

TEMPLATE

# MONITORING REPORT

---

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT - **TEMPLATE GUIDE Monitoring Report v. 1.1**

---

This document contains the following Sections

Key Project Information

SECTION A - Description of project

SECTION B - Implementation of project

SECTION C - Description of monitoring system applied by the project

SECTION D - Data and parameters

SECTION E - Calculation of SDG Impacts

SECTION F - Safeguards Reporting

SECTION G - Stakeholder inputs and legal disputes

## KEY PROJECT INFORMATION

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

|                                                                               |                                                                        |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>GS ID of Programme</b>                                                     | GS5658                                                                 |
| <b>Title of Programme</b>                                                     | PoA – Climate Finance for Sustainable Development                      |
| <b>Version of POA-DD applicable to this monitoring report</b>                 | Ver 10                                                                 |
| <b>Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)</b> | GS5658 VPA 1: Borehole project "Ease Water Madagascar" (GS ID GS:5230) |

### Key Project Information

|                                                                                  |                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GS ID (s) of Project (s)</b>                                                  | GS7567<br>GS7566<br>GS10657<br>GS10658<br>GS10659<br>GS10783<br>GS10784                                                                                                                                                                                                                                          |
| <b>Title of the project (s) covered by monitoring report</b>                     | GS5658 VPA 13: Water is Life, Madagascar<br>GS5658 VPA 14: Water is Life, Madagascar<br>GS5658 VPA 16: Water is Life, Madagascar<br>GS5658 VPA 17: Water is Life, Madagascar<br>GS5658 VPA 18: Water is Life, Madagascar<br>GS5658 VPA 23: Water is Life, Madagascar<br>GS5658 VPA 24: Water is Life, Madagascar |
| <b>Version number of the PDD/VPA-DD (s) applicable to this monitoring report</b> | GS7567: Ver 08<br>GS7566: Ver 08<br>GS10657: Ver 05<br>GS10658: Ver 05<br>GS10659: Ver 05<br>GS10783: Ver 04<br>GS10784: Ver 04                                                                                                                                                                                  |
| <b>Version number of the monitoring report</b>                                   | Ver 03.4                                                                                                                                                                                                                                                                                                         |
| <b>Completion date of the monitoring report</b>                                  | 07/11/2025                                                                                                                                                                                                                                                                                                       |
| <b>Date of project design certification</b>                                      | GS7567: 31/03/2021<br>GS7566: 31/02/2021<br>GS10657: 05/04/2021<br>GS10658: 05/04/2021<br>GS10659: 05/04/2021<br>GS10783: 25/05/2021<br>GS10784: 25/05/2021"                                                                                                                                                     |
| <b>Date of Last Annual Report</b>                                                | 31/12/2024                                                                                                                                                                                                                                                                                                       |

|                                                     |                                                                                                                                                                                                                                           |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitoring period number</b>                     | GS7567: 4<br>GS7566: 5<br>GS10657: 5<br>GS10658: 5<br>GS10659:5<br>GS10783: 4<br>GS10784: 4                                                                                                                                               |
| <b>Duration of this monitoring period</b>           | GS7567: 31/08/2023-21/09/2024<br>GS7566: 31/08/2023-21/09/2024<br>GS10657: 31/08/2023-21/09/2024<br>GS10658: 31/08/2023-21/09/2024<br>GS10659: 31/08/2023-21/09/2024<br>GS10783: 31/08/2023-21/09/2024<br>GS10784: 31/08/2023-21/09/2024  |
| <b>Project Representative</b>                       | Madaprojects Srl SB                                                                                                                                                                                                                       |
| <b>Host Country</b>                                 | Madagascar                                                                                                                                                                                                                                |
| <b>Activity Requirements applied</b>                | <input checked="" type="checkbox"/> Community Services Activities<br><input type="checkbox"/> Renewable Energy Activities<br><input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities<br><input type="checkbox"/> N/A |
| <b>Methodology (ies) applied and version number</b> | Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1                                                                                                                                    |
| <b>Product Requirements applied</b>                 | <input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration<br><input type="checkbox"/> Renewable Energy Label<br><input type="checkbox"/> N/A                                                                            |

**Table 1 - Sustainable Development Contributions Achieved**

GS7566

| <b>Sustainable Development Goals Targeted</b> | <b>SDG Impact</b>                                                                                                 | <b>Amount Achieved</b> | <b>Units/ Products</b> |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|
| 13 Climate Action (mandatory)                 | Emissions Reductions                                                                                              | 7,369                  | VERs                   |
| SDG 3: Good Health and Well-being             | Additional persons using safe water in the project activity compared to the baseline scenario                     | 4,519                  | Households             |
| SDG 6: Clean Water and Sanitation             | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 5,021                  | Households             |

|                                                         |                                                                                                      |   |                     |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------|---|---------------------|
| SDG 12:<br>Responsible<br>Consumption and<br>Production | Hygiene campaign on<br>water, sanitation and<br>health related issues<br>made in the project<br>area | 1 | Hygiene<br>campaign |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------|---|---------------------|

GS7567

| Sustainable<br>Development<br>Goals Targeted            | SDG Impact                                                                                                                       | Amount Achieved | Units/<br>Products  |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|
| 13 Climate Action<br>(mandatory)                        | Emissions<br>Reductions                                                                                                          | 6,926           | VERs                |
| SDG 3: Good<br>Health and Well-<br>being                | Additional persons<br>using safe water in the<br>project activity<br>compared to the<br>baseline scenario                        | 4,517           | Households          |
| SDG 6: Clean<br>Water and<br>Sanitation                 | Additional persons<br>having access to a safe<br>water source in the<br>project activity<br>compared to the<br>baseline scenario | 5,018           | Households          |
| SDG 12:<br>Responsible<br>Consumption and<br>Production | Hygiene campaign on<br>water, sanitation and<br>health related issues<br>made in the project<br>area                             | 1               | Hygiene<br>campaign |

GS10657

| Sustainable<br>Development<br>Goals Targeted | SDG Impact                                                                                                | Amount Achieved | Units/<br>Products |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------|--------------------|
| 13 Climate Action<br>(mandatory)             | Emissions<br>Reductions                                                                                   | 7,596           | VERs               |
| SDG 3: Good<br>Health and Well-<br>being     | Additional persons<br>using safe water in the<br>project activity<br>compared to the<br>baseline scenario | 4,524           | Households         |

|                                                |                                                                                                                   |       |                  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------|------------------|
| SDG 6: Clean Water and Sanitation              | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 5,027 | Households       |
| SDG 12: Responsible Consumption and Production | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 1     | Hygiene campaign |

GS10658

| Sustainable Development Goals Targeted         | SDG Impact                                                                                                        | Amount Achieved | Units/ Products  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------|------------------|
| 13 Climate Action (mandatory)                  | Emissions Reductions                                                                                              | 5,900           | VERs             |
| SDG 3: Good Health and Well-being              | Additional persons using safe water in the project activity compared to the baseline scenario                     | 3,835           | Households       |
| SDG 6: Clean Water and Sanitation              | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 4,261           | Households       |
| SDG 12: Responsible Consumption and Production | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 1               | Hygiene campaign |

GS10659

| Sustainable Development Goals Targeted | SDG Impact           | Amount Achieved | Units/ Products |
|----------------------------------------|----------------------|-----------------|-----------------|
| 13 Climate Action (mandatory)          | Emissions Reductions | 7,729           | VERs            |

|                                                |                                                                                                                   |       |                  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------|------------------|
| SDG 3: Good Health and Well-being              | Additional persons using safe water in the project activity compared to the baseline scenario                     | 4,525 | Households       |
| SDG 6: Clean Water and Sanitation              | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 5,028 | Households       |
| SDG 12: Responsible Consumption and Production | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 1     | Hygiene campaign |

GS10783

| Sustainable Development Goals Targeted         | SDG Impact                                                                                                        | Amount Achieved | Units/ Products  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------|------------------|
| 13 Climate Action (mandatory)                  | Emissions Reductions                                                                                              | 7,328           | VERs             |
| SDG 3: Good Health and Well-being              | Additional persons using safe water in the project activity compared to the baseline scenario                     | 5,101           | Households       |
| SDG 6: Clean Water and Sanitation              | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 5,668           | Households       |
| SDG 12: Responsible Consumption and Production | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 1               | Hygiene campaign |

GS10784

| Sustainable Development Goals Targeted         | SDG Impact                                                                                                        | Amount Achieved | Units/ Products  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------|------------------|
| 13 Climate Action (mandatory)                  | Emissions Reductions                                                                                              | 6,986           | VERs             |
| SDG 3: Good Health and Well-being              | Additional persons using safe water in the project activity compared to the baseline scenario                     | 4,571           | Households       |
| SDG 6: Clean Water and Sanitation              | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 5,078           | Households       |
| SDG 12: Responsible Consumption and Production | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 1               | Hygiene campaign |

**Table 2 – Product Vintages**

GS7566

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 2,259           |
| 01/01/2024  | 21/09/2024 | 5,110           |

GS7567

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 1,994           |

|            |            |       |
|------------|------------|-------|
| 01/01/2024 | 21/09/2024 | 4,932 |
|------------|------------|-------|

GS10657

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 2,173           |
| 01/01/2024  | 21/09/2024 | 5,423           |

GS10658

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 1,805           |
| 01/01/2024  | 21/09/2024 | 4,095           |

GS10659

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 2,217           |
| 01/01/2024  | 21/09/2024 | 5,512           |

GS10783

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 2,005           |
| 01/01/2024  | 21/09/2024 | 5,323           |

GS10784

|             |            | Amount Achieved |
|-------------|------------|-----------------|
| Start Dates | End Dates  | VERs            |
| 31/08/2023  | 31/12/2023 | 2,018           |
| 01/01/2024  | 21/09/2024 | 4,968           |

## SECTION A. DESCRIPTION OF PROJECT

### A.1. General description of project

The micro-scale voluntary Project Activities (VPA) “Water is Life, Madagascar” and “Water is Life – Phase II, Madagascar” are developed by an Italian Aid4MAda<sup>1</sup> in collaboration with Carbonsink. The project ownership then transferred to Madaprojects by an amended Cover Letter submitted to GS on 31/07/2024.

