

Gold standard for the global goals  
Monitoring report



June 2017, version 1

|                                                                               |                                                                                                                                                            |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title of the project                                                          | Water for Climate Rwanda Project                                                                                                                           |
| Gold Standard project id                                                      | GS6598                                                                                                                                                     |
| Version number of the monitoring report                                       | 2                                                                                                                                                          |
| Completion date of the monitoring report                                      | 04/05/2020                                                                                                                                                 |
| Date of project design certification                                          | 20/06/2019                                                                                                                                                 |
| Start date of crediting period                                                | 01/03/2019                                                                                                                                                 |
| Duration of this monitoring period                                            | 01/03/2019 to 31/10/2019                                                                                                                                   |
| Duration of previous monitoring period                                        | Not applicable since 1 <sup>st</sup> monitoring period                                                                                                     |
| Project representative(s)                                                     | Mr. Herman Noppen (CO2logic)                                                                                                                               |
| Host Country                                                                  | Rwanda                                                                                                                                                     |
| Certification pathway (activity certification/impact certification)           | Pathway 1 (VER Project Certification)                                                                                                                      |
| SDG Contributions targeted (as per approved PDD)                              | 1 – SDG 1: No Poverty<br>2 – SDG 3: Good Health and Well-Being<br>3 – SDG 5: Gender<br>4 – SDG 6: Clean Water and Sanitation<br>5 – SDG 13: Climate Action |
| Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.) | GSVER                                                                                                                                                      |
| Selected methodology(ies)                                                     | Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1                                                     |
| Estimated amount of annual average certified SDG impact (as per approved PDD) | 39,631 tCO <sub>2</sub> e <sup>1</sup>                                                                                                                     |

<sup>1</sup> The annual amount of 59,447 tCO<sub>2</sub>e indicated in the PDD for 2019-2020 has been extrapolated to 8 months (monitoring period), resulting in 39,631 tCO<sub>2</sub>e.

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|                                                                                                             |                          |
|-------------------------------------------------------------------------------------------------------------|--------------------------|
| Total amount of certified SDG impact<br>(as per approved methodology)<br>achieved in this monitoring period | 7,194 tCO <sub>2</sub> e |
|-------------------------------------------------------------------------------------------------------------|--------------------------|

## SECTION A. Description of project

### A.1. Purpose and general description of project

>> *(Provide a brief summary of the detailed description given in section B.1 including purpose of the project, brief description of the installed technology and equipment and relevant dates for the project (e.g. construction start/end, commissioning, continued operation periods, etc.)*

Water Access Rwanda (WAR) together with CO2logic and mkaarbon safari has implemented a project to provide safe drinking water to communities in the districts of Rusizi, Ngoma, Rwamagana and Bugesera. The company SPADEL has provided the funding for the project.

The project consists of the repair of damaged and defunct boreholes, the drilling of new boreholes and new water points belonging to a stand-pipe system<sup>2</sup>. The rehabilitation of boreholes or provision of new safe water supply points reduces the need for households to boil water as a means of purification or to consume unsafe water being the scenario prior to implementation of the project activity.

Boreholes consists of only one water point (being at the location of the borehole) or several water points if a stand-pipe system is connected to a borehole. In case of a standpipe system water is pumped from the borehole to different water points using solar energy. No grid electricity or diesel fuel have been used during this monitoring period.

The project has implemented 31 water points out of which 11 water points belong to 2 stand-pipe systems, one with 5 water points (Mugesera stand-pipe system in Ngoma) and the other one with 7 water points (Rukoronko stand-pipe system in Bugesera).

Filtering systems have been installed at 3 water points in Rusizi due to the particular location of the boreholes. The filters provide additional assurance, that the water remains safe in the mid- and long term even if the aquifer may get contaminated. The filtering systems have been installed end of March 2020, hence after the end of this 1<sup>st</sup> monitoring period. No VER credits are claimed for these water points for this 1<sup>st</sup> monitoring period, but will be only claimed from the 2<sup>nd</sup> monitoring period onwards.

The 34 water points are distributed over 4 districts in the following way:

Rusizi: 10 water points

Rwamagana: 7 water points

Ngoma: 7 water points

Bugesera: 10 water points

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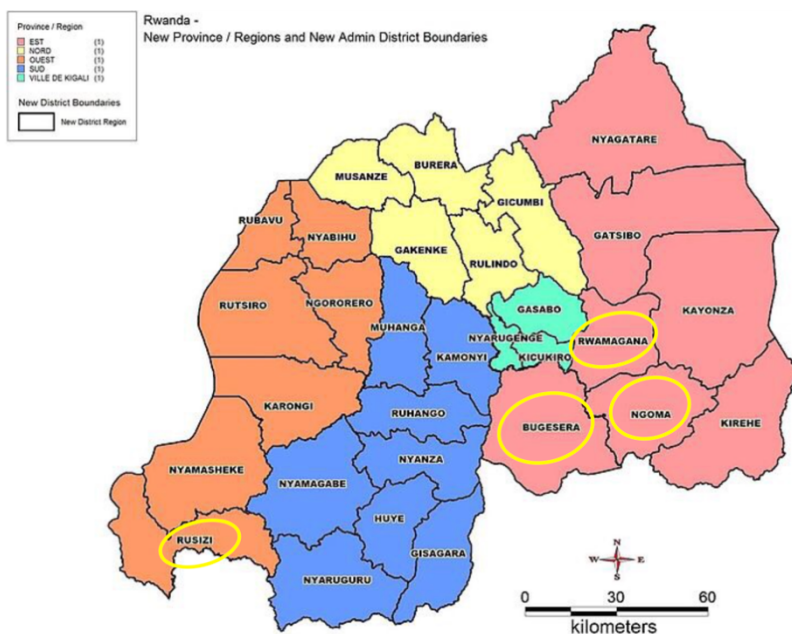
<sup>2</sup> A standpipe system is characterized by several water points which receive water from one common borehole. Water is pumped from the borehole to a central Nexus from which Water is purified and distributed to different other points, where there is extra storage.

31 water points have been implemented within around 1 year, being the first borehole rehabilitated on 03/10/2018 and the last water points in operation from 02/10/2019 onwards. 3 more water points in Rusizi have been fully implemented with a filtering system being installed end of March 2020.

## A.2. Location of project

>> (Provide host country, state/province, city/town details along with GPS co-ordinates.)

The project activity has been implemented in communities in the districts of Rusizi, Ngoma, Rwamagana and Bugesera all located in the Republic of Rwanda. See in the following a district map with the intervention districts encircled.



### GPS COORDINATES OF BUGESERA DISTRICT, RWANDA

#### DD COORDINATES

-2.23456 30.14825

#### DMS COORDINATES

-2°14'4.42" S 30°08'53.70"

#### GEOHASH COORDINATES

kxt7q11q9pu

#### UTM COORDINATES

36M 182779.82984615

## GPS COORDINATES OF RWAMAGANA DISTRICT, RWANDA

DD COORDINATES

-1.97281 30.35428

DMS COORDINATES

-1°58'22.12" S 30°21'15.41"

GEOHASH COORDINATES

kxtsf8z79cx

UTM COORDINATES

36M 205665.86275231

## GPS COORDINATES OF NGOMA DISTRICT, RWANDA

DD COORDINATES

-2.18532 30.46961

DMS COORDINATES

-2°11'7.15" S 30°28'10.60"

GEOHASH COORDINATES

kxtet65m96g

UTM COORDINATES

36M 218542.4992188 9758218.1938852

## GPS COORDINATES OF RUSIZI DISTRICT, RWANDA

DD COORDINATES

-2.57016 29.07535

DMS COORDINATES

-2°34'12.58" S 29°04'31.26"

GEOHASH COORDINATES

kxs9msh58z2

UTM COORDINATES

35M 730754.3409867 9715730.7170022

### A.3. Reference of applied methodology

>> (Indicate title and version number of the methodology.)

Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1

### A.4. Crediting period of project

>> (Provide start date and length of the crediting period as given in approved PDD.)

Start date of crediting period: 01/03/2019

Length of crediting period: 5 years. The crediting period may be renewed twice in line with the Community Services Activity Requirements.

## SECTION B. Implementation of project

### B.1. Description of implemented project

>> (Provide information on the implementation status of the project during this monitoring period. Specify any deviations / delays compared to information in approved project.)

The project had implemented during this 1<sup>st</sup> monitoring period 31 water points out of which 11 water points belong to 2 stand-pipe systems, one with 5 water points (Mugesera stand-pipe system in Ngoma) and the other one with 7 water points (Rukoronko stand-pipe system in Bugesera).

Filtering systems have been installed at 3 water points in Rusizi due to the particular location of the boreholes. The filters provide additional assurance, that the water remains safe in the mid- and long term even if the aquifer may get contaminated. The filtering systems have been installed at the end of March 2020. No VER credits are claimed for these 3 water points for this 1<sup>st</sup> monitoring period, but will be only claimed from the 2<sup>nd</sup> monitoring period onwards.

The 34 water points are distributed over 4 districts in the following way:

Rusizi: 10 water points

Rwamagana: 7 water points

Ngoma: 7 water points

Bugesera: 10 water points

| District  | Internal N° | Name of Water Point  | mWater ID | Date of rehabilitation/commissioning |
|-----------|-------------|----------------------|-----------|--------------------------------------|
| Bugesera  | BG_01       | Gatwe                | 7208609   | 25.03.2019                           |
|           | BG_02       | Migina               | 6660855   | 22.02.2019                           |
|           | BG_03       | Cyingaju             | 7208771   | 03.10.2018                           |
|           | BG_04       | Gisasa Standpipe 1   | 64315571  | 01.10.2019                           |
|           | BG_05       | Rugazi stand pipe 1  | 46078362  | 01.10.2019                           |
|           | BG_06       | Rugazi standpipe 2   | 46078355  | 01.10.2019                           |
|           | BG_07       | Rukoronko Nexus      | 46078348  | 01.10.2019                           |
|           | BG_08       | Gisasa Standpipe 2   | 46078386  | 01.10.2019                           |
|           | BG_09       | Rusagara standpipe   | 46078379  | 01.10.2019                           |
|           | BG_10       | Nyarukombe standpipe | 46078393  | 01.10.2019                           |
| Rwamagana | RW_01       | Nyagakombe           | 42447801  | 12.12.2018                           |
|           | RW_02       | Urugwiro             | 4776110   | 28.12.2018                           |
|           | RW_03       | Kabeza               | 1082528   | 28.12.2018                           |

|        |       |                     |          |                                |
|--------|-------|---------------------|----------|--------------------------------|
|        | RW_04 | Ubwiza              | 5451766  | 20.12.2018                     |
|        | RW_05 | Nyamabuye           | 43921357 | 28.04.2019                     |
|        | RW_06 | Karambo             | 16015902 | 22.02.2019                     |
|        | RW_07 | Ruhunda             | 46117427 | 02.10.2019                     |
| Ngoma  | NG_01 | Icyakabiri          | 5473834  | 28.11.2018                     |
|        | NG_02 | Rwakanuma           | 5473872  | 28.11.2018                     |
|        | NG_03 | Inunga Node         | 26694706 | 23.09.2019                     |
|        | NG_04 | Rugazi Nexus        | 49950566 | 23.09.2019                     |
|        | NG_05 | Rwamibabi standpipe | 49962840 | 23.09.2019                     |
|        | NG_06 | Kumuyange standpipe | 26122133 | 23.09.2019                     |
|        | NG_07 | Kumuyange Node      | 25845604 | 23.09.2019                     |
| Rusizi | RU_01 | Gisunyu             | 13259990 | 17.10.2018                     |
|        | RU_02 | Muhora              | 13248693 | 10.10.2018                     |
|        | RU_03 | Nyakabanda          | 5535769  | 17.10.2018                     |
|        | RU_04 | Rebero              | 13248734 | 27.11.2018                     |
|        | RU_05 | Busekanka           | 16645743 | 27.12.2018                     |
|        | RU_06 | Hepfu               | 5495043  | 27.10.2018                     |
|        | RU_07 | Sumoyamana          | 5494970  | 07.11.2018                     |
|        | RU_08 | Gihaya              | 15255826 | 29/03/2020 (Full installation) |
|        | RU_09 | Mutimasi 1          | 15255819 | 29/03/2020 (Full installation) |
|        | RU_10 | Mutimasi 2          | 15255675 | 29/03/2020 (Full installation) |

Image 1: Google Earth screenshot of Rukoronko stand-pipe system in Bugesera



Image 2: Google Earth screenshot of Mugesera stand-pipe system in Ngoma



## B.2. Post-registration changes

### B.2.1. Temporary deviations from Certified Key Project Information, Project Design Document, Monitoring & Reporting Plan, applied methodology or applied standardized baseline

>> (Indicate whether any temporary deviations have been applied during this monitoring period. If applied, provide a description of the deviation(s). Include the reasons for the deviation(s), how it deviates from the monitoring plan, applied methodology(ies) and/or applied approaches, the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Also indicate if prior approval from GS-TAC have been sought on the deviation.)

