - |
| Purpose of data/parameter | Used to quantify project emissions |
| Additional comments | To be considered only in the case the water purification devices consume electricity. |

SDG 8:

| | |
|---------------------------------------|---|
| Data/Parameter | Quantitative employment |
| Unit | Number of persons |
| Description | Number of full time and part time jobs created by the CPA project activities |
| Measured/calculated/default | Measured |
| Source of data | Records or agreement between project participants and representative of commune committee |
| Value(s) of monitored parameter | 32 |
| Monitoring equipment | - |
| Measuring/reading/recording frequency | Annually |
| Calculation method (if applicable) | - |
| QA/QC procedures | The signed agreements and site reports for cross-checking the number of persons employed by the operation |
| Purpose of data/parameter | Used to quantify the SDG 8 |
| Additional comments | - |

D.3. Comparison of monitored parameters with last monitoring period

| Data/Parameter | Value obtained in this monitoring period | | | | Value obtained last monitoring period | | | |
|--|--|--------|--------|--------|---------------------------------------|--------|--------|--------|
| QPW _y | CPA2 | CPA3 | CPA9 | CPA10 | CPA2 | CPA3 | CPA9 | CPA10 |
| | 257,39 | 194,27 | 210,57 | 178,57 | 227,62 | 178,34 | 216,72 | 162,16 |
| | 6,660 | 9,022 | 1,927 | 9,705 | 7,953 | 1,555 | 6,314 | 1,207 |
| N _y | CPA2 | CPA3 | CPA9 | CPA10 | CPA2 | CPA3 | CPA9 | CPA10 |
| | 1,089 | 966 | 1,152 | 665 | 947 | 878 | 1,098 | 565 |
| Refill # | CPA2 | CPA3 | CPA9 | CPA10 | CPA2 | CPA3 | CPA9 | CPA10 |
| | 7.27 | 6.31 | 6.52 | 8.18 | 7.42 | 6.64 | 7.06 | 8.78 |
| Refill% | 99.78% | | | | 100% | | | |
| Drink% | 98.80% | | | | 98.22% | | | |
| Water quality | 95.19% | | | | 95.26% | | | |
| Existence of public distribution network supplying | 0 | | | | 0 | | | |

safe
drinking
water

| | | |
|------------------|-------------|-------------|
| | CPA 2: 199 | CPA 2: 200 |
| POP _y | CPA 3: 157 | CPA 3: 159 |
| | CPA 9: 176 | CPA 9: 180 |
| | CPA 10: 229 | CPA 10: 234 |

Project
emissions
from fossil fuel
combustion

| | | |
|--|---|---|
| | 0 | 0 |
|--|---|---|

Project
emissions
from electricity
consumption

| | | |
|--|---|---|
| | 0 | 0 |
|--|---|---|

| | | |
|-------|---|---|
| SDG 6 | Total: 723,410 CPA 2: 216,711 CPA 3: 151,662 CPA 9: 202,752 CPA 10: 152,285 | - |
|-------|---|---|

| | | |
|-------|-----------|---|
| SDG 8 | Total: 32 | - |
|-------|-----------|---|

| | | |
|--------|---|---|
| SDG 13 | Total: 169,658 CPA 2: 51,409 CPA 3: 38,482 CPA 9: 42,768 CPA 10: 36,999 | - |
|--------|---|---|

D.4. Implementation of sampling plan

>>

According to the registered CPA DDs, three parameters were quantified through surveys: Water quality, Drink% and Refill%. The single sampling design was implemented in line with the validated CPA DD Section D.7.2, and the sampling for

each parameter was carried out all for a group of CPAs in Uganda (CPA 2, 3, 9, 10, 21 and 22)⁴.

i. Objectives and Reliability Requirements

The objective was to obtain reliable and conservative estimates of the parameters listed in Section E obtained through surveys over the course of the monitoring period and meeting the indicated confidence/precision levels. The results were consolidated into one single value over the full monitoring period.

ii. Target Population

The target population is the people with access to chlorine dispensers installed as a result of CPA 2, 3, 9, 10, 21 and 22 under the PoA. Each dispenser is assigned with a unique identification number of water point ID, which is part of the CPA dispenser database. Each end user is linked to a water point with a dispenser and each chlorine dispenser is assigned to a specific CPA. Surveys were conducted by Evidence Action field staff using mobile-based surveys.

iii. Sampling Method

Grouping of CPAs was applied for this monitoring period (CPA 2, 3, 9, 10, 21 and 22).