The project activity includes the construction and securing of a network of wells for increase accessibility to safe and clean drinking water for local families living in the surroundings of the city of Toliara located in the Region of Atsimo-Andrefana, in Toliara Province, Madagascar.

In targeted areas, many families do not have access to safe and clean drinking water and, moreover, long daily journeys are needed to reach the water sources in these semi-desert areas. Many health problems are linked to the use of unsafe drinking water: a high incidence of diseases such as diarrhea, intestinal infections, and parasites<sup>2</sup>. Local people typically use boiling with firewood or charcoal to purify their drinking water. This process results in the release of greenhouse gas emissions from the wood combustion.

The project is addressed to supply safe drinking water for domestic use and consequently to improve the hygiene, social, economic and environmental issues related to the water consume. Moreover, verifiable Carbon Dioxide (CO<sub>2</sub>) emission reductions are achieved through the reduced wood/charcoal combustion and the need for water purification through boiling is reduced. The project has also raised awareness among population regarding hygiene and contribute to sustainable development.

The water supply systems of all projects involve boreholes with solar powered pumps (GS7567, GS7566, GS10657, GS10658, GS10659, GS10783 and GS10784). Each system can provide 30,000 m<sup>3</sup> water every day and operational early in the morning until late night. Thanks to the battery system, the storage tank is filled during night

<sup>1</sup> The name of the NGO “Associazione Mondobimbi Veneto Onlus” has been changed to Aid4Mada.

<sup>2</sup> [https://www.who.int/publications/i/item/9789240075610?utm\\_source=chatgpt.com](https://www.who.int/publications/i/item/9789240075610?utm_source=chatgpt.com)

and ready to serve in the morning. Solar panels refill the battery during daytime and provides electricity needed for pumps. Each system is equipped with 9 taps that supply water to the community.

## A.2. Location of project

Republic of Madagascar, Atsimo-Andreafana Region, in the following villages listed below:

GS7567- Villages of Anketrake Andranogadra and Ankatsaky

GS7566- Villages of Belembokely Androvakely and Andranomena

GS10657- Villages of Ankilimarovahatse and Antanamikodoy

GS10658- Villages of Antobe and Ankoronga

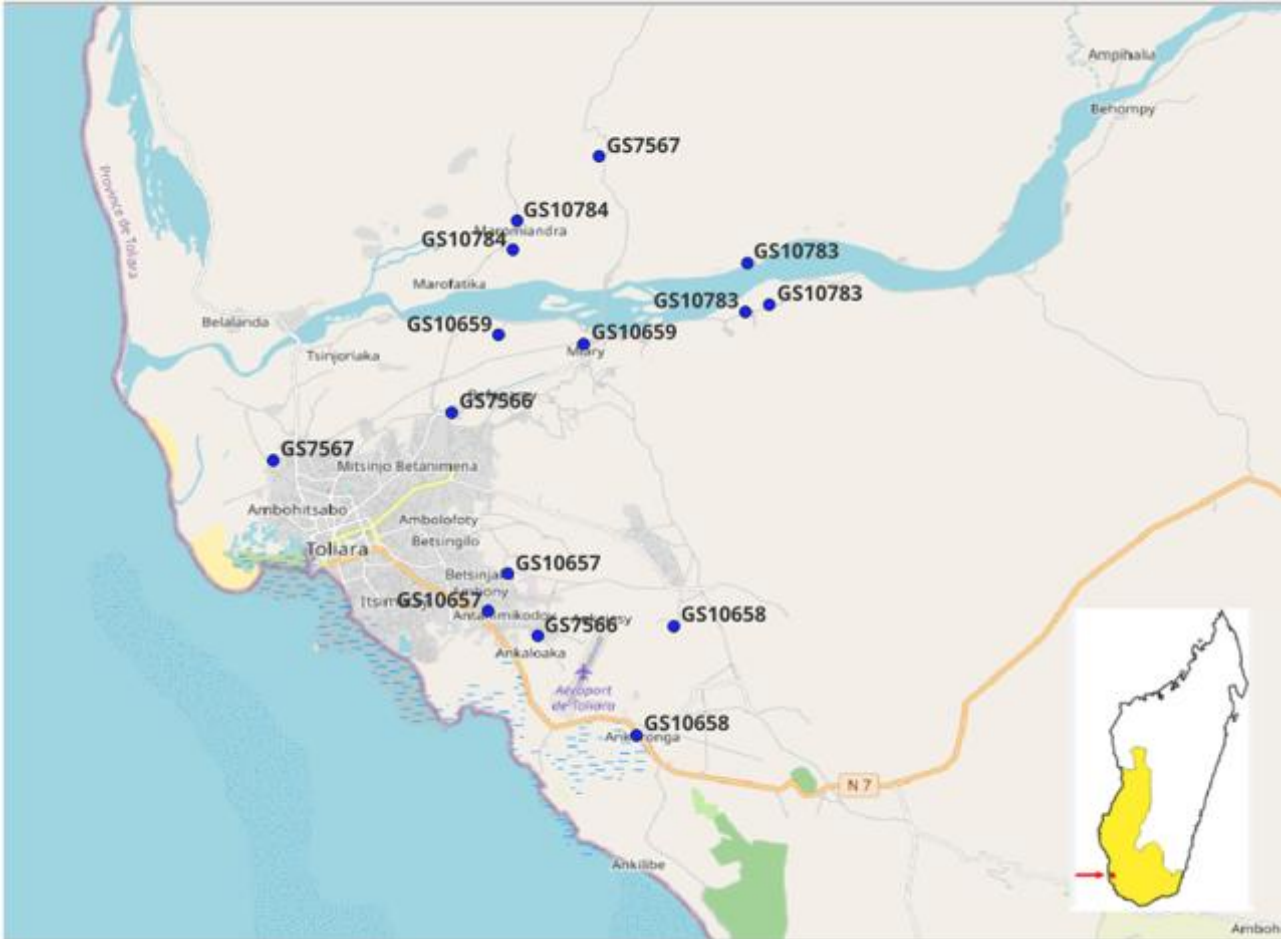
GS10659- Villages Miary Ville and Ankoronga

GS10783- Villages of Mandrosoa, Mandrosoa Antaikoaki and Ankotsahobihia

GS10784- Villages of Maromiandra and Maromiandra Antevamena

Table A-1. The GPS coordinates of the projects water systems

|                         |           |          |
|-------------------------|-----------|----------|
| <b>GS7567</b>           |           |          |
| Anketrake Andranogadra  | -23.33311 | 43.65463 |
| Ankatsaky               | -23.26096 | 43.73199 |
| <b>GS7566</b>           |           |          |
| Belembokely Androvakely | -23.32179 | 43.69703 |
| Andranomena             | -23.37465 | 43.71739 |
| <b>GS10657</b>          |           |          |
| Ankilimarovahatse       | -23.36874 | 43.70564 |
| Antanamikodoy           | -23.35997 | 43.71032 |
| <b>GS10658</b>          |           |          |
| Antobe                  | -23.37236 | 43.74957 |
| Ankoronga Angara        | -23.39817 | 43.74081 |
| <b>GS10659</b>          |           |          |
| Miary Ville             | -23.30545 | 43.72835 |
| Ankoronga               | -23.30334 | 43.70805 |
| <b>GS10783</b>          |           |          |
| Mandrosoa               | -23.29799 | 43.76655 |
| Mandrosoa Antaikoaki    | -23.29626 | 43.77237 |
| Ankotsobohia            | -23.28626 | 43.76706 |
| <b>GS10784</b>          |           |          |
| Maromiandra             | -23.27623 | 43.71246 |
| Maromiandra Antevamena  | -23.28319 | 43.71148 |



Imagine A-1. Location of projects water systems



Imagines A-4, A-5. Project water systems constructed in Belembovy Androvakely and Andranomena villages (GS7566)



Imagines A-6, A-7. Project water systems constructed in Ankilimarovahatse and Antanimikodoy villages (GS10657)



Imagines A-7, A-8. Project water systems constructed in Antobe and Ankoronga villages  
(GS10658)



Images A-9, A-10. Project water systems constructed in Miary Ville and Miary Ankoronga villages (GS10659)



Imagines A-11. Project water system constructed in Mandrosoa village (GS10783)



Images A-12. Project water system constructed in Mandrosoa/Antaikoaki village (GS10783)



Imagines A-13. Project water system constructed in Ankotsahobihia village (GS10783)



Imagines A-14. Project water system constructed in Maromiandra village (GS10784)



Images A-15. Project water system constructed in Maromiandra Antevamena village (GS10784)



Images A-16, A17. Project water systems constructed in Anketrake Andranogadra and Ankatsaky villages (GS7567)

### **A.3. Reference of applied methodology**

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

### **A.4. Crediting period of project**

The length of the crediting period is 5 years, twice renewable in line with Community Services Activity Requirements.

The start and end dates of all the projects crediting period are as follows:

GS7567: 01/09/2020 – 31/08/2025

GS7566: 22/09/2019 – 21/09/2024

GS10657: 22/09/2019 – 21/09/2024

GS10658: 23/11/2019 – 22/11/2024

GS10659: 22/09/2019 – 21/09/2024

GS10783: 01/09/2020 – 31/08/2025

GS10784: 01/09/2020 – 31/08/2025

## SECTION B. IMPLEMENTATION OF PROJECT

### **B.1. Description of implemented project**

As per the registered PDDs, the water systems have been installed to ensure the supply of safe drinking water for domestic use in the villages.

The project activities include construction of new boreholes with a solar powered pumps in each village. The installed submersible pump (LSPI Series DC Brush Plastic Impeller Solar Pump)<sup>3</sup> has a capacity of 2,500 litres/hour and it's connected to a storage battery (DC12-150)<sup>4</sup>.

The battery is placed in the water system technology already fully charged and is connected to a solar panel so that the battery works and charges in daylight hours.

The water extracted with the pump is transferred to a tank with a capacity of 3,000 liters, passing through a skimmer that provides chlorine purification. The water is piped out of the tank to 9 water taps to ensure that several people can fill their safe water containers contemporary.