- Some of the water points were tested for E.coli with delays, i.e. some of them exceeded the 6 months for the 1<sup>st</sup> test after rehabilitation/drilling or start of commissioning (in case of standpipe water points) or the 3 months for subsequent E.coli tests. In such cases the project technology days have been only considered in the ER calculation, if the 2 consecutive tests were E.coli negative. No project technology days and hence no emission reductions have been accounted for in the period between a negative and a subsequent positive test or a positive and a subsequent negative test. The following table provides an overview of when E.coli tests would have been due and when they have been finally conducted.

| Internal N° | Name of Water Point  | mWater ID | Date of Rehabilitation n/ commissioning | 1 <sup>st</sup> E.coli test due on                                          | Actual 1 <sup>st</sup> E.coli test | Delay days       | 2 <sup>nd</sup> E.coli test due on                    | Actual 2 <sup>nd</sup> E.coli test                 | Delay in days |
|-------------|----------------------|-----------|-----------------------------------------|-----------------------------------------------------------------------------|------------------------------------|------------------|-------------------------------------------------------|----------------------------------------------------|---------------|
| BG_01       | Gatwe                | 7208609   | 25.03.2019                              | 24.09.2019                                                                  | 18.07.2019                         | 0                | N/A since no technology days claimed after 18.07.2019 |                                                    |               |
| BG_02       | Migina               | 6660855   | 22.02.2019                              | N/A since no technology days claimed                                        |                                    |                  |                                                       |                                                    |               |
| BG_03       | Cyingaju             | 7208771   | 03.10.2018                              | N/A since no technology days claimed                                        |                                    |                  |                                                       |                                                    |               |
| BG_04       | Gisasa Standpipe 1   | 64315571  | 01.10.2019                              | 30.04.2020                                                                  | 30.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| BG_05       | Rugazi stand pipe 1  | 46078362  | 01.10.2019                              | 30.04.2020                                                                  | 30.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| BG_06       | Rugazi standpipe 2   | 46078355  | 01.10.2019                              | 30.04.2020                                                                  | 30.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| BG_07       | Rukoronko Nexus      | 46078348  | 01.10.2019                              | 30.04.2020                                                                  | 08.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| BG_08       | Gisasa Standpipe 2   | 46078386  | 01.10.2019                              | 30.04.2020                                                                  | 08.11.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| BG_09       | Rusagara standpipe   | 46078379  | 01.10.2019                              | N/A since no technology days claimed                                        |                                    |                  |                                                       |                                                    |               |
| BG_10       | Nyarukombe standpipe | 46078393  | 01.10.2019                              | 30.04.2020                                                                  | 26.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| RW_01       | Nyagakombe           | 42447801  | 12.12.2018                              | N/A since only 1 technology day after negative E.coli test has been claimed |                                    |                  |                                                       |                                                    |               |
| RW_02       | Urugwiro             | 4776110   | 28.12.2018                              | 27.06.2019                                                                  | 18.07.2019                         | 21               | 17.10.2019                                            | 18.10.2019                                         | 1             |
| RW_03       | Kabeza               | 1082528   | 28.12.2018                              | 27.06.2019                                                                  | 18.07.2019                         | 21               | 17.10.2019                                            | 18.10.2019                                         | 1             |
| RW_04       | Ubwiza               | 5451766   | 20.12.2018                              | 19.06.2019                                                                  | 18.07.2019                         | 29               | 17.10.2019                                            | 18.10.2019                                         | 1             |
| RW_05       | Nyamabuye            | 43921357  | 28.04.2019                              | 27.10.2019                                                                  | 18.07.2019                         | 0                | 17.10.2019                                            | 18.10.2019                                         | 1             |
| RW_06       | Karambo              | 16015902  | 22.02.2019                              | 21.08.2019                                                                  | 07.03.2019                         | 0                | 06.09.2019                                            | 27.09.2019                                         | 21            |
| RW_07       | Ruhunda              | 46117427  | 02.10.2019                              | 01.04.2020                                                                  | 02.10.2019                         | 0                | 01.04.2020                                            | 31.10.2019                                         | 0             |
| NG_01       | Icyakabiri           | 5473834   | 28.11.2018                              | 27.05.2019                                                                  | 19.03.2019                         | 0                | 18.09.2019<br>17.10.2019<br>(3 <sup>rd</sup> test)    | 18.07.2019<br>22.10.2019<br>(3 <sup>rd</sup> test) | 0<br>5        |
| NG_02       | Rwakanuma            | 5473872   | 28.11.2018                              | 27.05.2019                                                                  | 26.09.2019                         | 122              | 25/12/2019                                            | 31.10.2019                                         | 0             |
| NG_03       | Inunga Node          | 26694706  | 23.09.2019                              | 22.03.2020                                                                  | 22.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| NG_04       | Rugazi Nexus         | 49950566  | 23.09.2019                              | 22.03.2020                                                                  | 22.10.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| NG_05       | Rwamibabi standpipe  | 49962840  | 23.09.2019                              | 22.03.2020                                                                  | 06.11.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| NG_06       | Kumuyange standpipe  | 26122133  | 23.09.2019                              | 22.03.2020                                                                  | 06.11.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| NG_07       | Kumuyange Node       | 25845604  | 23.09.2019                              | 22.03.2020                                                                  | 06.11.2019                         | 0                | N/A since after monitoring period                     |                                                    |               |
| RU_01       | Gisunyu              | 13259990  | 17.10.2018                              | 16.04.2019                                                                  | 26.06.2019                         | 71               | 25.09.2019                                            | 18.11.2019                                         | 54            |
| RU_02       | Muhora               | 13248693  | 10.10.2018                              | 09.04.2019                                                                  | 26.06.2019                         | 78               | 25.09.2019                                            | 23.10.2019                                         | 28            |
| RU_03       | Nyakabanda           | 5535769   | 17.10.2018                              | 16.04.2019                                                                  | 26.06.2019                         | 71               | N/A since no technology days claimed after 26.06.2019 |                                                    |               |
| RU_04       | Rebero               | 13248734  | 27.11.2018                              | 26.05.2019                                                                  | 26.06.2019                         | 31               | 25.09.2019                                            | 23.10.2019                                         | 28            |
| RU_05       | Busekanka            | 16645743  | 27.12.2018                              | 26.06.2019                                                                  | 24.09.2019                         | N/A <sup>3</sup> | 23.12.2019                                            | 23.10.2019                                         | 0             |
| RU_06       | Hepfu                | 5495043   | 27.10.2018                              | 26.04.2019                                                                  | 26.06.2019                         | N/A <sup>4</sup> | 25.09.2019                                            | 23.10.2019                                         | 28            |
| RU_07       | Sumoyamana           | 5494970   | 07.11.2018                              | 06.05.2019                                                                  | 26.06.2019                         | 51               | N/A since no technology days claimed after 26.06.2019 |                                                    |               |

<sup>3</sup> No technology days claimed until 24.09.2019.

<sup>4</sup> No technology days claimed until 26.06.2019.

- The default value (4 l/p/day) indicated in the applied methodology (table on pages 48/49) has been applied for  $Q_{p,y} + Q_{p,y, rawboil,y}$  for this monitoring period. Since the 1<sup>st</sup> monitoring period is quite short (8 months) and 13 out of 34 water points (i.e. 38%) were commissioned only around 1 month prior to the end of the monitoring period and 3 out of 34 water points (9%) were not commissioned yet, i.e. almost half of the water points were in use for only a very short time or not in use at all during the monitoring period. PD decided for the sake of time and cost savings not to conduct a WCFT, but to apply the conservative default value as indicated in the methodology. The methodology does not mention any explicit default value for  $Q_{p, cleanboil,y}$ . The value of 0.615 l/p/day has been applied for  $Q_{p, cleanboil,y}$  and has been calculated in the following way: 13 households out of 65 households (equivalent to 20%) using the project water point have indicated during the usage/monitoring survey that all or some part of the water from the project water point is being purified (see Usage/Monitoring excel spreadsheet/worksheet 'SurveyResults recording', column BD). Out of those 13 households, 10 indicated to boil it, whereas the remaining 3 households use filter or purification tablets (see Usage/Monitoring excel spreadsheet/worksheet 'SurveyResults recording', column BE). 10 out of 65 households is equivalent to 15.38%. Subsequently,  $Q_{p, cleanboil,y}$  results in the following: 4 l/p/day (default value for  $Q_{py} + Q_{p, raw,y}$ ) \* 15.38% = 0.615 l/p/day. The value of 0.615 l/p/day is deemed to be very conservative. Since it is assumed that the 10 aforementioned households boil **ALL** the water from the project water point and not only the one used for drinking. ER calculation and MR have been updated accordingly. The PP will conduct a WCFT prior to 2<sup>nd</sup> issuance.

## B.2.2. Corrections

>> (Indicate whether any corrections to project information or parameters fixed at validation have been applied.)

Not applicable

## B.2.3. Changes to start date of crediting period

>> (Indicate whether any changes to the start date of the crediting period have been approved by Gold Standard that is relevant for this monitoring period.)

Not applicable

### B.2.4. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

>> *(Indicate whether any permanent changes from the approved monitoring plan, applied methodologies or applied approaches have been approved by GS-TAC that is relevant for this monitoring period.)*

- Diesel generators have been added as additional back-up option besides grid electricity. Any emissions from diesel consumption would be taken into account in the ER calculation as soon as they are material, i.e. consist of more than 5% of the overall project emissions. The verifying DOE verified this permanent change at the the time of 1<sup>st</sup> issuance. No GS-TAC approval or GS Design Change is needed. Since the change is not considered to be material.
- All water points were commissioned within 1.5 years, i.e. from 03/10/2018 (1<sup>st</sup> water point) until 29/03/2020 (last water points). And crediting period started on 01/03/2019 only. Hence, all water points are considered being part of one age group (0-1) for monitoring surveys/tests.