Clustered sampling was undertaken for the water quality and Drink% monitoring; during this monitoring period, water samples were collected from all the households who use the dispensers to purify their drinking water for the WQ test, and Drink% was surveyed from all the households who use the dispensers to purify their drinking water for the selected clusters.

Simple random sampling for Refill%. The sampling was done with randomly selected numbers corresponding to unique ID numbers of the dispensers.

⁴ For GS labelling process, only credits from CPA 2, 3, 9 and 10 are involved, CPA 21 or 22 are not involved for GS labelling.

iv. Sample Size

A 95/10 confidence/precision requirement has to be fulfilled. The number of visited dispensers is line with sample approach.

v. *Sampling Frame*

The sampling frame for CPA 2, 3, 9, 10, 21 and 22 consisted of all installed chlorine dispensers allocated to CPA 2, 3, 9, 10, 21 and 22, represented by their unique identification numbers stored in the chlorine dispenser database.

The monitoring has been carried out in accordance with the monitoring plan contained in the CPA-DDs. The following section describes the details of the implemented sampling design:

The sampling frame considered confidence/precision as 95/10 in order to meet the requirement of Standard for sampling and surveys for CDM project activities and PoAs. The target population was the households served by the chlorine dispensers installed as part of the CPAs located in Uganda. Each dispenser had the equal chance of selection. Randomization was undertaken in Microsoft-Excel. The samples were drawn from the database. Hence, the samples were representative of the total population.

Water Quality & Drink%: the CPA 2, 3, 9, 10, 21 and 22 dispenser databases with all dispensers from dispenser databases. The field officers visit the households listed and test their drinking water quality.

Cluster sampling has been applied for the monitored parameters of water quality and Drink%. 15 clusters/dispensers have been randomly selected during the 2020 survey. Within the selected dispensers, a total 543 households have been surveyed in 2020.

Refill%: Randomly selected promoters were interviewed during the monitoring period.

The collected data were summarized and analysed in an Excel spreadsheet. It is concluded the 95/10 confidence/precision level was met.

The sample sizes were determined, separately for each of them as under. The outcome of sample size calculation (required and actual samples) based on the considered confidence level and precision is presented below:

| | Sampling Approach | Required Sample Size | Actual Sample Size | Results | Precision Achieved |
|----------------------|--------------------------|-----------------------------|--|----------------|---------------------------|
| Refill% | Simple Random sampling | 21 dispensers | 467 | 99.78% | 0.4% |
| Drink% | Clustered sampling | 12 dispensers | 15 dispensers (543 samples among 543 households) | 98.80% | 0.5% |
| Water Quality | | | | 95.19% | 2.7% |

It is shown from the table above that the actual number of dispensers covered by the CME' sample were clearly larger than the minimum size required. The precision achieved for the confidence level 95% is within the limit (<10%) for all the parameter of interest.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

>>

SDG 13:

$$BE_y = QPW_y * SEC * f_{NRB,y} * EF_{projected_fossilfuel} * 10^{-9} * \text{Correction Factor}_{\text{water quality}} \quad (1)$$

Where:

| | |
|--|---|
| BE_y | Baseline emissions during the year y (tCO ₂ e) |
| QPW_y | Quantity of purified water in year y = 257,396,660 [CPA 2] = 194,279,022 [CPA 3] = 210,571,927 [CPA 9] = 178,579,705 [CPA 10] |
| SEC | Specific energy consumption required to boil one liter of water = 3,301 kJ/L [CPA 2], 3,274 [CPA 3], 3,357 [CPA 9], 3,424 [CPA 10] (SEC calculation below) |
| $f_{NRB,y}$ | Fraction of non-renewable biomass = 82% (default value for Uganda) |
| $EF_{projected_fossilfuel}$ | Emission factor = 81.6 tCO ₂ /TJ (default value) |
| Correction Factor _{water quality} | Water Quality |

The specific energy consumption required to boil one liter of water was calculated as follows:

$$SEC = [WH * (T_f - T_i) + 0.01 * WHE] / n_{wb} \quad (2)$$

Where:

| | |
|-------|---|
| WH | Specific heat of water = 4.186 kJ/L °C (default value) |
| T_f | Final temperature = 100 °C (default value) |
| T_i | Initial temperature of water |

= 20 °C (default value)