The water tank will serve also as a storage which will enable to have a capacity margin, in fact, thanks to the battery, the tank fills up completely during the evening/night hours and ready to supply water from the early hours of the morning. The tank and the battery are placed inside a masonry structure. Moreover, the battery is powering LED lamps that guarantee lighting of the water taps so that the families are able to fetch water even after sunset.

---

<sup>3</sup> See "Technical characteristics of the water pump" uploaded to SC application

<sup>4</sup> See "Technical characteristics of the battery" uploaded to SC application

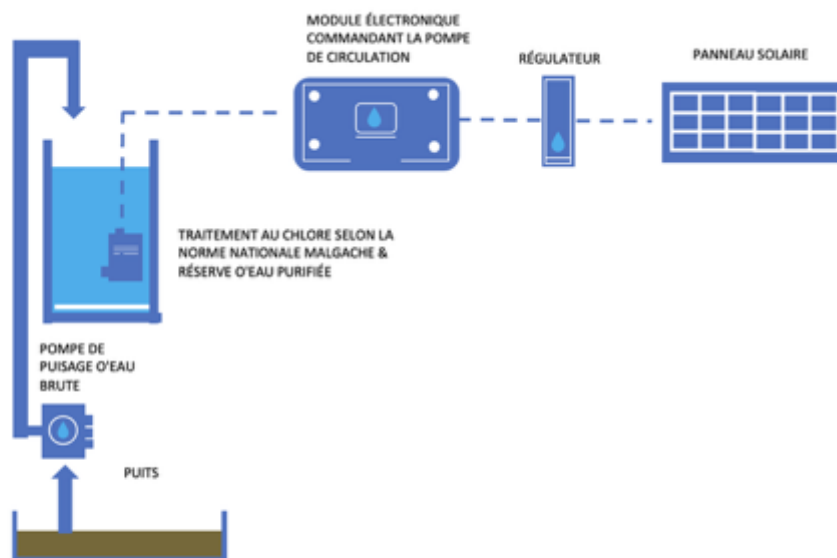


Figure B-1: Schematic presentation of the water systems

The water system can supply more than 30,000<sup>5</sup> litres of water per day<sup>6</sup>. Regular maintenance operations are required to every three months to ensure the quality of the supplied water and they include:

- Checking the chlorine level inside the skimmer and eventual replace it if necessary
- Cleaning of the accumulation tank from any residues or algae that can be created to prevent the formation of biofilms on the walls.

Table B-1. Summary of projects water systems

| Borehole ID (i.e. name of the village) | Start date of the construction | End date of the construction | Model of the pump                                | Total number of people obtaining water for this MP |
|----------------------------------------|--------------------------------|------------------------------|--------------------------------------------------|----------------------------------------------------|
| <b>GS7567</b>                          |                                |                              |                                                  |                                                    |
| Anketrake Andranogadra                 | 02/12/2019                     | 31/08/2020                   | LSPI Series DC Brush Plastic Impeller Solar Pump | 3,021                                              |

<sup>5</sup> For more details, please refer to "BenConsAndStorage" Tab in ERs calculations

<sup>6</sup> The indicated daily provision will be enough to supply the daily needs of locals (around 3,000 persons/village) water, considering a daily water demand of 10 litres per person.

|                          |            |            |                                                           |       |
|--------------------------|------------|------------|-----------------------------------------------------------|-------|
| Ankatsaky                | 01/09/2020 | 30/12/2020 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 2,997 |
| <b>GS7566</b>            |            |            |                                                           |       |
| Belemboky<br>Androvakely | 15/05/2019 | 21/09/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 2,992 |
| Andranomena              | 15/05/2019 | 21/09/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 3,029 |
| <b>GS10657</b>           |            |            |                                                           |       |
| Ankilimarovahats<br>e    | 15/05/2019 | 21/09/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 2,994 |
| Antanamikodoy            | 15/05/2019 | 22/11/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 3,034 |
| <b>GS10658</b>           |            |            |                                                           |       |
| Antobe                   | 15/05/2019 | 24/12/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 2,084 |
| Ankoronga<br>Angara      | 15/05/2019 | 22/11/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 3,024 |
| <b>GS10659</b>           |            |            |                                                           |       |
| Miary Ville              | 15/05/2019 | 21/09/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 3,022 |
| Miary Ankoronga          | 15/05/2019 | 21/09/2019 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 3,007 |
| <b>GS10783</b>           |            |            |                                                           |       |
| Mandrosoa                | 01/04/2020 | 31/08/2020 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 2,363 |
| Mandrosoa<br>Antaikoaki  | 01/04/2020 | 31/08/2020 | LSPI Series DC<br>Brush Plastic<br>Impeller Solar<br>Pump | 2,261 |

|                        |            |            |                                                  |       |
|------------------------|------------|------------|--------------------------------------------------|-------|
| Ankotsahobihia         | 01/09/2020 | 30/12/2020 | LSPI Series DC Brush Plastic Impeller Solar Pump | 2,173 |
| <b>GS10784</b>         |            |            |                                                  |       |
| Maromiandra            | 15/05/2020 | 15/09/2020 | LSPI Series DC Brush Plastic Impeller Solar Pump | 3,106 |
| Maromiandra Antevamena | 15/05/2020 | 31/08/2020 | LSPI Series DC Brush Plastic Impeller Solar Pump | 2,984 |

Table B-2. Monitoring Activities implemented during the current Monitoring Period

| Monitoring Activity  | Time                                              |
|----------------------|---------------------------------------------------|
| Annual hygiene camps | 21/06/2024, Ankantsaky (GS7567)                   |
|                      | 07/06/2024, Belembohy (GS7566)                    |
|                      | 07/06/2024, Antanimikodoy (GS10657)               |
|                      | 05/06/2024, Ankongra Angara (GS10658)             |
|                      | 25/05/2024, Miary Ville (GS10659)                 |
|                      | 14/06/2024, Antaikoaky & Ankotsahobihia (GS10783) |
|                      | 21/06/2024, Maromiandra (GS10784)                 |
| Monitoring survey    | 9-10/07/2024                                      |
| WCFT                 | 14/06/2023-18/06/2023                             |

Peak rainfall is usually between January and March, with occasional tropical storms or cyclones increasing precipitation levels. Water quality test frequency is designed to maintain the water quality during this period. Water tests are done on early February.

Table B-3 below summarizes the dates of sampling for each VPA and the results confirming the water quality meets the physical and microbial standards for safe drinking water is provided to the VVB.

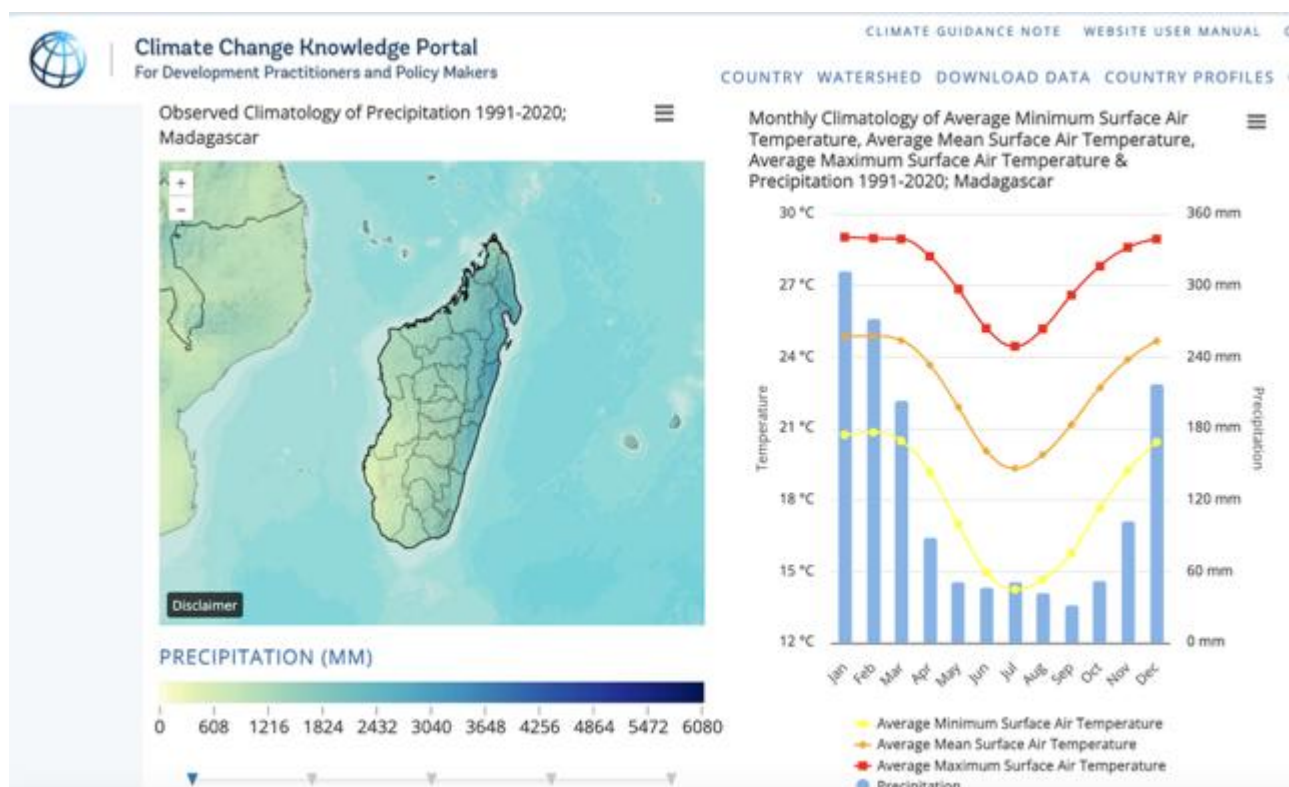


Figure B-1. Rainfall distribution throughout the year<sup>7</sup>.