### B.2.5. Changes to project design of approved project

>> *(Indicate whether any changes to the design of the project have been approved by GS-TAC that is relevant for this monitoring period.)*

Diesel generators have been added as additional back-up option besides grid electricity. Any emissions from diesel consumption would be taken into account in the ER calculation as soon as they are material, i.e. consist of more than 5% of the overall project emissions. The verifying DOE verified this permanent change at the the time of 1<sup>st</sup> issuance. No GS-TAC approval or GS Design Change is needed. Since the change is not considered to be material.

## SECTION C. Description of monitoring system applied by the project

The project proponent maintains an accurate and complete electronic database using mWater data management platform<sup>5</sup> for enabling the unique identification of the project water points. The database contains amongst the following information:

- Unique mWater identification number of each project water point;
- Date of rehabilitation/drilling of each borehole or commissioning in case of standpipe water points;
- GPS location of each project water point;

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<sup>5</sup> <https://www.mwater.co>

- Model of the pump used for each borehole;

The number of households including number of household members have been collected by the WASH committees<sup>6</sup> for each water point. End-user lists (paper records) have been provided to WAR which then have been transferred to an excel spreadsheet. No difference has been made between households living within 1 km and beyond 1 km from the project water point. Since in the first 2 years after project design certification all users of a project water point can be credited regardless of the distance between household and water point.

### Water quality testing (E.coli water quality tests)

The quality of the treated water has been assessed to ensure that it is fit for human consumption. In line with the national standard, no E.coli is permitted in drinking water, hence must be nil Colony Forming Unit (CFU) of E.Coli / 100 ml of safe water. As per the registered monitoring plan, the water quality must be tested every quarter, with the first test within 6 months of the stated project start date<sup>7</sup>. In addition project participants shall ensure that water quality is tested at least once during season where there is a high chance of contamination, for example the rainy season in the presence of the local health authorities. At least once every two years, accredited laboratories must perform the water quality testing. If accredited laboratory results differ materially from non-accredited laboratory results, testing with the aberrant non-accredited laboratory must be discontinued.

By the time of writing this monitoring report, all water points have been tested once in the presence of a local health authority.

For some tests positive E.coli results were found. This fact was conservatively taken into account when calculating the project technology days. Hence, project technology days were reduced by days for which it could not be ensured that water was E.coli free.

Example 1: E.coli test on 26/06/2019 (1<sup>st</sup> test) was negative, on 23/09/2019 (2<sup>nd</sup> test) positive and on 05/10/2019 (3<sup>rd</sup> test) negative again, 101 days (89 plus 12) were discounted); This is deemed to be very conservative since the water has not necessarily

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<sup>6</sup> The WASH committees amongst others help to ensure that surroundings of the boreholes are kept clean and protected against animals or vandalism and notify the hand-pump mechanic immediately in case any problem with the borehole occurs. Additionally, they are community mobilizers who remind their peers of good practices to keep water safe and sensitize them on handwash practices to further reduce instances of waterborne diseases.

<sup>7</sup> The project start date has been defined for each water point as the date of rehabilitation/drilling (for boreholes) or commissioning (for standpipe water points).

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become E.coli positive right after the 1<sup>st</sup> test (which was negative), but possibly only later on during the period from 26/06/2019 and 23/09/2019.

Example 2: E.coli test on 12/05/2019 was positive, and the subsequent test on 11/08/2019 was negative. No emission reductions are claimed for the period between the 1<sup>st</sup> and the 2<sup>nd</sup> test.

WAR has conducted on their own mWater presence/absence tests of E.coli (see instructions in image 3) and once in the monitoring period (during the season with the highest risk of contamination, i.e. rainy season) in the presence of the local health authorities. This is in line with the Request of Deviation which was approved by the GS secretariat on 17/01/2019 by Email. E.coli tests are integrated with the mWater surveyor app for data recording.

As image 3 shows, the mWater E.coli presence/absence test is straightforward and easy to use. People carrying out the mWater E.coli presence/absence test have been properly trained and have some test experience before carrying out the tests as part of the carbon project monitoring. The mWater website (<http://www.mwater.co/kits.html>) confirms that the tests 1) are easy-to-use; 2) do not require laboratory or extra equipment; 3) meet WHO guidelines.

Image 3: Instructions for the mWater E.coli test kit

## Instructions for the mWater *E. coli* test kit

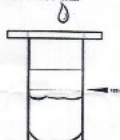
Use the mWater Surveyor App to record and map test results! Visit [surveyor.mwater.co](http://surveyor.mwater.co) or search for mWater in the Android or iOS app stores.

### Important precautions:

- The result of a test only reflects the quality of water of the sample that was tested on the day it was sampled. Water quality changes frequently and water quality monitoring should include regular testing and management of sanitary risks.
- Store the kit in the dark in a climate controlled room and always check the expiration date on the kit before use.
- This kit tests for *E. coli*, a type of bacteria cause by fecal contamination that is associated with an increased risk of diarrheal disease. There are hundreds of other possible water contaminants that could pose a health risk. Consult with local water authorities or laboratories to determine what additional risks might be present in your water supply.
- Use aseptic technique. This means: (i) Assume that your hands and any other surfaces may be contaminated with the target bacteria being detected. Use hand sanitizer before opening one of the sterile parts of the kit (pipettes, compact dry plates, WhirlPak bags, and HiEcoli test buds); (ii) Never touch parts that will come into direct contact with the water sample; and (iii) Minimize the time that the water sample or other sterile parts are exposed to the air.
- Dispose of used tests safely. After reading results, place 1 Aquatab into the WhirlPak bag to disinfect. After 30 minutes, pour the contents into a toilet or drain. Ideally, test materials should be disposed of as medical waste at local hospitals or labs. Where this is not possible, dispose by incineration or in trash receptacles away from water sources that are not accessible to children, trash pickers, or animals.

### Test procedure:

1 Remove tear off strip from top of WhirlPak ThioBag without touching inside and fill to 100 ml.



2 Open a fresh pipette and remove 1 ml of sample from WhirlPak ThioBag.



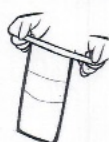
3 Lay a fresh Compact Dry Plate on a flat surface, carefully remove the lid without touching the inside, and squeeze the 1 ml sample onto the center of the plate.



4 Tear open a HiEcoli packet and drop the test bud into the WhirlPak bag (do not touch bud or inside bag).



5 Seal the WhirlPak bag by holding the white tabs at the edges and flipping the bag over 3 times. Fold over the tabs or twist them together.



6 Store the Compact Dry Plates and WhirlPak bags for 24 hours in a warm and dark location where the temperature is between 27 and 40 Celsius at all times.

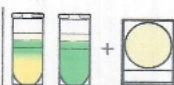


### Interpreting results:

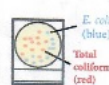
- If WhirlPak bag remains yellow, sample is negative for *E. coli* at the World Health Organization (WHO) limit for safe drinking water.
- If WhirlPak bag has any green or blue color, test is positive for *E. coli*.
- If Compact Dry Plate has any blue spots (colonies), test is positive for *E. coli* above the WHO limit for safe bathing/recreational water.



0 CFU/100ml  
Safe for drinking



1 - 100 CFU/100ml  
Adequate for washing/bathing



100+ CFU/100ml  
Very unsafe



Questions? Contact mWater at [info@mwater.co](mailto:info@mwater.co).

## Hygiene campaigns

Community wide trainings are usually led by one or two trainers from Water Access Rwanda and the trained trainers in the village. Trainers are sensitized in so-called ToT 'Train of Trainers'. A mWater field book and a resource packet (visual diagrams of lessons) is used during the trainings.

Several focus groups are created with each trainer leading one to talk about one of the lessons or to do the requested activity.

During these times the following WASH Facilities are usually set-up in a model house

- A pit latrine
- A tippy-tap handwashing facility
- An utensils drying rack
- A fence to keep animals out of key places
- A garbage disposal pit

## Gold Standard<sup>®</sup>

At the end of the training, a WASH committee is either created, or the existing one presented to the village. The WASH Committee of five people should have at least one community-health worker.

Created or reactivated WASH committee have an active exercise to conduct a supervision aiming to assess hygiene and sanitation status in their own communities. The results of that assessment are to upgrade water, hygiene and sanitary facilities to be improved in all villages where local leaders contribute by organizing community workers to help vulnerable households as well the promise of sustainability of the water points. Yearly refresher trainings receive input from the WASH Committee on which practices the community is struggling to implement. Those is the focus of the refresher trainings and the field book with the resource package is used during these refresher trainings.

42 Community campaigns and 16 Train of Trainers campaigns have been carried out by end of 2019. See excel spreadsheet "200123 W4C Wash Training and WASH committees.xlsx" for more details.

### Leakage assessment

Since a leakage assessment has been carried out at the time of elaborating the PDD, and such a leakage assessment is necessary only every two years, such a leakage assessment is not necessary for this monitoring period.

### Usage and monitoring Survey

Usage/monitoring survey has been done on a sample basis as described in the registered monitoring plan. For details on the sampling approach, see section D.3 of this monitoring report.

### Water Consumption Field Test (WCFT)

The project proponent uses the default value of 4 l/p/day as prescribed in the applied methodology on pages 48/49.

The PP will carry out a WCFT prior to the 2<sup>nd</sup> issuance.

## SECTION D. Data and parameters

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

*(Copy this table for each piece of data and parameter)*

|                        |                        |
|------------------------|------------------------|
| Relevant SDG Indicator | SDG 13, Climate action |
| Data/parameter:        | C <sub>j</sub>         |
| Unit                   | Percentage             |

|                                                      |                                                                                                                                                                                                                                                                       |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                          | Percentage of users of project safe water supply who were already in the baseline using a non-boiling safe water supply                                                                                                                                               |
| Source of data                                       | Baseline Survey <sup>8</sup>                                                                                                                                                                                                                                          |
| Value(s) applied)                                    | 18.8 %                                                                                                                                                                                                                                                                |
| Choice of data or measurement methods and procedures | Note: The baseline study with 100 households has been conducted. A separate baseline survey report and excel calculation spreadsheet has been presented to the DOE at the time of validation and has been submitted to Gold Standard for Design Certification Review. |
| Purpose of data                                      | Estimation of emission reductions                                                                                                                                                                                                                                     |
| Additional comments                                  | Transparent data analysis and reporting.                                                                                                                                                                                                                              |

|                                                      |                                                                                                                                                                                                                                                                       |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                                                                                                                                                                                                                                                |
| Data/parameter:                                      | $X_{boil}$                                                                                                                                                                                                                                                            |
| Unit                                                 | Percentage                                                                                                                                                                                                                                                            |
| Description                                          | Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary.                                                                           |
| Source of data                                       | Baseline Survey                                                                                                                                                                                                                                                       |
| Value(s) applied)                                    | 6.5 %                                                                                                                                                                                                                                                                 |
| Choice of data or measurement methods and procedures | Note: The baseline study with 100 households has been conducted. A separate baseline survey report and excel calculation spreadsheet has been presented to the DOE at the time of validation and has been submitted to Gold Standard for Design Certification Review. |
| Purpose of data                                      | Estimation of baseline emissions                                                                                                                                                                                                                                      |
| Additional comments                                  | Transparent data analysis and reporting.<br>This parameter is only applied for premises that are under suppressed demand situation.                                                                                                                                   |

|                        |                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator | SDG 13, Climate action                                                                                                                         |
| Data/parameter:        | $W_{b,y}$                                                                                                                                      |
| Unit                   | Tonnes/Litre                                                                                                                                   |
| Description            | Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of baseline scenario b during year y |
| Source of data         | Baseline Water Boiling Test (BWBT) <sup>9</sup>                                                                                                |

<sup>8</sup> See baseline survey report being made available at the time of DOE validation.