WHE Latent heat of water evaporation

= 2,260 kJ/L (default value)

η_{wb} Efficiency of the water boiling systems being replaced

= 10.83% [CPA 2], 10.92% [CPA 3], 10.65% [CPA 9] and 10.44% [CPA 10] (baseline survey)

$BE_y =$

54,115 tCO₂e [CPA 2]

40,508 tCO₂e [CPA 3]

45,019 tCO₂e [CPA 9]

38,947 tCO₂e [CPA 10]

SDG 6:

In many areas worldwide the central water infrastructure is not available at all, or not reliable, leading to unsafe water at the tap. People don't have access to an improved water source. In baseline scenario, the target population of the project activities didn't have access to safe drinking water. So, in the absence of the CPAs within the CPAs' project boundary, the number of persons who have access to clear and safe drinking water is zero.

SDG 8:

In the absence of the CPAs project activities, no employment has been created. So, the number of jobs created would be zero.

E.2. Calculation of project value or estimation of project situation of each SDG Impact

>>

SDG 13:

The operation of the chlorine dispensers does not involve the consumption of fossil fuels or electricity. Therefore, the project emissions are zero.

SDG 6:

N_y Number of functional chlorine dispensers in the monitoring period
 = 1,089 [CPA 2]
 = 966 [CPA 3]
 = 1,152 [CPA 9]
 = 665 [CPA 10]

POP_y Average number of persons supplied with purified water from
 each of the functional chlorine dispenser
 = 199 [CPA 2]
 = 157 [CPA 3]
 = 176 [CPA 9]
 = 229 [CPA 10]

Number of persons who have access to clean water for each CPA = $N_y \times POP_y$
 = 216,711 [CPA 2]
 = 151,662 [CPA 3]
 = 202,752 [CPA 9]
 = 152,285 [CPA 10]

In total, 723,410 people have access to clean and safe drinking water during the monitoring period.

SDG 8:

In total, 32 full time and part time jobs have been provided due to the 4 CPAs.

E.3. Calculation of leakage

>>

Leakage relating to the non-renewable woody biomass is assessed as per the relevant procedures of AMS-I.E version 5 explained below: BE_y is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.

Therefore, the leakage of the project is:

$LE =$

$$54,115 \text{ tCO}_2\text{e} * (1 - 0.95) = 2,706 \text{ tCO}_2\text{e} \text{ [CPA 2]} \quad \mathbf{(3)}$$

$$40,508 \text{ tCO}_2\text{e} * (1 - 0.95) = 2,026 \text{ tCO}_2\text{e} \text{ [CPA 3]}$$

$$45,019 \text{ tCO}_2\text{e} * (1 - 0.95) = 2,251 \text{ tCO}_2\text{e} \text{ [CPA 9]}$$

$$38,947 \text{ tCO}_2\text{e} * (1 - 0.95) = 1,948 \text{ tCO}_2\text{e} \text{ [CPA 10]}$$

E.4. Calculation of net benefits or direct calculation for each SDG Impact

| SDG | SDG Impact | Baseline estimate | Project estimate | Net benefit |
|-----|---|-------------------|------------------|-------------|
| 13 | Emissions Reductions | 0 | 169,658 | 169,658 |
| 6 | Number of people who have Clean water access | 0 | 723,410 | 723,410 |
| 8 | Number of full time and part time Jobs provided by CPAs | 0 | 32 | 32 |

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values ⁵ achieved during this monitoring period |
|-----|--|---|
| 13 | 220,296 | 169,658 |
| 6 | 1,161,994 | 723,410 |
| 8 | 32 | 32 |

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

>>

SDG 13:

The amount estimated ex ante for this monitoring period in the approved transition annexes is calculated based on the corresponding days in this monitoring period, i.e.

⁵ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

Annual ER value in CPA DD (transition annex) x Duration of this monitoring period / 366.