Table B-3. Water quality tests. (dd/mm/yyyy)

| GS ID   | Village                 | WP Name               | WQT Nov    | WQT Feb    | WQT May    | WQT Aug    |
|---------|-------------------------|-----------------------|------------|------------|------------|------------|
| GS7566  | ANDRANOME NA            | Andranomena           | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |
| GS7566  | BELEMBOKY               | Belemboky Androvakely | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS7567  | ANKTSAKY                | Ankatsake             | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |
| GS7567  | ANKETRAKE ANDRANOGA DRA | Andranogadr a         | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |
| GS10657 | ANKILIMARO VAHATSE      | Ankilimarova hatse    | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS10657 | ANTANIMIKO DOY          | Antanimikodo y        | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS10658 | ANKORONGA ANGARA        | Ankoronga Angara      | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS10658 | ANTOBY                  | Antoby                | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS10659 | MIARY ANKORONGA         | Ankoronga             | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS10659 | MIARY VILLE             | Miary Ville           | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| GS10783 | ANKOTSOBIH IA           | Arkotsobihia          | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |
| GS10783 | MANDROSOA ANTAIKOAKY    | Antaikoaky            | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |
| GS10783 | MANDROSOA               | Mandrosoa             | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |

<sup>7</sup> [https://climateknowledgeportal.worldbank.org/country/madagascar/climate-data-historical?utm\\_source=chatgpt.com](https://climateknowledgeportal.worldbank.org/country/madagascar/climate-data-historical?utm_source=chatgpt.com)

|                |                               |             |            |            |            |            |
|----------------|-------------------------------|-------------|------------|------------|------------|------------|
| <b>GS10784</b> | MAROMIAND<br>RA<br>ANTEVAMENA | Antevamena  | 18/11/2023 | 17/02/2024 | 15/05/2024 | 20/08/2024 |
| <b>GS10784</b> | MAROMIAND<br>RA               | Maromiandra | 11/11/2023 | 10/02/2024 | 08/05/2024 | 06/08/2024 |

All VPAs are implemented as described the registered VPA-DDs. There are no changes to design components or to monitoring plans.

#### B.1.1 Forward Action Requests

No FAR has been raised.

### B.2. Post-Design Certification changes

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

N/A

B.2.2. Corrections

N/A

B.2.3. Changes to start date of crediting period

N/A

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

N/A

B.2.5. Changes to project design of approved project

N/A

## SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

In line the section B.7.3. of the registered VPA-DDs the monitoring is to be made by keeping records on the water supply systems and by conducting the studies after the project implementation start in line with the applied methodology as described below:

### 1) Record of the Water Supply Systems

In order to enable the unique identification of the project water supply systems, each project technology is identified with GPS coordinates. Following information is recorded for each water supply point for the unique identification of the system:

- Unique identification number of each Water Supply System
- Date of installation of each Water Supply System
- GPS location of each Water Supply System
- Model of the pump and filter used for each Water Supply System
- Total quantity of the constructed Water Supply Systems
- The total number of people obtaining their water from each Water Supply System

These data are summarised in the Emission Reduction Calculation sheet<sup>8</sup> as well as in the above tables A-1 and B-1.

The data unique to each water supply point are recorded by VPA Implementer Aid4MA once they are operational.

### 2) Studies on Project Scenario

After the project implementation start, the following studies have been conducted for the project scenario:

#### **A. Project Non-Renewable Biomass (NRB) Assessment – at least at renewal of crediting period**

In accordance with the TPDDTEC methodology, the NRB assessment can be remained fixed for the entire crediting period and thus no updates or new assessment have been made during this monitoring period.

#### **B. Project Survey (PS) of end-user characteristics – completed annually**

<sup>8</sup> Please refer tab "ERs" within the ER Ex post calculations spreadsheets

The project survey has the same requirements as the baseline survey (described in Section B.4 of this VPA-DD) but is conducted with end-users representative of the project scenario target population and currently using the safe water project technology. In the guidance data collected, questions about end-user characteristics and baseline technology and fuels should be treated as specific to safe water supply and water treatment.

The data was collected by VPA Implementer through structured field surveys using digital questionnaires administered by trained enumerators. These surveys were conducted using smartphones equipped with data collection apps which allowed enumerators to record responses alongside automatically captured GPS coordinates. The questionnaires gathered information on household water sources, usage patterns and baseline fuel use for water treatment (such as firewood for boiling). In areas with mobile network access, completed forms were uploaded in real time to a secure cloud server. In remote locations, the data was stored locally on the devices and synced once internet access was restored. All collected data, including spatial coordinates, was securely transferred and recorded in centralized cloud storage in formats such as CSV for quantitative analysis. The recorded data was then reviewed and analysed to support carbon credit certification processes.

During this monitoring period, the Project Survey and the below-described Usage Survey has been implemented together on 09-10 July 2024. The summary of the obtained results is described below. A more detailed description of the results is made in a separate document<sup>9</sup>.

### **C. Baseline Water Boiling Test (BWBT) – completed at least once**

In line with BAMG report, the following conservative values for baseline fuels have been used:

- 0.4 Kg/l for wood (default value)
- 0.125 Kg/l for charcoal (capped value).

A separate baseline water boiling test (BWBT) for charcoal fuel consumption has been conducted in Spring 2021 in line the indications of the applied methodology

---

<sup>9</sup> Sample Selection\_Usage Survey 2023

and the BAMG report. The value obtained from the field measurement has been selected to be conservatively capped at 0.125 Kg/litre.<sup>10</sup>

Moreover, the monitoring survey has confirmed the same water boiling technologies prevalent in the baseline and in the project scenarios.

#### **D. Water Consumption Field Test (WCFT) – completed at least biennially**

The project proponent has carried out the WCFTs to determine the actual safe water consumption and boiling volumes (both of raw/unsafe water and safe water)<sup>11</sup> for the projects scenarios. The WCFTs have been completed prior to the verification and in future will be made at least every two years after with randomly selected end-users representative of the project scenario target population and currently using the projects technology following the WCFT Procedure designed for the project<sup>12</sup>.

The following three different volumetric variables are measured during the WCFTs:

|                     |                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------|
| $Q_p$               | Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day |
| $Q_{p,rawboil,y}$   | Quantity of raw or unsafe water boiled in the project scenario p per person per day                                       |
| $Q_{p,cleanboil,y}$ | Quantity of safe (treated, or from safe supply) water boiled in the project scenario p per person per day                 |

The Water Consumption Test was made between 14th and 18th June 2023 in 30 randomly selected families among nine of the projects' villages<sup>13</sup>.

Precision testing was carried out for the dataset to ensure compliance with 95/10 rule.

#### **E. On-going Monitoring Studies: Usage rates, leakage, water quality**

##### **Water quality testing – completed every quarter**

<sup>10</sup> REPORT IEST

<sup>11</sup> Measured as volume per person per day

<sup>12</sup> WCFT Procedure has been provided to Gold Standard at the projects validation.

<sup>13</sup> WCFT 2023 Report uploaded to SC application

The quality of the treated water will be assessed to ensure that it is fit for human consumption. In line with the national standard the quality shall be 0 Colony - Forming Unit (CFU) of E. Coli / 100 ml of safe water<sup>14</sup>. The water quality must be tested every quarter, with the first test within 6 months of the stated project start date. 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.

The water quality testing was carried out quarterly as explained in the registered VPA-DDs and has been made in the local laboratory or in the accredited laboratory<sup>15</sup>. The dates of WQTs are shared in Table B-3 above. The detailed results of each test are provided as a separate document<sup>16</sup>. All the test confirmed the water to be in line with the national water quality requirements, and no Colony Forming Units (CFU) were found to be present and therefore, meeting the required minimum precision level 90/10.

The hygienic campaigns organized during this monitoring period have further enhanced awareness raising regarding the hygienic water usage in the project area. The detailed description of the made hygienic campaigns is provided in a separate document<sup>17</sup>.

### **Usage Survey – completed at least annually**

In line with the registered VPA-DDs, the Usage Survey is completed annually, or more frequently, and all cases on time for any request of issuance. The usage survey provides a single usage parameter that is weighted based on drop off rates that are representative of age distribution for project technologies in the sales/distribution/construction record.

For this monitoring period Usage Survey and the above-described Project Survey have been implemented together on the 9<sup>th</sup> and 10<sup>th</sup> of July, 2024. The households were selected randomly from the list of users for each village is shown

<sup>14</sup> See the document "Décret MECIE - 2004" uploaded in SC application at project validation

<sup>15</sup> Univerite de Toliara Institut d'enseignement superieur de Toliara (IEST) Laboratoire de chimie et de contrôle de qualité des eaux

<sup>16</sup> Results of the quality tests 2021

<sup>17</sup> Reports on hygiene campaign uploaded to SC Application

in the table below. As per Annex. 3 of the applied methodology project surveys have same requirements of baseline survey described in Section 2.4. For a group size of 1000, the minimum sample size is determined as 100. Sampling is done randomly and representative of typical end-user. Please see below the population of each village and the number of samples selected. Sample size has been kept as 8 respondents from each village; that makes 16-24 samples for each VPA.