<sup>9</sup> See BWBT excel spreadsheet being made available at the time of DOE validation.

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value(s) applied)                                    | 0.00073277                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Choice of data or measurement methods and procedures | <p>The BWBT is conducted to calculate the quantity of fuel required to purify by boiling one litre of water for 10 minutes.</p> <p>The BWBT was conducted on cooking devices and fuels representative of the results found in the baseline survey. All households in the baseline survey indicated to boil water with firewood which is in line with the BWBT only including households using firewood. Around 7.4% indicated to boil water on improved cookstoves. 2 out of 22 BWBTs have been conducted on improved cookstoves, which is equivalent to 9%, hence conservative. Around 61% and 31% indicated in the baseline survey to boil water on 3-stone fire and traditional firewood stoves (without a grate or chimney) respectively. 12 out of 22 BWBTs have been conducted on 3-stone fires and 8 out of 22 BWBTs on traditional firewood stoves. This is equivalent to 54.5% and 36.3%. The difference in the proportion between baseline survey and BWBT is considered to be irrelevant. Since the average firewood consumption on 3-stone fires and traditional firewood stoves varies by less than 1% (748 g vs. 753 g).</p> <p>One BWBT was conducted in a randomly selected household around each of the 22 different boreholes which had been identified for rehabilitation at the time of conducting WBT, hence resulting in 22 BWBTs around 22 boreholes in total. As the WBT excel spreadsheet shows, the endpoints of the 90% confidence interval lie within 30% of the estimated mean.</p> |
| Purpose of data                                      | Estimation of baseline emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Additional comments                                  | <p>Transparent data analysis and reporting.</p> <p>Baseline only; Should be updated if ongoing monitoring surveys show that baseline water boiling technologies change over time.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                      |                                                                                                                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                                                                                                                                              |
| Data/parameter:                                      | $W_{p,y}$                                                                                                                                                           |
| Unit                                                 | Tonnes/Litre                                                                                                                                                        |
| Description                                          | Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representatives of project scenario b during year y                       |
| Source of data                                       | Baseline Water Boiling Test (BWBT)                                                                                                                                  |
| Value(s) applied)                                    | 0.00073277                                                                                                                                                          |
| Choice of data or measurement methods and procedures | Ex ante assumption is that the same water boiling technologies are prevalent in the baseline and project scenarios and therefore $W_{b,y}$ and $W_{p,y}$ are equal. |

|                     |                                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of data     | Estimation of project emissions                                                                                                                                                                                                                                                                            |
| Additional comments | Transparent data analysis and reporting.<br>If the later monitoring surveys reveal that the same water boiling technologies are prevalent in the baseline and project scenarios, $W_{b,y}$ and $W_{p,y}$ are equal.<br>Should be updated whenever new water boiling technologies are introduced over time. |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Data/parameter:                                      | $EF_{b,CO_2}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Unit                                                 | tCO <sub>2</sub> /TJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description                                          | CO <sub>2</sub> emission factor arising from use of fuels in baseline scenario                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source of data                                       | IPCC default value for wood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Value(s) applied)                                    | 112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Purpose of data                                      | Estimation of baseline emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Additional comments                                  | If EF is in units of tCO <sub>2</sub> /t <sub>fuel</sub> , remove NCV term from emission calculations.<br><br>Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project.<br><br>CO <sub>2</sub> -emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood. |

|                                                      |                                                                               |
|------------------------------------------------------|-------------------------------------------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                                                        |
| Data/parameter:                                      | $EF_{b,non-CO_2}$                                                             |
| Unit                                                 | tCO <sub>2</sub> /TJ                                                          |
| Description                                          | CO <sub>2</sub> emission factor arising from use of fuels in project scenario |
| Source of data                                       | IPCC default value for wood                                                   |
| Value(s) applied)                                    | 8.692                                                                         |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                           |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of data     | Estimation of baseline emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Additional comments | <p>If EF is in units of tCO<sub>2</sub>/t<sub>fuel</sub>, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. CO<sub>2</sub>-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.</p> |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Data/parameter:                                      | EF <sub>p,CO2</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Unit                                                 | tCO <sub>2</sub> /TJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description                                          | CO <sub>2</sub> emission factor arising from use of fuels in project scenario                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source of data                                       | IPCC default value for wood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Value(s) applied                                     | 112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Purpose of data                                      | Estimation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Additional comments                                  | <p>If EF is in units of tCO<sub>2</sub>/t<sub>fuel</sub>, remove NCV term from emission calculations.</p> <p>Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project.</p> <p>CO<sub>2</sub>-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.</p> |

|                        |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|
| Relevant SDG Indicator | SDG 13, Climate action                                                            |
| Data/parameter:        | EF <sub>p,non-CO2</sub>                                                           |
| Unit                   | tCO <sub>2</sub> /TJ                                                              |
| Description            | Non-CO <sub>2</sub> emission factor arising from use of fuels in project scenario |
| Source of data         | IPCC default value for wood                                                       |
| Value(s) applied       | 8.692                                                                             |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Purpose of data                                      | Estimation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Additional comments                                  | <p>If EF is in units of tCO<sub>2</sub>/t<sub>fuel</sub>, remove NCV term from emission calculations.</p> <p>Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project.</p> <p>Non-CO<sub>2</sub>-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.</p> |

|                        |                                                                                                                                                                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator | SDG 13, Climate action                                                                                                                                                                                                                                          |
| Data/parameter:        | $f_{NRB,i,y}$                                                                                                                                                                                                                                                   |
| Unit                   | Fraction                                                                                                                                                                                                                                                        |
| Description            | Non-renewability status of woody biomass fuel in scenario I during the year y                                                                                                                                                                                   |
| Source of data         | MINIRENA (Ministry of Natural Resources of Rwanda, 2016): Projection Scenario of Supply/Demand of Woody Biomass in Rwanda from 2015 to 2026. Department of Forestry and Nature Conservation (DFNC), Rwanda Natural Resources Authority (RNRA), MINIRENA, Kigali |
| Value(s) applied)      | 0.8968                                                                                                                                                                                                                                                          |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Choice of data or measurement methods and procedures | <p>Sustainable Supply and Total Demand data for woody biomass are taken from the table on page 20 of the document 'Projection Scenario of Supply/Demand of Woody Biomass in Rwanda from 2015 to 2026. Department of Forestry and Nature Conservation (DFNC), Rwanda Natural Resources Authority (RNRA), MINIRENA, Kigali'. Using these data, the fNRB has been calculated for each of the years from 2019 (the year in which the crediting period starts) until 2023 (last year of the 1st crediting period). The average from these 5 years has been calculated.</p> <p>The study 'Projection Scenario of Supply/Demand of Woody Biomass in Rwanda from 2015 to 2026' is the most recent official source available, i.e. a study of the Rwandan Ministry of Natural Resources from 2016. The study compares data on the sustainable supply and the demand of woody biomass from 2015 to 2026. In the study, biomass production is estimated based on the Rwanda National Forest Inventory results. Specific growth factors are defined and applied to the different types of land areas, differentiated according to different ecological conditions in different provinces of Rwanda. For more details, please see document 'Projection Scenario of Supply/Demand of Woody Biomass in Rwanda from 2015 to 2026'.</p> |
| Purpose of data                                      | Estimation of emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Additional comments                                  | <p>The value of fNRB is fixed ex-ante for entire crediting period even though the project proponent may at any time choose to re-examine the fNRB during the crediting period. Since the crediting period is renewable, following GS rules NRB fraction will be reassessed as any other baseline parameters and updated in line with most recent data available.</p> <p>The fNRB value applied for the 1<sup>st</sup> crediting period is more conservative than the default fNRB value of 98%<sup>10</sup> which was valid until 20/05/2017.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                        |                                                       |
|------------------------|-------------------------------------------------------|
| Relevant SDG Indicator | SDG 13, Climate action                                |
| Data/parameter:        | NCV <sub>b, fuel</sub>                                |
| Unit                   | TJ/tonne                                              |
| Description            | Net calorific value of the fuels used in the baseline |
| Source of data         | IPCC default value for wood                           |
| Value(s) applied       | 0.0156                                                |

<sup>10</sup> <https://cdm.unfccc.int/DNA/fNRB/index.html>

|                                                      |                                                                                                                                                |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                            |
| Purpose of data                                      | Estimation of baseline emissions                                                                                                               |
| Additional comments                                  | Fixed for the entire crediting period<br>If EF is in units of tCO <sub>2</sub> /t <sub>fuel</sub> , remove NCV term from emission calculations |

|                                                      |                                                                                                                                                                                                                                                 |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Relevant SDG Indicator</b>                        | <b>SDG 13, Climate action</b>                                                                                                                                                                                                                   |
| <b>Data/parameter:</b>                               | NCV <sub>p, fuel</sub>                                                                                                                                                                                                                          |
| Unit                                                 | TJ/tonne                                                                                                                                                                                                                                        |
| Description                                          | Net calorific value of the fuels used in the project                                                                                                                                                                                            |
| Source of data                                       | IPCC default value for wood                                                                                                                                                                                                                     |
| Value(s) applied)                                    | 0.0156                                                                                                                                                                                                                                          |
| Choice of data or measurement methods and procedures | Deemed valid by Methodology                                                                                                                                                                                                                     |
| Purpose of data                                      | Estimation of project emissions                                                                                                                                                                                                                 |
| Additional comments                                  | Fixed for the entire VPA crediting period<br>If EF in units of tCO <sub>2</sub> /t <sub>fuel</sub> , remove NCV term from emission calculations. This has same values as NCV <sub>baseline</sub> in projects which reduce use of the same fuel. |

|                                                      |                                                          |
|------------------------------------------------------|----------------------------------------------------------|
| <b>Relevant SDG Indicator</b>                        | <b>SDG 13, Climate action</b>                            |
| <b>Data/parameter:</b>                               | EF <sub>CO<sub>2</sub>,diesel,y</sub>                    |
| Unit                                                 | tCO <sub>2</sub> /TJ                                     |
| Description                                          | CO <sub>2</sub> emission factor of diesel fuel in year y |
| Source of data                                       | IPCC, volume 2, chapter 1, Table 1.4                     |
| Value(s) applied)                                    | 74.1                                                     |
| Choice of data or measurement methods and procedures | Default value as per IPCC                                |
| Purpose of data                                      | Estimation of project emissions                          |
| Additional comments                                  | Fixed for the entire VPA crediting period                |

|                                                      |                                                                                                                |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                                                                                         |
| Data/parameter:                                      | Density <sub>diesel</sub>                                                                                      |
| Unit                                                 | kg/l                                                                                                           |
| Description                                          | Density of diesel fuel                                                                                         |
| Source of data                                       | Second National Communication under the UNFCCC by Republic of Rwanda (Ministry of Natural Resources), page 40. |
| Value(s) applied)                                    | 0.84                                                                                                           |
| Choice of data or measurement methods and procedures | Average diesel density (determined by KOBIL, MINICOM, Rwanda Bureau of Standards)                              |
| Purpose of data                                      | Estimation of project emissions                                                                                |
| Additional comments                                  | Fixed for the entire VPA crediting period<br>Only applicable if diesel fuel consumption is measured in volume. |

|                                                      |                                              |
|------------------------------------------------------|----------------------------------------------|
| Relevant SDG Indicator                               | SDG 13, Climate action                       |
| Data/parameter                                       | NCV <sub>diesel,y</sub>                      |
| Unit                                                 | TJ/tonne                                     |
| Description                                          | Net calorific value of diesel fuel in year y |
| Source of data                                       | IPCC, volume 2, chapter 1, Table 1.2         |
| Value(s) applied                                     | 0.043                                        |
| Choice of data or Measurement methods and procedures | Default value as per IPCC                    |
| Purpose of data                                      | Estimation of project emissions              |
| Additional comment                                   | Fixed for the entire VPA crediting period    |