The amount estimated ex ante for this monitoring period is calculated as below:

| CPA UNFCCC reference number and GS ID | ER value in Transition Annex (annual average) (t CO _{2e}) | Duration of monitoring period (days) | Amount estimated ex ante for this monitoring period in Transition Annex (t CO _{2e}) |
|---------------------------------------|---|--------------------------------------|---|
| 5962-P1-0002-CP1 GS2735 | 58,286 | 366 | 58,446 |
| 5962-P1-0003-CP1 GS3668 | 44,742 | 366 | 44,865 |
| 5962-P1-0008-CP1 GS5051 | 59,339 | 366 | 59,502 |
| 5962-P1-0009-CP1 GS5052 | 57,327 | 366 | 57,484 |
| Total | 219,694 | - | 220,296 |

SDG 6:

The estimated ex ante values of the number of people having access to clean water for this monitoring period in the approved transition annexes is calculated based on the number of functional dispensers (N_y) and the average number of people serviced by each functional dispenser (POP_p).

| CPA UNFCCC reference number and GS ID | N_y in Transition Annex | POP_p in Transition Annex | Amount estimated ex ante for this monitoring period in Transition Annex |
|---------------------------------------|---------------------------|-----------------------------|---|
| 5962-P1-0002-CP1 GS2735 | 1,094 | 301 | 329,294 |
| 5962-P1-0003-CP1 GS3668 | 950 | 287 | 272,650 |
| 5962-P1-0008-CP1 GS5051 | 1,187.5 | 243 | 288,562 |

| | | | |
|----------------------------|-----|-----|-----------|
| 5962-P1-0009-CP1 GS5052 | 808 | 336 | 271,448 |
| Total | - | - | 1,161,994 |

SDG 8:

The program will provide 48 full time and part time jobs for all project activities (6 CPAs) in Uganda. On average 32 jobs will be provided by the 4 CPAs (CPA 2, 3, 9 and 10).

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

>>

During the monitoring period, the measured emission reductions of CPA 2, 3, 9 and 10 are lower than the estimated emission reductions in the approved transition annexes.

The actual achieved numbers of people who have clean water access during this monitoring period are lower than the estimated values in the approved transition annexes.

The actual number of jobs provided is in line with the estimated value in the approved transition annexes.

SECTION F. SAFEGUARDS REPORTING

>>

No safeguarding principles and mitigation measures have been added to the monitoring plan.

(a) The implementation is normal; no mitigation measures are needed.

(b) No key indicators or pre-set tolerances of safeguarding principles need to be monitored and reported.

(c) No assessment questions answered 'Potentially' or 'Yes', and no requirements call for regular re-assessment.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

>>

| Method | Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers. |
|--|--|
| Continuous Input / Grievance Expression Process Book (mandatory) | Evidence Action Country office: Flat 2, Plot 11 Acacia Avenue, Kampala Evidence Action Mbale office: Plot 47, Namatala Drive, Mbale |
| Telephone access | <p><u>Evidence Action (project implementer):</u></p> <p>Evidence Action Country office: Contact person: Andrew Ocama +256 (0) 772532326</p> <p>Evidence Action Mbale office: Contact person: Irene Neumbe +256 (0) 752265181</p> <p><u>Pure Water Ltd. (CME):</u></p> <p>Contact person: Jane Duan +86 10 5907 0872</p> |
| Email access | <p><u>Via post:</u></p> <p>Evidence Action, Uganda P.O Box 33010 Kampala, Uganda</p> <p><u>Evidence Action (project implementer):</u></p> <p>Evidence Action Country office: Contact person: Andrew Ocama Andrew.ocama@evidenceaction.org</p> <p>Evidence Action Mbale office: Contact person: Irene Neumbe Irene.neumbe@evidenceaction.org</p> <p><u>Pure Water Ltd. (CME):</u></p> <p>Contact person: Jane Duan j.duan@southpole.com</p> |

GS Contact (mandatory) help@goldstandard.org

Other

No inputs and grievances have been received during the monitoring period through all the method.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

>>

Since there is no input / grievance received during the monitoring period, no stakeholder mitigations to be monitored.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

>>

No legal contest has been arisen with the projects during the monitoring period.

Revision History

| Version | Date | Remarks |
|---------|-----------------|---|
| 1.1 | 14 October 2020 | <p>Hyperlinked section summary to enable quick access to key sections</p> <p>Improved clarity on Key Project Information</p> <p>Section for POA monitoring</p> <p>Forward action request section</p> <p>Improved Clarity on SDG contribution/SDG Impact term used throughout</p> <p>Clarity on safeguard reporting</p> <p>Clarity on design changes</p> <p>Leakage section added for VER/CER projects</p> <p>Addition of Comparison of monitored parameters with last monitoring period</p> <p>Provision of an accompanying Guide to help the user understand detailed rules and requirements</p> |
| 1.0 | 10 July 2017 | Initial adoption |