Table C-1: Sample size

| WP Name                | GS IDs of Projects | No. of people | Share in the total population | Minimum sample size (100) | Actual sample size (120) |
|------------------------|--------------------|---------------|-------------------------------|---------------------------|--------------------------|
| Anketrake Andranogadra | GS7567             | 3021          | 7%                            | 7.2                       | 8                        |
| Ankatsaky              | GS7567             | 2997          | 7%                            | 7.1                       | 8                        |
|                        |                    | <b>6018</b>   | <b>14%</b>                    | <b>14.3</b>               | <b>16</b>                |
| Belemboky Androvakely  | GS7566             | 2992          | 7%                            | 7.1                       | 8                        |
| Andranomena            | GS7566             | 3029          | 7%                            | 7.2                       | 8                        |
|                        |                    | <b>6021</b>   | <b>14%</b>                    | <b>14.3</b>               | <b>16</b>                |
| Ankilimarovahatse      | GS10657            | 2994          | 7%                            | 7.1                       | 8                        |
| Antanamikodoy          | GS10657            | 3034          | 7%                            | 7.2                       | 8                        |
|                        |                    | <b>6028</b>   | <b>14%</b>                    | <b>14.3</b>               | <b>16</b>                |
| Antobe                 | GS10658            | 2086          | 5%                            | 5.0                       | 8                        |
| Ankoronga Angara       | GS10658            | 3024          | 7%                            | 7.2                       | 8                        |
|                        |                    | <b>5110</b>   | <b>12%</b>                    | <b>12.1</b>               | <b>16</b>                |
| Miary Ville            | GS10659            | 3022          | 7%                            | 7.2                       | 8                        |
| Miary Ankoronga        | GS10659            | 3007          | 7%                            | 7.1                       | 8                        |
|                        |                    | <b>6029</b>   | <b>14%</b>                    | <b>14.3</b>               | <b>16</b>                |
| Mandrosoa              | GS10783            | 2363          | 6%                            | 5.6                       | 8                        |
| Mandrosoa Antaikoaki   | GS10783            | 2261          | 5%                            | 5.4                       | 8                        |
| Ankotsahobihia         | GS10783            | 2173          | 5%                            | 5.2                       | 8                        |
|                        |                    | <b>6797</b>   | <b>16%</b>                    | <b>16.1</b>               | <b>24</b>                |
| Maromiandra            | GS10784            | 3106          | 7%                            | 7.4                       | 8                        |
| Maromiandra Antevamena | GS10784            | 2984          | 7%                            | 7.1                       | 8                        |
|                        |                    | <b>6090</b>   | <b>14%</b>                    | <b>14.5</b>               | <b>16</b>                |
| <b>GRAND TOTAL</b>     |                    | <b>42,093</b> |                               | <b>100</b>                | <b>120</b>               |

Totally 120 households were interviewed. Below are summarized the obtained main results.

- 120 randomly selected persons were interviewed within all 15 project villages.
- 93.3% of the households are using traditional charcoal stoves as their principal cooking device and the 93.3% affirmed to use charcoal as main fuel and the remaining 6.7% declared to wood as fuel.
- 100% of the households obtain the water from project boreholes for drinking purposes. Furthermore, all the respondents declared to use the project water point on a daily basis both during the dry and rainy seasons. Therefore, no seasonal variation was observed in the use of the project's water systems.
- Considering the non-drinking purposes, most of the users declared to use unprotected source or drilling (60%) and 40% of the households stated to prefer river or stream.
- The one-way distance to the project boreholes was averagely 353.8 meters.
- No one of the respondents stated to purify the water deriving from project borehole before drinking it.

### **Leakage Assessment – completed every other year**

As the leakage risks related to the safe water supply and treatment technologies can be deemed very low, the leakage can be ignored, and leakage is expected to be 0.

However, to confirm that leakage can be deemed very low, the below described leakage assessment regarding the potential leakage sources (listed in the methodology TPDDTEC, pages 12-13) shall be completed every other year, starting on time for the first verification in line with the section 2.6 ("Leakage") of the applied TPDDTEC methodology.

a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.

Not applicable and therefore not counted. In these VPAs the baseline technologies are referring to the methodologies used for water boiling which are three stone fires and traditional charcoal stoves. As confirmed by the made Monitoring Survey made in 2024 these baseline methodologies have continued to be used by the families for cooking activities (even though the project has replaced the need for boiling the water) and it's not foreseen that the project would have led to the displacement of the baseline technologies outside the project boundary.

b) Non-project users who previously used lower emitting energy sources use the non-renewable biomass or fossil fuels saved under the project activity.

Not applicable and therefore not counted. As confirmed by the Monitoring Survey made in 2024, the energy used in the area for eventual water boiling are firewood and charcoal. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like chlorine treatment for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

c) The project significantly impacts the NRB fraction within an area other CDM or VER project activities account for NRB fraction in their baseline scenario. Due to the small size of these VPAs, it's not expected that it will have significant influence on the national NRB fraction.

d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.

Not applicable and therefore not counted. It is unlikely that households would have used the boiling of drinking water for space heating. In addition, end-users retain use of the baseline technologies for cooking and the difference in heat effects from no longer boiling water can be considered minimal. Any retaining use of inefficient technology for water boiling will, anyhow, be covered in the results of the water consumption field test (WCFT).

e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

Not applicable and therefore not counted. As confirmed by the Monitoring Survey made in 2024, the technologies used in the baseline for water boiling are three stone fires and traditional charcoal stoves with either non-renewable biomass or

fossil fuels and/or the end-users are lacking access to safe water. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like chlorine treatment for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

## **F. Hygiene Survey – completed annually**

The hygiene campaigns are to be carried out in the project area annually. All the hygiene campaigns are foreseen to be based on "Water, Sanitation, and Hygiene Improvement, Training Package for the Prevention of Diarrheal Disease, Guide for Training Outreach Workers, USAID Hygiene Improvement Project, 2009" which is referred to in the applied methodology and to be in line with the plan described in the section B.7.2 of the registered VPA-DDs.

The conducted activities as well as the number of the participants in the organized campaigns and the number of the trained personnel are to be described annually in the monitoring reports. Moreover, any major changes on the health status of the water users as a result of contaminated water (e.g. an outbreak of water related disease) should be reported and, if relevant, a strategy put in place to address it through the hygiene campaign. Hygiene refers here to access to sanitation amenities, equipment and infrastructure, as well as to the behaviour in respect to regular and correct use of such amenities. It also refers to behaviour that prevents infections from water-related diseases.

The success of education on hygiene issue will also be monitored through the WCFT which will study the ratio of end-user that are still boiling their drinking water in the project scenario and through the usage/monitoring survey to check on the use of clean/safe containers and devices for transport and storage of water used for drinking, cooking, food preparation and basic personal hygiene. In case needed the education on the hygiene will be adjusted if proven unsuccessful.

During this monitoring period the eight hygiene campaigns have been organized, please refer to campaigns reports.

During the events water, sanitation and health related issues were discussed and the benefits of consumption of clean water and the ways for hygienic handling during transport, storage and usage of clean water have been highlighted. Moreover, particular attention was paid to the transport of water. All participants were advised not to let the children of their families carry heavy containers. At the end of all campaigns. At the end of all the hygiene campaigns, it was recalled that all stakeholders have the opportunity to leave comments when they prefer, using the grievance Continuous Input / Grievance Expression Process Book among all the other methods for the reporting of all grievances. The detailed description of the hygienic campaigns made during this monitoring period is provided in a separate document<sup>18</sup>.

## SECTION D. DATA AND PARAMETERS

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

#### SDG 13

|                                                             |                                                                                                                                                                                                       |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                                      | X <sub>boil</sub>                                                                                                                                                                                     |
| <b>Unit</b>                                                 | Percentage                                                                                                                                                                                            |
| <b>Description</b>                                          | 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.           |
| <b>Source of data</b>                                       | Baseline Survey <sup>19</sup>                                                                                                                                                                         |
| <b>Value(s) applied)</b>                                    | 0.149                                                                                                                                                                                                 |
| <b>Choice of data or measurement methods and procedures</b> | Baseline Study found 14.9% of the interviewed families, in the absence of the project activity, would have preferred to use liquid chlorine for water purification if it would be available for them. |
| <b>Purpose of data</b>                                      | Estimation of CO2e emission reductions                                                                                                                                                                |
| <b>Additional comments</b>                                  | Transparent data analysis and reporting.<br>This parameter is only applied for premises that are under suppressed demand situation.<br><br>Parameter is also used to calculate SDG 3 and SDG 6        |

|                        |                                                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b> | C <sub>j</sub>                                                                                                      |
| <b>Unit</b>            | Percentage                                                                                                          |
| <b>Description</b>     | Percentage of users of project safe water supply who were already in baseline using a non-boiling safe water supply |

<sup>18</sup> Hygiene campaigns 2023

<sup>19</sup> See the document "GS6752\_GS7311 Baseline Survey Report\_2018", uploaded to SC application

|                                                      |                                                                                                                                     |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Source of data                                       | Baseline Survey                                                                                                                     |
| Value(s) applied)                                    | 0.02                                                                                                                                |
| Choice of data or measurement methods and procedures | Baseline Study found 2% of the interviewed families to consume non-boiling safe water supply (water purified with liquid chlorine). |
| Purpose of data                                      | Estimation of CO <sub>2</sub> e emission reductions                                                                                 |
| Additional comments                                  | Transparent data analysis and reporting.<br><br>Parameter is also used to calculate: SDG 3 and SDG 6                                |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                               | Specific fuel consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Unit                                                 | Kg/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                                       | BAMG report<br>BWBT <sup>20</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Value(s) applied)                                    | 0.40 for wood (default value, BAMG report)<br>0.125 for charcoal (capped value, BWBT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Choice of data or measurement methods and procedures | Default value for wood (from BAMG report)<br><br>A separate baseline water boiling test (BWBT) for charcoal fuel consumption has been conducted in Spring 2021 in line the indications of the applied methodology and the BAMG report. The value obtained from the field measurement has been selected to be conservatively capped at 0.125 Kg/litre                                                                                                                                                                                                                                                              |
| Purpose of data                                      | Estimation of CO <sub>2</sub> e emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Additional comments                                  | Transparent data analysis and reporting.<br>Baseline only; Should be updated if ongoing monitoring surveys show that baseline water boiling technologies change over time. The values of specific fuel consumption will be used of calculating W <sub>b,y</sub> .<br><br>For example, for ex-ante W <sub>b,y</sub> is calculated as follows:<br>W <sub>b,y</sub> = household using charcoal (%) * charcoal consumption converted as woody biomass consumption (Kg/Litre) + households using wood (%) * woody biomass consumption (Kg/Litre) = 0.933*(0.125*4) Kg/Litre + 0.067*0.4 Kg/Litre = 0.000493 Tons/Litre |

|                        |                                                                                |
|------------------------|--------------------------------------------------------------------------------|
| <b>Data/parameter:</b> | EF <sub>b,co2</sub>                                                            |
| 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                                                    |