## D.2. Data and parameters monitored

*(Copy this table for each piece of data and parameter)*

|                                        |                                                                                                                                                                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                 | SDG 13, Climate action                                                                                                                                                                                                                          |
| Data/parameter:                        | $N_{p,y}$                                                                                                                                                                                                                                       |
| Unit                                   | Persons.days                                                                                                                                                                                                                                    |
| Description                            | Number of person.days consuming water supplied by project scenario p through year y                                                                                                                                                             |
| Measured/calculated/default            | Calculated                                                                                                                                                                                                                                      |
| Source of data                         | <ul style="list-style-type: none"> <li>-End-user lists supplied by the WASH committee responsible for the water supply and treatment system</li> <li>-Borehole/Standpipe water point breakdown records</li> <li>-E.coli test results</li> </ul> |
| Value(s) of monitored parameter        | 2,272,148                                                                                                                                                                                                                                       |
| Monitoring equipment                   | mWater E.coli test kits                                                                                                                                                                                                                         |
| Measuring/reading/recording frequency: | At least biennially                                                                                                                                                                                                                             |

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calculation method (if applicable): | <p>The person days (<math>N_{p,y}</math>) have been calculated multiplying the technology days by the number of people indicated in the end-user list for the respective water point.</p> <p>The technology days again have been calculated taking into account the start and end date of the monitoring period, any days the water point was down and the days for which the water could not be ensured to be E.coli free or during which the E.coli tests were on delay.</p> <p>Or in other words, the following days were subtracted when calculating the project technology days:</p> <ul style="list-style-type: none"> <li>a) Days on which the borehole was down due to a technical issue;</li> <li>b) Days for which it could not be ensured that water was E.coli free (e.g. if E.coli test on 26/06/2019 (1<sup>st</sup> test) was negative, on 23/09/2019 (2<sup>nd</sup> test) positive and on 05/10/2019 (3<sup>rd</sup> test) negative again, 101 days (89 plus 12) were discounted); This is deemed to be very conservative since the water has not necessarily become E.coli positive right after the 1<sup>st</sup> test (which was negative), but possibly only later on during the period from 26/06/2019 and 23/09/2019.</li> </ul> <p>In case that days fall at the same time under more than one of the scenarios described above, the discount has been made only once.</p> |
| QA/QC procedures:                   | Transparent data analysis and reporting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Purpose of data:                    | Estimation of emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Additional comments:                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                                        |                                                                                                                                               |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Relevant SDG Indicator                 | SDG 13, Climate action                                                                                                                        |
| Data/parameter:                        | $Q_{p,y}$                                                                                                                                     |
| Unit                                   | Liters per person per day (l/person/day)                                                                                                      |
| Description                            | Quantity of safe water supplied in the project scenario p during the year y, using the "zero or low" emissions' clean water supply technology |
| Measured/calculated/default            | default                                                                                                                                       |
| Source of data                         | Default value                                                                                                                                 |
| Value(s) of monitored parameter        | 4 (default value)                                                                                                                             |
| Monitoring equipment                   | Not applicable                                                                                                                                |
| Measuring/reading/recording frequency: | At least biennially                                                                                                                           |

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| Calculation method (if applicable): | Not applicable                                                                                                                                                                                        |
| QA/QC procedures:                   | Transparent data analysis and reporting                                                                                                                                                               |
| Purpose of data:                    | Estimation of baseline emissions                                                                                                                                                                      |
| Additional comments:                | The default value (4 l/p/day) indicated in the applied methodology (table on pages 48/49) have been applied for this monitoring period. The PP will conduct a WCFT prior to 2 <sup>nd</sup> issuance. |

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| <b>Relevant SDG Indicator</b>          | <b>SDG 13, Climate action</b>                                                                                                                                                                         |
| <b>Data/parameter:</b>                 | $Q_{p,y, rawboil,y}$                                                                                                                                                                                  |
| Unit                                   | Litres per person per day (l/person/day)                                                                                                                                                              |
| Description                            | Quantity of raw or unsafe water that is still boiled after installation of the water treatment technology.                                                                                            |
| Measured/calculated/default            | default                                                                                                                                                                                               |
| Source of data                         | Default value                                                                                                                                                                                         |
| Value(s) of monitored parameter        | 0                                                                                                                                                                                                     |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                        |
| Measuring/reading/recording frequency: | At least biennially                                                                                                                                                                                   |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                        |
| QA/QC procedures:                      | Transparent data analysis and reporting                                                                                                                                                               |
| Purpose of data:                       | Estimation of emission reductions                                                                                                                                                                     |
| Additional comments:                   | The default value (4 l/p/day) indicated in the applied methodology (table on pages 48/49) have been applied for this monitoring period. The PP will conduct a WCFT prior to 2 <sup>nd</sup> issuance. |

|                               |                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Relevant SDG Indicator</b> | <b>SDG 13, Climate action</b>                                                                                                    |
| <b>Data/parameter:</b>        | $Q_{p,cleanboil,y}$                                                                                                              |
| Unit                          | Litres per person per day (l/person/day)                                                                                         |
| Description                   | Quantity of safe (treated, or from safe supply) water boiled in the project scenario p, after installation of project technology |
| Measured/calculated/default   | Calculated based on monitoring/usage survey results and default value (4 l/p/day) indicated in the applied methodology           |
| Source of data                | Default                                                                                                                          |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value(s) of monitored parameter        | 0.615                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Measuring/reading/recording frequency: | At least biennially                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| QA/QC procedures:                      | Transparent data analysis and reporting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Purpose of data:                       | Estimation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Additional comments:                   | <p>The default value (4 l/p/day) indicated in the applied methodology (table on pages 48/49) has been applied for <math>Q_{p,y} + Q_{p,y,rawboil,y}</math> for this monitoring period. The methodology does not mention any explicit default value for <math>Q_{p,cleannoil,y}</math>. The value for <math>Q_{p,cleannoil,y}</math> has been calculated in the following way: 13 households out of 65 households (equivalent to 20%) using the project water point have indicated during the usage/monitoring survey that all or some part of the water from the project water point is being purified (see Usage/Monitoring excel spreadsheet/worksheet 'SurveyResults recording', column BD). Out of those 13 households, 10 indicated to boil it, whereas the remaining 3 households use filter or purification tablets (see Usage/Monitoring excel spreadsheet/worksheet 'SurveyResults recording', column BE).</p> <p>10 out of 65 households is equivalent to 15.38%. Subsequently, <math>Q_{p,cleannoil,y}</math> results in the following: <math>4 \text{ l/p/day (default value for } Q_{p,y} + Q_{p,raw,y}) * 15.38\% = 0.615 \text{ l/p/day}</math>. The value of 0.615 l/p/day is deemed to be very conservative. Since it is assumed that the 10 aforementioned households boil <b>ALL</b> the water from the project water point and not only the one used for drinking. ER calculation and MR have been updated accordingly. The PP will conduct a WCFT prior to 2<sup>nd</sup> issuance.</p> |

|                                 |                                                |
|---------------------------------|------------------------------------------------|
| Relevant SDG Indicator          | SDG 13, Climate action                         |
| Data/parameter:                 | $U_{p,y}$                                      |
| Unit                            | Percentage                                     |
| Description                     | Usage rate in project scenario p during year y |
| Measured/calculated/default     | Surveyed and calculated                        |
| Source of data                  | Annual usage survey                            |
| Value(s) of monitored parameter | 58.56%                                         |

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| Monitoring equipment                   | Not applicable                                                                                                                                                                                                                                                                                    |
| Measuring/reading/recording frequency: | Annual or more frequently, in all cases on time for any request for issuance                                                                                                                                                                                                                      |
| Calculation method (if applicable):    | 65% of the 100 surveyed households indicated to use a project water point. 11 households making part of the sample group were not surveyed and had a negative impact on the usage factor, hence the final usage factor was calculated in the following way:<br>= $(65\% \times 100) / (100 + 11)$ |
| QA/QC procedures:                      | Transparent data analysis and reporting                                                                                                                                                                                                                                                           |
| Purpose of data:                       | Estimation of emission reductions                                                                                                                                                                                                                                                                 |
| Additional comments:                   | Since only age group is being involved, the determination of a weighted usage parameter representative of the quantity of project technologies of each age being credited in a given project scenario was not relevant.                                                                           |

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| <b>Relevant SDG Indicator</b>          | <b>SDG 13, Climate action</b>                                                                                                                                                                                                                                                                        |
| <b>Data/parameter:</b>                 | $LE_{p,y}$                                                                                                                                                                                                                                                                                           |
| Unit                                   | tCO <sub>2</sub> e /year                                                                                                                                                                                                                                                                             |
| Description                            | Leakage in project scenario p during year y                                                                                                                                                                                                                                                          |
| Measured/calculated/default            | Surveyed                                                                                                                                                                                                                                                                                             |
| Source of data                         | Baseline survey                                                                                                                                                                                                                                                                                      |
| Value(s) of monitored parameter        | 0                                                                                                                                                                                                                                                                                                    |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                                                                                                                       |
| Measuring/reading/recording frequency: | Every two years                                                                                                                                                                                                                                                                                      |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                                                                                                                       |
| QA/QC procedures:                      | Transparent data analysis and reporting                                                                                                                                                                                                                                                              |
| Purpose of data:                       | Estimation of emission reductions                                                                                                                                                                                                                                                                    |
| Additional comments:                   | Aggregate leakage can be assessed for multiple project scenarios.<br><br>Since a leakage assessment has been carried out at the time of elaborating the PDD, and such a leakage assessment is necessary only every two years, such a leakage assessment is not necessary for this monitoring period. |

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| <b>Relevant SDG Indicator</b>          | <b>SDG 13, Climate action</b>                                                                                                                                                                                                                                                                    |
| <b>Data/parameter:</b>                 | Quality of the treated water                                                                                                                                                                                                                                                                     |
| Unit                                   | As appropriate in alignment with QA/QC procedures                                                                                                                                                                                                                                                |
| Description                            | Performance of the treatment technology – less than 1 Colony Forming Unit (CFU) of E.Coli / 100 ml of safe water                                                                                                                                                                                 |
| Measured/calculated/default            | Measured through tests                                                                                                                                                                                                                                                                           |
| Source of data                         | E.coli tests                                                                                                                                                                                                                                                                                     |
| Value(s) of monitored parameter        | See detailed results for each water point in excel spreadsheet “200123_W4C Project Water Point Database _v1.0.xlsx”                                                                                                                                                                              |
| Monitoring equipment                   | mWater E.coli test kits                                                                                                                                                                                                                                                                          |
| Measuring/reading/recording frequency: | The first test within 6 months of the stated project start date, afterwards quarterly                                                                                                                                                                                                            |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                                                                                                                   |
| QA/QC procedures:                      | Transparent data analysis and reporting                                                                                                                                                                                                                                                          |
| Purpose of data:                       | Estimation of emission reductions                                                                                                                                                                                                                                                                |
| Additional comments:                   | mWater E.coli presence/absence tests in 100 ml water are conducted by the project proponent, once in a year (during seasons of high contamination) in the presence of the local health authorities. Every 2nd year an accredited laboratory must perform E.coli tests in parallel. <sup>11</sup> |