<sup>20</sup> Please see file "REPORT IEST"; showing the onfield water boiling tests doen 2021

|                                                      |                                                     |
|------------------------------------------------------|-----------------------------------------------------|
| Value(s) applied)                                    | 112                                                 |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                 |
| Purpose of data                                      | Estimation of CO <sub>2</sub> e emission reductions |
| Additional comments                                  |                                                     |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                               | EF <sub>b,non 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)                                    | 8.692 (2020), 9.46 (2021-2022)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Purpose of data                                      | Estimation of CO <sub>2</sub> e emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 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> <p>According to the GS rules, for the period starting from 01 January 2021 is applied the AR5 GWP values.</p> |

|                                                      |                                                                               |
|------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                               | 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 CO <sub>2</sub> e emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 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> |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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, 9.46 (2021-2022)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Purpose of data                                      | Estimation of CO <sub>2</sub> e emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 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> |

|                                                      |                                                                                                                                                    |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                               | f <sub>NRB,I,y</sub>                                                                                                                               |
| Unit                                                 | Fraction                                                                                                                                           |
| Description                                          | Non-renewability status of woody biomass fuel in scenario I during the year y                                                                      |
| Source of data                                       | Default fNRB value provided by CDM Executive Board and endorsed by the host country DNA <sup>21</sup> .                                            |
| Value(s) applied)                                    | 0.72                                                                                                                                               |
| Choice of data or measurement methods and procedures | The default NRB value provided by the CDM Executive Board and endorsed by the host country DNA is deemed valid by the applied TPDDTEC methodology. |

<sup>21</sup> Available at <http://cdm.unfccc.int/DNA/fNRB/index.html> (Site visited 02/12/2019)

|                     |                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of data     | Estimation of CO <sub>2e</sub> emission reductions                                                                                                                                                                                                                                                                                                       |
| Additional comments | The value of $f_{NRB}$ is fixed ex-ante for entire crediting period even though the project activity may choose to update the $f_{NRB}$ during the crediting period.<br>In case CDM/DNA updates on this value, PP may continue to use the registered value by demonstrating it's to be a conservative approach. Otherwise, PP shall use an updated value |

|                                                      |                                                                                                                                                                                                    |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                               | NCV <sub>b, fuel</sub>                                                                                                                                                                             |
| Unit                                                 | TJ/ton                                                                                                                                                                                             |
| Description                                          | Net calorific value of the fuels used in the baseline                                                                                                                                              |
| Source of data                                       | IPCC default value for wood                                                                                                                                                                        |
| Value(s) applied)                                    | 0.0156                                                                                                                                                                                             |
| Choice of data or measurement methods and procedures | Deemed valid by TPDDTEC Methodology                                                                                                                                                                |
| Purpose of data                                      | Estimation of CO <sub>2e</sub> emission reductions                                                                                                                                                 |
| Additional comments                                  | Fixed for the entire VPA crediting period<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. |

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>                               | NCV <sub>p, fuel</sub>                                                                                                                                                                                                                                                                                                                                                                                      |
| Unit                                                 | TJ/ton                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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 CO <sub>2e</sub> emission reductions                                                                                                                                                                                                                                                                                                                                                          |
| Additional comments                                  | Fixed for the entire VPA crediting period<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>If EF in units of tCO <sub>2</sub> /t <sub>fuel</sub> , remove NCV term from emission calculations.<br>This has same values as NCV <sub>baseline</sub> in projects which reduce use of the same fuel. |

## D.2 Data and parameters monitored

### SDG 13

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|------------|------|------|--------|---------|-----------|--------|---------|-----------|---------|---------|-----------|---------|---------|-----------|---------|---------|-----------|---------|---------|-----------|---------|---------|-----------|
| Data/parameter:                    | N <sub>p,y</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Unit                               | Persons.days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Description                        | Number of person.days consuming water supplied by project scenario p through year y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Source of data                     | The total number of persons using each water supply and treatment system is monitored through the production of an end-users list <sup>22</sup><br><br>The total number of operational days is monitored <sup>23</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                            |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Value(s) applied                   | <table><tr><td>Project ID</td><td>2023</td><td>2024</td></tr><tr><td>GS7567</td><td>547,638</td><td>1,354,050</td></tr><tr><td>GS7566</td><td>620,163</td><td>1,402,893</td></tr><tr><td>GS10657</td><td>596,772</td><td>1,488,916</td></tr><tr><td>GS10658</td><td>495,670</td><td>1,124,200</td></tr><tr><td>GS10659</td><td>608,929</td><td>1,513,279</td></tr><tr><td>GS10783</td><td>550,557</td><td>1,461,355</td></tr><tr><td>GS10784</td><td>554,190</td><td>1,364,160</td></tr></table><br><br>Maintenance days are reported for each year and dropped from total operational days as follows:<br><br>2023: 198 days<br><br>2024: 240 days |           |  | Project ID | 2023 | 2024 | GS7567 | 547,638 | 1,354,050 | GS7566 | 620,163 | 1,402,893 | GS10657 | 596,772 | 1,488,916 | GS10658 | 495,670 | 1,124,200 | GS10659 | 608,929 | 1,513,279 | GS10783 | 550,557 | 1,461,355 | GS10784 | 554,190 | 1,364,160 |
| Project ID                         | 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2024      |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS7567                             | 547,638                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,354,050 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS7566                             | 620,163                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,402,893 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS10657                            | 596,772                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,488,916 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS10658                            | 495,670                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,124,200 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS10659                            | 608,929                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,513,279 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS10783                            | 550,557                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,461,355 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| GS10784                            | 554,190                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1,364,160 |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Measurement methods and procedures | As per Field Test updates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Monitoring frequency               | Annually                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| QA/QC procedures:                  | Transparent data analysis and reporting<br>Each family is recorded in a database with their family size and distance to the water point. The list of families are prepared for each village and updated annually.                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |
| Purpose of data:                   | Estimation of CO2e emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |  |            |      |      |        |         |           |        |         |           |         |         |           |         |         |           |         |         |           |         |         |           |         |         |           |

<sup>22</sup> Please refer to the relative spreadsheet in the Ex-post calculation documents uploaded to GS registry.

<sup>23</sup> The number of operation days ("Technology days") has been monitored for each supply systems, please refer to "maintenance plan" uploaded to SC Application. To be conservative the value of technology days has been capped at 347 days as per GS recommendations.

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional comments: | <p>Example of calculation methods:<br/>GS7566: 6,021 persons * 103 Op.days (2023)= 620,163 persons.days</p> <p>In ex-ante it is estimated that each project water system is used by around 395 families (3,000 persons /7.6/ family = 395 families when assuming average family size to be 7.6 persons as found by the baseline survey). The household size is crosschecked with UN data in 2020<sup>24</sup>. The VPAs are located in a highly populated zone compared to the other parts of the country.</p> <p>Moreover, all the users are living in near-by distance from the project boreholes which enables them to fetch the water several times per day. In fact, based on the baseline survey it is foreseen that each family goes averagely 2-3 times per day to fetch the water. The real usage of the project boreholes as well as the eventual water fetching from other sources will be monitored annually via usage survey and accounted thus in ER calculations.</p> <p>The days during which maintenance activities will be made will be conservatively excluded from the calculations at the monitoring stage.</p> <p>For the complete calculations please refer the ER spreadsheet (tap ERs, column E)</p> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                    |                                                             |
|------------------------------------|-------------------------------------------------------------|
| <b>Data/parameter:</b>             | Percentage of users per used fuel                           |
| Unit                               | %                                                           |
| Description                        | Percentage of user that are using firewood or charcoal      |
| Source of data                     | Monitoring survey                                           |
| Value(s) applied                   | 0.933 charcoal; 0.067 firewood                              |
| Measurement methods and procedures | This parameter is used to calculate $W_{b,y}$ and $W_{p,y}$ |
| Monitoring frequency               | Annually                                                    |
| QA/QC procedures:                  | Transparent data analysis and reporting                     |
| Purpose of data:                   | Estimation of CO2e emission reductions                      |
| Additional comments:               |                                                             |

|                        |                                                                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b> | $Q_{p,y}$                                                                                                                                     |
| 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 |
| Source of data         | Water Consumption Field Test (WCFT)                                                                                                           |
| Value(s) applied       | 7                                                                                                                                             |

<sup>24</sup> <https://hub.worldpop.org/geodata/summary?id=37357>

|                                    |                                                                                                                                                                                                                        |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement methods and procedures | As per WCFT                                                                                                                                                                                                            |
| Monitoring frequency               | At least biennially                                                                                                                                                                                                    |
| QA/QC procedures:                  | Transparent data analysis and reporting                                                                                                                                                                                |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions                                                                                                                                                                    |
| Additional comments:               | WCFT made in 2023 resulted as 8.2 litre/person/day. This value has been capped to 7 litres in line with the page 48 of the applied methodology. For further details on WCFT please refer the separate WCFT Report 2021 |

|                                    |                                                                                                            |
|------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>             | $Q_{p,rawboil,y}$                                                                                          |
| 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. |
| Source of data                     | Water Consumption Field Test (WCFT)                                                                        |
| Value(s) applied                   | 0                                                                                                          |
| Measurement methods and procedures | As per WCFT                                                                                                |
| Monitoring frequency               | At least biennially                                                                                        |
| QA/QC procedures:                  | Transparent data analysis and reporting                                                                    |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions                                                        |
| Additional comments:               | For further details on WCFT please refer the separate WCFT Report 2023.                                    |

|                                    |                                                                                                                                  |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <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 |
| Source of data                     | Water Consumption Field Test (WCFT)                                                                                              |
| Value(s) applied                   | 0                                                                                                                                |
| Measurement methods and procedures | As per WCFT                                                                                                                      |
| Monitoring frequency               | At least biennially                                                                                                              |
| QA/QC procedures:                  | Transparent data analysis and reporting                                                                                          |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions                                                                              |
| Additional comments:               | For further details on WCFT please refer the separate WCFT Report 2023.                                                          |

|                        |                                                |
|------------------------|------------------------------------------------|
| <b>Data/parameter:</b> | $U_{p,y}$                                      |
| Unit                   | Percentage                                     |
| Description            | Usage rate in project scenario p during year y |
| Source of data         | Annual usage survey                            |