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| <b>Relevant SDG Indicator</b>          | <b>SDG 13, Climate action</b>                                                                                                                                                                |
| <b>Data/parameter:</b>                 | Hygiene campaigns                                                                                                                                                                            |
| Unit                                   | -                                                                                                                                                                                            |
| Description                            | Hygiene campaigns carried out among project technology users.                                                                                                                                |
| Measured/calculated/default            | Campaigns                                                                                                                                                                                    |
| Source of data                         | Annual hygiene campaigns results                                                                                                                                                             |
| Value(s) of monitored parameter        | 42 Community campaigns and 16 Train of Trainers campaigns have been carried out by end of 2019<br>See excel spreadsheet “200123 W4C Wash Training and WASH committees.xlsx” for more details |
| Monitoring equipment                   | Not applicable                                                                                                                                                                               |
| Measuring/reading/recording frequency: | Annually                                                                                                                                                                                     |

<sup>11</sup> The same approach has been approved by GS for project [https://mer.markit.com/br-reg/public/master-project.jsp?project\\_id=103000000004445](https://mer.markit.com/br-reg/public/master-project.jsp?project_id=103000000004445). A formal request for deviation has been submitted to GS and has been approved on 17/01/2019.

|                                     |                                                                                                                        |
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| Calculation method (if applicable): | Not applicable                                                                                                         |
| QA/QC procedures:                   | -                                                                                                                      |
| Purpose of data:                    | Estimation of emission reductions                                                                                      |
| Additional comments:                | Prior to the project the local communities received no regular training on water, sanitation and health related issues |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <b>Relevant SDG Indicator</b>          | <b>SDG 13, Climate action</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Data/parameter:</b>                 | Capacity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Unit                                   | Liters per day                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description                            | Treatment capacity of the project technology/improved sources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measured/calculated/default            | Manufacturer specification<br>Measured                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Source of data                         | Afridev and India Mark II discharge capacity<br>Water point yield tests                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Value(s) of monitored parameter        | See detailed results for each water point in excel spreadsheet "200123_W4C Project Water Point Database _v1.0.xlsx"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Measuring/reading/recording frequency: | Once at the time of registration or at inclusion of new technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| QA/QC procedures:                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Purpose of data:                       | Estimation of emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Additional comments:                   | <p>The water volume values used in the calculations of emission reductions must be justified in terms of capacity of the project technology/improved sources.</p> <p>The discharge capacity provided by the manufacturer of the Afridev and India Mark II pumps were compared with the yield test results and the lower value was used to check whether the capacity is enough to serve the number of people indicated in the end-user lists by the WASH Committees. The number of people have been multiplied with the default value of 4 l/p/day. The yield test is based on manual pumping activity for 1 minute. This test is repeated at least 3 times and an average value is taken. For the tap water points belonging to a standpipe system the available amount of water is based on the quantity of water pumped per minute.</p> |

| Relevant SDG Indicator                 | SDG 13, Climate action                                                                                                                                                                                 |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter:                        | EF <sub>grid,y</sub>                                                                                                                                                                                   |
| Unit                                   | tCO <sub>2</sub> e/MWh                                                                                                                                                                                 |
| Description                            | CO <sub>2</sub> emission factor of the grid electricity in year y                                                                                                                                      |
| Measured/calculated/default            | Default                                                                                                                                                                                                |
| Source of data                         | <a href="https://pub.iges.or.jp/pub/iges-list-grid-emission-factors">https://pub.iges.or.jp/pub/iges-list-grid-emission-factors</a>                                                                    |
| Value(s) of monitored parameter        | 0.676                                                                                                                                                                                                  |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                         |
| Measuring/reading/recording frequency: | At the time of issuance                                                                                                                                                                                |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                         |
| QA/QC procedures:                      | -                                                                                                                                                                                                      |
| Purpose of data:                       | Estimation of project emissions                                                                                                                                                                        |
| Additional comments:                   | Not applicable for this 1 <sup>st</sup> monitoring period. Since no grid electricity has been consumed for pumping water in a standpipe system to the different water points or any other water point. |

| Relevant SDG Indicator                 | SDG 13, Climate action                                                                                                                                                                                 |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter:                        | EC <sub>y</sub>                                                                                                                                                                                        |
| Unit                                   | MWh                                                                                                                                                                                                    |
| Description                            | Quantity of grid electricity consumed for pumping water in a standpipe system to the different water points in year y.                                                                                 |
| Measured/calculated/default            | Measured                                                                                                                                                                                               |
| Source of data                         | On-site measurements (electricity meters)                                                                                                                                                              |
| Value(s) of monitored parameter        | 0                                                                                                                                                                                                      |
| Monitoring equipment                   | Electricity meters                                                                                                                                                                                     |
| Measuring/reading/recording frequency: | Continuous monitoring and at least monthly recording (provided that there is consumption of grid electricity)                                                                                          |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                         |
| QA/QC procedures:                      | -                                                                                                                                                                                                      |
| Purpose of data:                       | Estimation of project emissions                                                                                                                                                                        |
| Additional comments:                   | Not applicable for this 1 <sup>st</sup> monitoring period. Since no grid electricity has been consumed for pumping water in a standpipe system to the different water points or any other water point. |

| Relevant SDG Indicator                 | SDG 13, Climate action                                                                                                                     |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter:                        | $FC_{\text{diesel},y}$                                                                                                                     |
| Unit                                   | tonne/year (mass unit) or $m^3$ /year (volume unit)                                                                                        |
| Description                            | Quantity of diesel consumed for pumping water in a standpipe system to the different water points or any other water point in year y       |
| Measured/calculated/default            | Measured                                                                                                                                   |
| Source of data                         | On-site measurements (rulers or weighing scales)                                                                                           |
| Value(s) of monitored parameter        | 0                                                                                                                                          |
| Monitoring equipment                   | Rulers or weighing scales                                                                                                                  |
| Measuring/reading/recording frequency: | Continuous monitoring and at least monthly recording (provided that there is diesel consumption)                                           |
| Calculation method (if applicable):    | Not applicable                                                                                                                             |
| QA/QC procedures:                      | The measured fuel consumption is cross-checked by invoices/bills received at the time of purchase.                                         |
| Purpose of data:                       | Estimation of project emissions                                                                                                            |
| Additional comments:                   | Only applicable if diesel fuel is consumed for pumping water in a standpipe system to the different water points or any other water point. |

| Relevant SDG Indicator                 | SDG 1, No poverty                                                                                                                                 |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter:                        | $Q_{\text{tot},p,y}$                                                                                                                              |
| Unit                                   | l/y (litres/year) <sup>12</sup>                                                                                                                   |
| Description                            | Total quantity of safe water in litres per year supplied by the rehabilitated/newly drilled boreholes of the project to the communities in year y |
| Measured/calculated/default            | Measured and calculated                                                                                                                           |
| Source of data                         | Lists supplied by the WASH committee responsible for the water points                                                                             |
| Value(s) of monitored parameter        | 9,088,592 l/monitoring period                                                                                                                     |
| Monitoring equipment                   | Not applicable                                                                                                                                    |
| Measuring/reading/recording frequency: | At least biennially                                                                                                                               |

<sup>12</sup> The registered PDD refers to litres/year, however the value indicated herewith is referring to litres of safe water provided during the monitoring period.

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| Calculation method (if applicable): | <p>Calculated as:</p> $Q_{tot,p,y} = N_{p,y} * Q_{p,y}$ <p>Where</p> <p><math>N_{p,y}</math> = Number of person.days consuming water supplied by project scenario p through year y</p> <p><math>Q_{p,y}</math> = Quantity of safe water supplied in the project scenario p during the year y, using the "zero or low" emissions' clean water supply technology</p> <p><math>Q_{tot,p,y} = 2,272,148 * 4 = 9,088,592</math> l/monitoring period</p> |
| QA/QC procedures:                   | Transparent data analysis and reporting                                                                                                                                                                                                                                                                                                                                                                                                            |
| Purpose of data:                    | Estimation of SDG impact                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Additional comments:                | The value of 9,088,592 refers to the "total quantity of safe water in litres per year supplied by the rehabilitated/newly drilled boreholes of the project to the communities" during the monitoring period.                                                                                                                                                                                                                                       |

|                                        |                                                                                                                                                                                  |
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| Relevant SDG Indicator                 | SDG 3, Good health and well-being                                                                                                                                                |
| Data/parameter:                        | $P_{IWBD,y}$                                                                                                                                                                     |
| Unit                                   | Fraction                                                                                                                                                                         |
| Description                            | Proportion of households perceiving less often incidence of water borne diseases like cholera, diarrhea, typhoid fever or Hepatitis A/E since the start of the project in year y |
| Measured/calculated/default            | Determined through survey                                                                                                                                                        |
| Source of data                         | Monitoring/usage survey                                                                                                                                                          |
| Value(s) of monitored parameter        | Amongst the households using the project water point:<br>80% reported a decrease<br>20% reported no change                                                                       |
| Monitoring equipment                   | Not applicable                                                                                                                                                                   |
| Measuring/reading/recording frequency: | Annual                                                                                                                                                                           |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                   |
| QA/QC procedures:                      | The raw data and analysis of the data have been made available to the VVB.                                                                                                       |
| Purpose of data:                       | Data for the parameter "Proportion of households perceiving less often incidence of water borne diseases like cholera, diarrhea, typhoid fever or Hepatitis A/E".                |

|                      |                                                                                                                                                                                                                      |
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| Additional comments: | The survey results show that the project positively contributes to the reduction of waterborne diseases. 80% of the surveyed households appreciate a reduction of waterborne diseases, while 20% reported no change. |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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| Relevant SDG Indicator                 | SDG 5, Gender equality                                                                                                                                                                                                                                                                                                                                                                                                     |
| Data/parameter:                        | PITEC, y                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Unit                                   | Fraction                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description                            | Proportion of women in households perceiving reduced amount of time and effort spent for collecting water and wood fuel since the start of the project in year y                                                                                                                                                                                                                                                           |
| Measured/calculated/default            | Determined through survey                                                                                                                                                                                                                                                                                                                                                                                                  |
| Source of data                         | Monitoring/usage survey                                                                                                                                                                                                                                                                                                                                                                                                    |
| Value(s) of monitored parameter        | <p>In terms of time and effort spent for collecting water, amongst the households using the project water point:</p> <p>74% reported a decrease<br/>14% reported no change<br/>12% reported an increase</p> <p>In terms of time and effort spent for collecting wood fuel, amongst the households using the project water point:</p> <p>48% reported a decrease<br/>46% reported no change<br/>6% reported an increase</p> |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                             |
| Measuring/reading/recording frequency: | Annual                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Calculation method (if applicable):    | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                             |
| QA/QC procedures:                      | The raw data and analysis of the data have been made available to the VVB for review.                                                                                                                                                                                                                                                                                                                                      |
| Purpose of data:                       | Data for the parameter "Proportion of women in households perceiving reduced amount of time and effort spent collecting water and wood fuel since the start of the project".                                                                                                                                                                                                                                               |
| Additional comments:                   | The survey results show that the project positively contributes to the amount of time and efforts needed for women to collect water and wood fuel. For almost three quarters of all surveyed women, less time and efforts are needed to collect water, while for almost half of all surveyed women, the project results in time savings and reduced efforts when it comes to fuel wood collection.                         |

|                                        |                                                                                                                                                                                               |
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| Relevant SDG Indicator                 | SDG 6, Clean water and sanitation                                                                                                                                                             |
| Data/parameter:                        | $N_{WASH, y}$                                                                                                                                                                                 |
| Unit                                   | Number                                                                                                                                                                                        |
| Description                            | Number of organized Water Sanitation and Hygiene trainings in year y                                                                                                                          |
| Measured/calculated/default            | Calculated as the sum of the different trainings                                                                                                                                              |
| Source of data                         | Records of Water Sanitation and Hygiene sensitization and training campaigns                                                                                                                  |
| Value(s) of monitored parameter        | 42 Community campaigns and 16 Train of Trainers campaigns have been carried out by end of 2019.<br>See excel spreadsheet "200123 W4C Wash Training and WASH committees.xlsx" for more details |
| Monitoring equipment                   | Not applicable                                                                                                                                                                                |
| Measuring/reading/recording frequency: | Annual                                                                                                                                                                                        |
| Calculation method (if applicable):    | The different community campaigns and Training of Trainers have been summed up.                                                                                                               |
| QA/QC procedures:                      | Records of Water Sanitation and Hygiene sensitization and training campaigns have been made available to the VVB for review.                                                                  |
| Purpose of data:                       | Data for the parameter "Number of organized Water Sanitation and Hygiene trainings"                                                                                                           |
| Additional comments:                   | 2018: 2,926 people and 106 trainers trained<br>2019: 3,226 people and 94 trainers trained                                                                                                     |

### D.3. Implementation of sampling plan

>> (If data and parameters monitored described in section D.2 above are determined by a sampling approach, provide a description on how project participants implemented the sampling plan and surveys for those data and parameters according to the approved PDD.)

#### Usage/Monitoring Survey

As per the applied methodology/registered monitoring plan, the minimum total sample size for Usage/Monitoring Survey is 100, with at least 30 samples for project technologies of each age being credited.

Since all project water points have been implemented within one year, only one age group is involved, hence the requirement of having 30 samples for project technologies

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of each age is not applicable. 99 randomly selected households have been visited in person in the period between 09/12/2019 and 30/12/2019 and one additional household has been visited on 28/01/2020 to complete the minimum sample size of 100. Usage survey has been conducted together with the monitoring survey, however the latter one has been only fully carried out in case that the household was a user. In line with the applied TPDDTEC methodology, any sampling methods can be used, provided that the sample is selected randomly. If sampling approach other than simple random sampling is applied, 'Guidelines for sampling and survey for CDM project activities and program of activities' must be followed.

Simple random sampling was the applied sampling method. The sampling frame consisted of all the households which were recorded in end-user lists by the WASH committees using the project water points. The 3 water points Gihaya (15255826), Mutimasi 1 (15255819) and Mutimasi 2 (15255675) however were not making part of the sampling frame. Since no VER credits are claimed for these 3 water points for the 1<sup>st</sup> monitoring period.

RAND and VLOOKUP Functions were used to generate a random sample list amongst all households, except the ones for the 3 water points Gihaya (15255826), Mutimasi 1 (15255819) and Mutimasi 2 (15255675). Those households which were at the top of the list were selected for the survey, going down the list until the necessary sample size of 100 was reached. Some of the interviewees were not responsible for fetching water and in this case, the household was omitted without having an impact on the usage rate. Some registered households left the communities after registration or were not fetching water at any project water point. In such cases, no survey has been taken either, however those households have been taken into account as non-users when calculating the usage rate.

The surveys have been conducted with smartphones using the mWater survey app. As soon as the surveyor got connected to the internet, the recorded survey data have been transferred to a centralized database from where the data was exported later on to an excel spreadsheet.

Enumerators were trained by the carbon consultants, both in form of a theoretical and practical training. The first few surveys were done in presence of the carbon consultants to ensure that the enumerators had correctly understood the survey questions. A quality check for plausibility and consistency has been carried out by the carbon consultants after the raw data had been received.

### Water Consumption Field Test (WCFT)

Instead applying values from a WCFT, the project developer decided to apply the default value (4 l/p/day) indicated in the applied methodology (table on pages 48/49) for  $Q_{p,y}$  +  $Q_{p,y, \text{rawboil},y}$  for this monitoring period. The methodology does not mention any explicit default value for  $Q_{p,\text{cleanboil},y}$ . The value for  $Q_{p,\text{cleanboil},y}$  has been calculated by applying

usage/monitoring survey results and the default value (4 l/p/day) indicated in the applied methodology.

The PP will conduct a WCFT prior to 2<sup>nd</sup> issuance.

## Water quality testing

As per the applied methodology/registered monitoring plan, the samples for water quality tests are collected at the source, i.e. the boreholes. The 90/10 precision rule must be followed in calculating the sample size required for testing water quality.

All project water points have been systematically tested for E.coli, hence sampling is not applicable for water quality testing for this monitoring period.

## SECTION E. Calculation of SDG outcomes

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

#### Calculation of baseline value for SDG 13 outcome

The equation used to calculate the baseline fuel consumption is calculated in line with the applied methodology and registered PDD and is as follows:

$$B_{b,y} = (1 - X_{boil}) * (1 - C_j) * N_{p,y} * W_{b,y} * (Q_{p,y} + Q_{p,rawboil,y})$$

Where:

|            |                                                                                                                                                                                            |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $B_{b,y}$  | Quantity of fuel consumed in baseline scenario b during the year in tonnes (L/p/d)                                                                                                         |
| $X_{boil}$ | Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary |
| $C_j$      | Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply                                                                        |
| $N_{p,y}$  | Number of person.days consuming water supplied by project scenario p through year y                                                                                                        |
| $W_{b,y}$  | Quantity of fuel in tonnes required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test.                       |

|                   |                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| $Q_{p,y}$         | Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day in year y |
| $Q_{p,rawboil,y}$ | Quantity of raw water boiled in the project scenario p per person per day                                                           |

The total safe water consumed in the project scenario is the amount of safe water supplied by the project technology and consumed in the project scenario, plus the amount of raw water boiled after introducing the project technology (respectively represented above as  $Q_{p,y} + Q_{p,rawboil,y}$ ). This total is assumed to be equivalent to the water boiled in the baseline. If the total of these two volumes exceed the cap stipulated in the applied TPDDTEC methodology (7 l/p/day), the project proponent's claim for emission reductions may not exceed the cap. For this monitoring period, the default value of 4 l/p/day as stated in the methodology has been applied.

The transparent calculations of the outcome of SDG 13 (i.e. CO<sub>2</sub>e reductions) are provided in a separate excel spreadsheet uploaded to GS Registry. For the used data/parameters, see the sections D.1 and D.2. in this monitoring report.

## Calculation of baseline value for SDG 1, SDG 3, SDG 5 and SDG 6 outcomes

In line with the registered PDD (page 18), the SDG impacts SDG 1, SDG 3, SDG 5 and SDG 6 of this project activity are not certified as 'Certified Impact Statements' and therefore, for these SDG impacts no specific methodologies for estimation and monitoring are applied.

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

The equation used to calculate the project fuel consumption is calculated in line with the applied methodology and registered PDD and is as follows:

$$B_{p,y} = (1 - C_j) * N_{p,y} * W_{p,y} * (Q_{p,rawboil,y} + Q_{p,cleanboil,y})$$

Where :

|           |                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| $B_{p,y}$ | Quantity of fuel f consumed in project scenario p during the year y in tonnes                                                                          |
| $C_j$     | Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply                                    |
| $N_{p,y}$ | Number of person.days consuming water supplied by project scenario p through year y                                                                    |
| $W_{b,y}$ | Quantity of fuel in tonnes required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water |

**Boiling Test.**

$Q_{p,rawboil,y}$  Quantity of raw water boiled in the project scenario p per person per day

$Q_{p,cleannoil,y}$  Quantity of safe water boiled in the project scenario p per person per day in year y

**Project emissions from possible grid electricity consumption**

$$PE_{EC,y} = EF_{grid,y} \times EC_y$$

$PE_{EC}$  Project emissions from grid electricity consumption during year y in tCO<sub>2</sub>e

$EF_{grid,y}$  CO<sub>2</sub> emission factor of the grid electricity in year y

$EC_y$  Quantity of grid electricity consumed for pumping water in a standpipe system to the different water points or any other water point in year y

**Project emissions from possible diesel consumption**

$$PE_{FC,y} = EF_{CO_2,diesel,y} \times FC_{diesel,y} \times NCV_{diesel,y} \times Density_{diesel}$$

$PE_{FC,y}$  Project emissions from diesel consumption during year y in tCO<sub>2</sub>e

$EF_{CO_2,diesel,y}$  CO<sub>2</sub> emission coefficient of diesel in year y

$FC_{diesel,y}$  Quantity of diesel consumed for pumping water in a standpipe system to the different water points or any other water point in year y

$NCV_{diesel,y}$  Net calorific value of diesel in year y

$Density_{diesel}$  Density of diesel in year y (only relevant in case that volume of diesel consumption is measured)

The transparent calculations of the outcome of SDG 13 (i.e. CO<sub>2</sub>e reductions) are provided in a separate excel spreadsheet uploaded to GS Registry. For the used data/parameters, see the sections D.1 and D.2. in this monitoring report.

**Calculation of project scenario for SDG 1, SDG 3, SDG 5 and SDG 6 outcomes**

In line with the registered PDD (page 18), the SDG impacts SDG 1, SDG 3, SDG 5 and SDG 6 of this project activity are not certified as 'Certified Impact Statements' and therefore, for these SDG impacts no specific methodologies for estimation and monitoring are applied.