|                                    |                                                                                                                                                                                                                                                                   |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value(s) applied                   | 90%                                                                                                                                                                                                                                                               |
| Measurement methods and procedures | Field survey                                                                                                                                                                                                                                                      |
| Monitoring frequency               | Annual or more frequently, in all cases on time for any request for issuance                                                                                                                                                                                      |
| QA/QC procedures:                  | Transparent data analysis and reporting                                                                                                                                                                                                                           |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions and monitoring of SDG 3                                                                                                                                                                                       |
| Additional comments:               | During the usage survey all the respondents declared to use the water point on daily basis both during the dry season and during the rainy season. For conservativeness, the applied value of usage rate is 90%.<br><br>Parameter is also used to calculate SDG 3 |

|                                    |                                                                  |
|------------------------------------|------------------------------------------------------------------|
| <b>Data/parameter:</b>             | LE <sub>p,y</sub>                                                |
| Unit                               | tCO <sub>2</sub> e /year                                         |
| Description                        | Leakage in project scenario p during year y                      |
| Source of data                     | Baseline and monitoring surveys                                  |
| Value(s) applied                   | 0                                                                |
| Measurement methods and procedures | Field survey                                                     |
| Monitoring frequency               | Every two years                                                  |
| QA/QC procedures:                  | Transparent data analysis and reporting                          |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions              |
| Additional comments:               | Aggregate leakage can be assessed for multiple project scenarios |

|                                    |                                                                                                                                                  |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <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 <sup>25</sup>                   |
| Source of data                     | Water quality test                                                                                                                               |
| Value(s) applied                   | 2023: Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water<br>2024: Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water |
| Measurement methods and procedures | As per the local laboratory procedures for measuring E. Coli.                                                                                    |
| Monitoring frequency               | Quarterly                                                                                                                                        |
| QA/QC procedures:                  | Transparent data analysis and reporting                                                                                                          |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions                                                                                              |
| Additional comments:               | N/A                                                                                                                                              |

<sup>25</sup> See the National Water Quality Standard Madagascar uploaded to Sustaincert

|                                    |                                                                                                                                                                   |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>             | Hygiene campaigns                                                                                                                                                 |
| Unit                               | N/A                                                                                                                                                               |
| Description                        | Hygiene campaigns carried out among project technology users. The description of the campaigns is provided in Section B.6.1.                                      |
| Source of data                     | Annual hygiene campaigns results                                                                                                                                  |
| Value(s) applied                   | 7 annual hygiene campaigns done in May- June 2024 <sup>26</sup>                                                                                                   |
| Measurement methods and procedures | N/A                                                                                                                                                               |
| Monitoring frequency               | Annually                                                                                                                                                          |
| QA/QC procedures:                  | N/A                                                                                                                                                               |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions and monitoring of SDG 12                                                                                      |
| Additional comments:               | Prior to the project the local communities received no regular training on water, sanitation and health related issues Parameter is also used to calculate SDG 12 |

|                                    |                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>             | Capacity <sup>27</sup>                                                                                                                                                                                                                                                                                                                  |
| Unit                               | Litres per day                                                                                                                                                                                                                                                                                                                          |
| Description                        | Treatment capacity of the project technology/improved sources                                                                                                                                                                                                                                                                           |
| Source of data                     | Manufacturer specification/design specification                                                                                                                                                                                                                                                                                         |
| Value(s) applied                   | GS7566-GS10657-GS10658-GS10659-GS7567-GS10783-GS10784: 31,448 litres per day <sup>28</sup>                                                                                                                                                                                                                                              |
| Measurement methods and procedures | GS7566-GS10657-GS10658-GS10659-GS7567-GS10783-GS10784: The calculation is based on: <ul style="list-style-type: none"> <li>- Capacity water pump</li> <li>- Capacity of the battery</li> <li>- Number of water taps</li> <li>- Flow rate of each water tap</li> <li>- Peak demand simulation</li> <li>- Capacity of the tank</li> </ul> |
| Monitoring frequency               | Once at the time of registration or at inclusion of new technology.                                                                                                                                                                                                                                                                     |
| QA/QC procedures:                  | N/A                                                                                                                                                                                                                                                                                                                                     |
| Purpose of data:                   | Estimation of CO <sub>2</sub> e emission reductions                                                                                                                                                                                                                                                                                     |
| Additional comments:               | The water volume values used in the calculations of emission reductions must be justified in terms of capacity of the project technology/improved sources.                                                                                                                                                                              |

### SDG 3

|                        |                                                        |
|------------------------|--------------------------------------------------------|
| <b>Data/parameter:</b> | Frequency of water-borne diseases (like e.g. diarrhea) |
| Unit                   | N/A                                                    |

<sup>26</sup> For the year 2023, hygiene campaigns were carried out on May 2023.

<sup>27</sup> In line with the GS TAC rule update at <http://www.goldstandard.org/articles/tac-rule-updates> (Site visited 25/02/2020)

<sup>28</sup> Please refer to spreadsheet "BenConsAndStorage" in ERs calculation uploaded to SC Application.

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                        | Frequency of water-borne diseases with the project families estimated via qualitatively self-estimation by the families                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Source of data                     | Monitoring Survey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Value(s) applied                   | 100% of people are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Measurement methods and procedures | Monitoring Survey studied qualitatively the frequency of suffering diarrhea and other water-borne diseases in the project scenario in comparison with the baseline scenario (The sample of project households are asked to evaluate if they experience less, more or the same amount of diarrhea and other water-borne diseases than prior to the project).                                                                                                                                                                                                                                        |
| Monitoring frequency               | Annually                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| QA/QC procedures:                  | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Purpose of data:                   | Monitoring of SDG 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Additional comments:               | Based on the Baseline Survey averagely 52.5 % of the families living in the project are suffering diarrhea and other water-borne diseases. The Monitoring Survey studied qualitatively the frequency of water-borne diseases in the project scenario and found that all the people (100%) auto evaluated to suffer less of water-borne diseases like diarrhoea in confront with the baseline scenario. Following question was asked to the respondents:<br>How do you estimate the frequency of diarrhea and other waterborne diseases after your family started using water from the water point? |

|                                    |                                                                                                                                                      |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data/parameter:</b>             | Py                                                                                                                                                   |
| Unit                               | Number of persons                                                                                                                                    |
| Description                        | Number of persons having access to safe water in the project activity compared to the baseline scenario                                              |
| Source of data                     | The total number of persons using each water supply and treatment system will be monitored through the production of an end-users list               |
| Value(s) applied                   | GS7567: 6,018<br>GS7566: 6,021<br>GS10657: 6,028<br>GS10658: 5,110<br>GS10659: 6,029<br>GS10783: 6,797<br>GS10784: 6,090                             |
| Measurement methods and procedures | The total number of persons using each water supply and treatment system is monitored through the production of an end-users list                    |
| Monitoring frequency               | Annually                                                                                                                                             |
| QA/QC procedures:                  | N/A                                                                                                                                                  |
| Purpose of data:                   | Monitoring SDG 3 and SDG 6                                                                                                                           |
| Additional comments:               | The number of users included in the Project Database will be monitored throughout the project duration.<br>Parameter is also used to calculate SDG 6 |

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

| Data/Parameter                                         | Value obtained in this monitoring period                                                                                                             | Value obtained last monitoring period                                                                                                                |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| $N_{p,y}$                                              | GS7567: 1,901,688<br>GS7566: 2,023,056<br>GS10657: 2,085,688<br>GS10658: 1,619,870<br>GS10659: 2,122,208<br>GS10783: 2,011,912<br>GS10784: 1,918,350 | GS7567: 2,103,451<br>GS7566: 2,119,920<br>GS10657: 2,108,357<br>GS10658: 1,771,199<br>GS10659: 2,105,554<br>GS10783: 2,328,620<br>GS10784: 2,105,813 |
| Percentage of users per used fuel                      | Charcoal: 0.933<br>Firewood: 0.067                                                                                                                   | Charcoal: 0.73<br>Firewood: 0.27                                                                                                                     |
| $Q_{p,y}$                                              | 7                                                                                                                                                    | 7                                                                                                                                                    |
| $Q_{p,rawboil,y}$                                      | 0                                                                                                                                                    | 0                                                                                                                                                    |
| $Q_{p,cleanboil,y}$                                    | 0                                                                                                                                                    | 0                                                                                                                                                    |
| $U_{p,y}$                                              | 90%                                                                                                                                                  | 90%                                                                                                                                                  |
| $LE_{p,y}$                                             | 0                                                                                                                                                    | 0                                                                                                                                                    |
| Quality of the treated water                           | Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water                                                                                     | Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water                                                                                     |
| Hygiene campaigns                                      | One annual hygiene campaign                                                                                                                          | One annual hygiene campaign                                                                                                                          |
| Capacity                                               | GS7566-GS7567-GS10657-GS10658-GS10659-GS10783- GS10784: 31,448 litres per day                                                                        | GS7566-GS7267-GS10657-GS10658-GS10659-GS10783- GS10784: 31,448 litres per day                                                                        |
| Frequency of water-borne diseases (like e.g. diarrhea) | 100% of people are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario               | 100% of people are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario               |
| $P_y$                                                  | GS7567: 6,018<br>GS7566: 6,021<br>GS10657: 6,028<br>GS10658: 5,110<br>GS10659: 6,029<br>GS10783: 6,797<br>GS10784: 6,090                             | GS7567: 6,003<br>GS7566: 6,050<br>GS10657: 6,017<br>GS10658: 5,108<br>GS10659: 6,009<br>GS10783: 6,787<br>GS10784: 6,073                             |

The parameters  $N_{p,y}$  and  $P_y$  have been updated according to the annual monitoring activities (i.e., number of days and users of the monitoring period). Therefore they differs from the previous period.

In the previous monitoring period, the values reported are 0.73 charcoal; 0.27 firewood. The share of charcoal and firewood are determined as 0.933, 0.067 in this monitoring period. The academic research: 'Estimating wood charcoal supply to Toliara town in southwestern Madagascar'<sup>29</sup>, provides a comparison of methods that focuses charcoal production and consumption in Toliara town and surroundings. As it could be seen from the study, the charcoal consumption in Toliara town increased 600% between 1991- 2018 and 130% during the last 10 years of this period. Such a high demand for charcoal creates a pressure on dry forests that has low regeneration capacity and highly vulnerable to disturbances. The charcoal production sites are distributed 40 km perimeter of the town and expanding by the population increase every year. Therefore, such a high increase in charcoal consumption in the project area is expected due to the continued loss of forest for charcoal production.