## E.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

### Calculation of Emission Reductions i.e. SDG 13 outcome

The equation used to calculate the emission reductions in line with the applied methodology and registered PDD is as follows:

$$BE_{b,y} = B_{b,y} * ((f_{NRB} * EF_{fuel,CO2}) + EF_{fuel,non-CO2}) * NCV_{b,fuel}$$

$$PE_{p,y} = B_{p,y} * ((f_{NRB} * EF_{fuel,CO2}) + EF_{fuel,non-CO2}) * NCV_{p,fuel}$$

$$ER_y = (\sum BE_{fuel,b,y} - \sum PE_{fuel,p,y}) * U_{p,y} - \sum LE_{p,y} - \sum PE_{EC,y} - \sum PE_{FC,y}$$

Where:

|                     |                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| $BE_{b,y}$          | Emissions for baseline scenario b during year y in tCO <sub>2</sub> e                                                               |
| $PE_{p,y}$          | Emissions for project scenario p during year y in tCO <sub>2</sub> e                                                                |
| $PE_{EC,y}$         | Project emissions from grid electricity consumption during year y in tCO <sub>2</sub> e                                             |
| $PE_{FC,y}$         | Project emissions from diesel consumption during year y in tCO <sub>2</sub> e                                                       |
| $f_{NRB}$           | Fraction of biomass used that can be established as non-renewable biomass                                                           |
| $EF_{fuel,CO2}$     | CO <sub>2</sub> emission factor of the fuel that is substituted or reduced                                                          |
| $EF_{fuel,non-CO2}$ | Non-CO <sub>2</sub> emission factor arising from use of fuels in baseline scenario                                                  |
| $NCV_{b,fuel}$      | Net calorific value of the fuels used in the baseline                                                                               |
| $NCV_{p,fuel}$      | Net calorific value of the fuels used in the project                                                                                |
| $ER_y$              | Emission reduction for total project activity in year y (tCO <sub>2</sub> e/yr)                                                     |
| $U_{p,y}$           | Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate |
| $LE_{p,y}$          | Leakage from project scenario p in year y (tCO <sub>2</sub> e/yr)                                                                   |

The transparent calculations of the outcome of SDG 13 (i.e. CO<sub>2</sub>e reductions) are provided in a separate excel spreadsheet uploaded to GS Registry. For the used data/parameters, see the sections D.1 and D.2. in this monitoring report.

### Calculation of net benefits for SDG 1, SDG 3, SDG 5, SDG 6 outcomes

**SDG 1:** Total quantity of safe water in litres per year supplied by the rehabilitated/newly drilled boreholes of the project to the communities in year y

$$Q_{tot,p,y} = N_{p,y} * Q_{p,y}$$

Where

$N_{p,y}$  = Number of person.days consuming water supplied by project scenario p through year y (2,272,148)

$Q_{p,y}$  = Quantity of safe water supplied in the project scenario p during the year y, using the "zero or low" emissions' clean water supply technology (4 l/p/day)

$Q_{tot,p,y} = 2,272,148 * 4 = 9,088,592$  l/monitoring period

**SDG 3:** Proportion of households perceiving less often incidence of water borne diseases like cholera, diarrhea, typhoid fever or Hepatitis A/E since the start of the project in year y.

N/A. No calculation necessary since measurement of the parameter is based on qualitative information collected during Monitoring Surveys.

**SDG 5:** Proportion of women in households perceiving reduced amount of time and effort spent for collecting water and wood fuel since the start of the project in year y.

N/A. No calculation necessary since measurement of the parameter is based on qualitative information collected during Monitoring Surveys.

**SDG 6:** Number of organized Water Sanitation and Hygiene trainings in year y

N/A. No calculation necessary since measurement of the parameter is based on the list of Water Sanitation and Hygiene trainings during the corresponding monitoring period.

## E.4. Summary of ex-post values of each SDG outcome for the current monitoring period

| Item   | Baseline estimate                                                                                                                                      | Project estimate     | Net benefit                                                                                                                                                                  |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDG 13 | 7,194 tCO <sub>2</sub> e                                                                                                                               | 0 tCO <sub>2</sub> e | 7,194 tCO <sub>2</sub> e                                                                                                                                                     |
| SDG 1  | Consumption of unsafe/unclean water leads to more poverty. Since money has to be spent for e.g. medicine/hospital and loss of productive working hours | N/A                  | 9,088,592 litres of clean (safe) water has been provided during the monitoring period.                                                                                       |
| SDG 3  | People consume unsafe/unclean water resulting in water borne diseases.                                                                                 | N/A                  | Less people (80%) suffering of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario.                                            |
| SDG 5  | Women spend significant amount of time for collecting water and wood fuel to boil unsafe/unclean water.                                                | N/A                  | A significant part of the women needs less time and efforts to collect water (74%) and wood fuel (48%).                                                                      |
| SDG 6  | Prior to the project the local communities received no regular training on water, sanitation and health related issues.                                | N/A                  | Hygiene campaigns/training provided for more than 6,000 people and 200 trainers<br>2018: 2,926 people and 106 trainers trained<br>2019: 3,226 people and 94 trainers trained |

## E.5. Comparison of actual value of outcomes with estimates in approved PDD

| Item   | Values estimated in ex ante calculation of approved PDD | Actual values achieved during this monitoring period                                                       |
|--------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| SDG 13 | 39,631 tCO <sub>2</sub> e <sup>13</sup>                 | 7,194 tCO <sub>2</sub> e                                                                                   |
| SDG 1  | 45,990,000 l <sup>14</sup>                              | 9,088,592 l/monitoring period                                                                              |
| SDG 3  | 80%                                                     | 80%                                                                                                        |
| SDG 5  | 90%                                                     | 74% (less time needed for women to collect water)<br>48% (less time needed for women to collect wood fuel) |
| SDG 6  | 50 campaigns <sup>15</sup>                              | 42 Community campaigns<br>16 Train of Trainers                                                             |

## E.6. Remarks on difference from estimated value in approved PDD

SDG 13 : Actual emission reductions are significantly less than the estimated ones. Actual emission reductions are 21% of the estimated ones. This is due to several reasons:

- A significant number of project water points have been implemented relatively late in the monitoring period and generate carbon credits not for the whole monitoring period, but only for a certain fraction of the monitoring period.
- Some project water points were unexpectedly tested E.coli positive.
- A much higher breakdown time of the project water points than expected.
- A much lower water consumption per person per day (application of the default value of 4 l/p/day) than initially expected.
- A much lower usage rate than expected ex-ante. This can be explained because most of the WASH committees included households in the end-user database which are finally not using the project water points and many of the households were not sufficiently informed and sensitized about the use of, in particularly the most recently implemented, project water points.

<sup>13</sup> The annual amount of 59,447 tCO<sub>2</sub>e indicated in the PDD for 2019-2020 has been extrapolated to 8 months (monitoring period), resulting in 39,631 tCO<sub>2</sub>e.

<sup>14</sup> The annual amount of 68,985,000 l/year indicated in the PDD has been extrapolated to 8 months (monitoring period), resulting in 45,990,000 l.

<sup>15</sup> It was foreseen to conduct one campaign per water point.

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SDG 1: Only around 20% of clean (safe) water of the initially expected amount has been provided during the monitoring period. This can be explained by the same reasons as indicated for SDG 13, (a) to (d).

SDG 3: The actual value corresponds to the estimated value.

SDG 5: Though the actual value is lower than the estimated value, around  $\frac{3}{4}$  of the women indicate to invest less time to collect water and almost half indicate to need less time to collect wood fuel indicating the project's positive contribution to this SDG.

SDG 6: The actual value exceeds the estimated value taking into account the sum of WASH campaigns carried out for communities and trainers.

### SECTION F. Stakeholder inputs and legal disputes

#### F.1. List all inputs/grievances which have been received for the project during the monitoring period together with their respective answers/actions

No comments or grievances have been received for the project during the monitoring period in the physical grievance books located in the district offices nor by Email or phone. However, some grievances have been received through the WASH committees (see detailed list in F.2.)

#### F.2. List all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period

| Water Point Custom ID       | Grievances Expressed                                                                                                 | Action Taken                                                                                                                                   |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| BG-08-46078348-Rukoronko-NX | None                                                                                                                 | None                                                                                                                                           |
| BG-01-7208609-Gatwe-NN      | In summer season, water was at low level and people were not able to access water at the quantity level they wished. | A new deeper borehole was drilled to access a good quality aquifer with higher borehole yield, that keeps enough discharge even in dry season. |
| BG-02-6660855-Migina-NN     | In summer season, water was at low level and people were not able to access water at the quantity level              | The upgraded solar-powered system (Nano) has filtration System that solved the issue and people fetch                                          |

|                              |                                                                                                                      |                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|                              | they wished.                                                                                                         | e-coil free water.                                                                                                       |
| BG-03-7208771-Cyingaju-NN    | In summer season, water was at low level and people were not able to access water at the quantity level they wished. | The upgraded solar-powered system (Nano) has filtration System that solved the issue and people fetch e-coil free water. |
| BG-04-64315571-Gisasa-SP1    | None                                                                                                                 | None                                                                                                                     |
| BG-05-46078386-Gisasa-SP2    | None                                                                                                                 | None                                                                                                                     |
| BG-06-46078362-Rugazi-SP1    | none                                                                                                                 | None                                                                                                                     |
| BG-07-46078355-Rugazi-SP2    | None                                                                                                                 | None                                                                                                                     |
| BG-09-46078379-Rusagara-SP   | Noe                                                                                                                  | None                                                                                                                     |
| BG-10-46078393-Nyarukombe-SP | None                                                                                                                 | None                                                                                                                     |
| NG_01_5473834-Icyakabiri-HP  | None                                                                                                                 | None                                                                                                                     |
| NG_02_5473872-Rwakanuma-HP   | None                                                                                                                 | None                                                                                                                     |
| NG_04_49950566-Mugesera NX   | They cannot use water from this water point in washing clothes because of the hardness.                              | The softener issue is still being solved                                                                                 |
| NG_05_49962840-Inunga-SP     | There is still hardness.                                                                                             | The softener issue is still being solved                                                                                 |
| NG_06_26122133-Kumuyange-SP  | They cannot use water from this water point in washing clothes because of the hardness.                              | The softener issue is still being solved                                                                                 |
| NG_07_25845604-Kumuyange-ND  | They cannot use water from this water point in washing clothes because of the hardness.                              | The softener issue is still being solved                                                                                 |
| NG-03-26694706-Inunga-ND     | They cannot use water from this water point in washing clothes because of the                                        | The softener issue is still being solved                                                                                 |

|                              |                                                                                                                      |                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|                              | hardness.                                                                                                            |                                                                                                                          |
| RU_01_13259990-Gisunyu-NN    | In summer season, water was at low level and people were not able to access water at the quantity level they wished. | The upgraded solar-powered system (Nano) has filtration System that solved the issue and people fetch e-coil free water. |
| RU_02_13248693-Muhora-HP     | None                                                                                                                 | None                                                                                                                     |
| RU_03_5535769-Nyakabanda-HP  | None                                                                                                                 | None                                                                                                                     |
| RU_04_13248734-Rebero-HP     | None                                                                                                                 | None                                                                                                                     |
| RU_05_16645743-Busekanka-HP  | None                                                                                                                 | None                                                                                                                     |
| RU_06_5495043-Hepfu-HP       | None                                                                                                                 | None                                                                                                                     |
| RU_07_5494970-Sumoyamana-HP  | None                                                                                                                 | None                                                                                                                     |
| RW_04_5451766-Ubwiza-HP      | None                                                                                                                 | None                                                                                                                     |
| RW_05_43921357-Nyamabuye-HP  | None                                                                                                                 | None                                                                                                                     |
| RW_06_16015902 - Karambo-HP  | None                                                                                                                 | None                                                                                                                     |
| RW_07_46117427-Ruhunda-HP    | None                                                                                                                 | None                                                                                                                     |
| RW-01-42447801-Nyagakombe-NN | In summer season, water was at low level and people were not able to access water at the quantity level they wished. | The upgraded solar-powered system (Nano) has filtration System that solved the issue and people fetch e-coil free water. |
| RW-02-4776110-Urugwiro-HP    | None                                                                                                                 | None                                                                                                                     |
| RW-03-1082528-Kabeza-HP      | None                                                                                                                 | None                                                                                                                     |

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

Not applicable. Since no legal contest or dispute has arisen with the project during the monitoring period.