#### **D.4. Implementation of sampling plan**

The sampling approach (line in Section B.7.2 of the registered VPA-DD has been used for the following surveys as summaries below:

##### **Project Survey (PS) of end-user characteristics:**

- The Project Survey has the same requirements as the Baseline Survey (described in Section B.4 of the VPA-DDs) regarding the representativeness and sample sizing i.e. at least 100 households need to be sampled when the target groups size is > 1000.
- The Project Survey and the Usage Survey were implemented together using the same sample.

##### **Usage Survey.:**

- Cross sampling approach has been followed for sampling as the communities served are homogenous. The total number of villages to be included in the sample was set as 15. The number of families, belonging to the selected villages, was set at 120 and the sample was selected randomly from the total end-user list. In line with Section 3.0 of the applied methodology, the minimum sample size of 100 is met with at least 30 samples for project technologies of each age being credited.

---

<sup>29</sup> <https://www.sciencedirect.com/science/article/pii/S2468227621003124>

Tables D-3 Number of samples per village and age groups

| GS ID   | CP start date | AGE | TOTAL POP | SAMPLE SIZE |
|---------|---------------|-----|-----------|-------------|
| GS7566  | 22/09/2019    | 5.0 | 6,021     | 16          |
| GS7567  | 20/01/2020    | 4.7 | 6,018     | 16          |
| GS10657 | 22/09/2019    | 5.0 | 6,028     | 16          |
| GS10658 | 23/11/2019    | 4.8 | 5,110     | 16          |
| GS10659 | 22/09/2019    | 5.0 | 6,029     | 16          |
| GS10783 | 01/09/2020    | 4.1 | 6,797     | 24          |
| GS10784 | 01/09/2020    | 4.1 | 6,090     | 16          |

Sampling approach, data collected and its analysis is described in Section C above. The households were selected randomly from the list of users for each village. Sample size has been kept as 8 respondents from each village; that makes 16-24 samples for each VPA.

#### Leakage Assessment:

- Leakage assessment regarding the potential leakage sources was completed with the Usage Survey and therefore no separate sampling approach was used for the leakage assessment.

#### Water quality testing:

- The sample for water quality testing was made following the 90/10 precision rule indicated by the applied TPDDTEC methodology. Each system were sampling quarterly and 90 tests have been run. All results being negative confirms the required precision level.
- Please refer to table B-3 for more details.
- Detailed results of each test are provided as a separate document. All the tests confirmed the water quality to be in line with the national water quality requirements as no Colony Forming Units (CFU) were found to be present

Following tests are carried out in the previous monitoring periods and verified by auditors:

#### Water Consumption Field Test (WCFT):

- The minimum sample size requirement of the applied Gold Standard methodology has been reached as the sample size was 30.

- All the sample households were selected randomly within the project's areas villages.
- According to CDM's standard when two or more projects activities are grouped for undertaking a common survey, as for GS6752, GS7311, GS7566, GS10657, GS10658, GS10659, GS7567, GS10783 and GS10784 it shall be ensured that a confidence/precision of 95/10 is achieved for each of the project activity or alternatively lower bound of the 95% confidence level is to be used.
- WCFT was performed during 14/06/2023 – 18/06/2023.
- Further details has been described in the WCFT Report.
- The samples were randomly selected (simple random sample using the random number generator of Excel) out from the 120 end-user households who were previously selected for the Usage Survey.

### **Baseline Water Boiling Test (BWBT):**

In line with BAMG report, the following conservative values for baseline fuels have been used:

- 0.4 Kg/l for wood (default value)
- 0.125 Kg/l for charcoal (capped value)

A separate baseline water boiling test (BWBT) for charcoal fuel consumption has been conducted in Spring 2021 in line the indications of the applied methodology and the BAMG report. The value obtained from the field measurement has been selected to be conservatively capped at 0.125 Kg/litre. For further information regarding the sampling protocol and sample selection of the BWBT please refer to a separate document<sup>30</sup>.

## **SECTION E. CALCULATION OF SDG IMPACTS**

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

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

#### **Calculation of baseline for SDG 13 outcomes**

---

<sup>30</sup> BWBT Madagascar 2021

The equation used to calculate the baseline fuel consumption is calculated in line with the Gold Standard TPDDTEC methodology version 3.1 , Annex 3 and registered VPA-DD is as follows:

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

Where:

|                   |                                                                                                                                                                                            |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $B_{b,y}$         | Quantity of fuel consumed in baseline scenario b during the year in tons (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                                                                        |
| $N_{j,y}$         | Number of person days consuming water supplied by project scenario p through year y                                                                                                        |
| $W_{b,y}$         | Quantity of fuel in tons 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 equation used to calculate the emission reductions in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

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

Where:

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| $BE_{b,y}$            | Emissions for baseline scenario b during year y in tCO <sub>2</sub> e              |
| $fNRB$                | Fraction of biomass used that can be established as non-renewable biomass          |
| $EF_{b,fuel,CO2}$     | CO <sub>2</sub> emission factor arising from the use of fuels in baseline scenario |
| $EF_{b,fuel,non-CO2}$ | 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                              |

Related results calculated for GS7566 for the period 2023 within this monitoring period is reported below as an example:

$$B_{b,y} = (1 - 0.149) * (1 - 0.02) * 620,163 * 0.000493 * (7 + 0) = 1,786 \text{ ton/person/day}$$

$$BE_{b,y} = 1,786 * ((0.72 * 112) + 8.692) * 0.0156 = 2,510 \text{ tCO}_2\text{e/year}$$

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. Even though the total of these two volumes exceed the cap of 7 liters stipulated in the applied TPDDTEC methodology (the page 48 of applied TPDDTEC methodology), the project proponent's claim for emission reductions may however not exceed the cap.

The transparent calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate Excel Spreadsheet uploaded to GS Registry. For the used data/parameters the sections D.1 and D.2 can be referred.

### Calculation of baseline for SDG 3, SDG 6 and SDG 12 outcomes

The baseline situation related to the SDG 3, SDG 6 and SDG 12 is estimated based on the results of the Baseline Survey made in the project area in the year 2018

$$\text{SDG 3: } P_{\text{safe}} = P_y * (1 - C_j) * (1 - X_{\text{boil}}) * U_{p,y}$$

$$\text{SDG 6: } P_{\text{access}} = P_y * (1 - C_j) * (1 - X_{\text{boil}})$$

SDG 12: No specific formula, number of hygiene campaigns is zero for baseline.

Where;

P safe: Number of additional persons using safe water in the project activity compared to the baseline scenario (number)

P access: Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario (number)

$P_y$ : Number of persons having access to safe water in the project activity (taken as 3000 per village)

C<sub>j</sub>: Percentage of users of project safe water supply who were already in baseline using a non-boiling safe water supply (percentage- 0.02 as per Baseline survey 2018)

X<sub>boil</sub>: 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. (percentage- 0.149 as per Baseline survey 2018)

U<sub>p,y</sub>: Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate (percentage- 0.9 as per Baseline survey 2018)

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

### Calculation of project scenario for SDG 13 outcomes

The equation used to calculate the project scenario fuel consumption is calculated in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

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

Where:

|                            |                                                                                                                                                                    |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B <sub>p,y</sub>           | Quantity of fuel f consumed in project scenario p during the year y in tons                                                                                        |
| C <sub>j</sub>             | Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply                                                |
| N <sub>p,y</sub>           | Number of person. Days consuming water supplied by project scenario p through year y                                                                               |
| W <sub>b,y</sub>           | Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test. |
| Q <sub>p,rawboil,y</sub>   | Quantity of raw water boiled in the project scenario p per person per day                                                                                          |
| Q <sub>p,cleanboil,y</sub> | Quantity of safe water boiled in the project scenario p per person per day in year y                                                                               |

W<sub>b,y</sub>; quantity of fuel in tons required to treat 1 litre of water is calculated based on the results of the project survey as follows:

$$W_{b,y} = ((\text{Specific fuel consumption}_{\text{charcoal}} \times \text{Conversion factor to fuelwood}) \times \text{Share of charcoal use}) + (\text{Specific fuel consumption}_{\text{fuelwood}} \times \text{Share of fuelwood})$$

$$W_{b,y} = ((0.125 \text{ t charcoal/L} \times 4) \times 0.933) + (0.5 \text{ t fuelwood/L} \times 0.067) = 0.000493 \text{ t/L}$$

The equation used to calculate the emission reductions in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

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

Where:

|                       |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| $PE_{p,y}$            | Emissions for project scenario p during year y in tCO <sub>2</sub> e              |
| $f_{NRB}$             | Fraction of biomass used that can be established as non-renewable biomass         |
| $EF_{p,fuel,CO2}$     | CO <sub>2</sub> emission factor arising from use of the fuels in project scenario |
| $EF_{p,fuel,non-CO2}$ | Non-CO <sub>2</sub> emission factor arising from use of fuels in project scenario |
| $NCV_{p,fuel}$        | Net calorific value of the fuels used in the baseline                             |

Related results calculated for GS7566 for the period 2023 within this monitoring period is reported below as an example:

$$B_{p,y} = (1-0.02) * 620,163 * 0.000493 * (0+0) = 0$$

$$PE_{p,y} = B_{p,y} * ((0.72 * 112) + 8.692) * 0.0156 = 0$$

The transparent calculations of the outcomes 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 the sections D.1 and D.2 can be referred.

### Calculation of Project Scenario for SDG 3, SDG 6 and SDG 12 outcomes

The project outcomes of the SDG 3, SDG 6 and SDG 12 were made following the below described approaches.

| SDG Indicator | Selected parameter | Approach for estimation of the outcome |
|---------------|--------------------|----------------------------------------|
|---------------|--------------------|----------------------------------------|

|                                 |                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDG 3 /<br>Indicator<br>3.9.2   | "Number of additional persons using safe water in the project activity compared to the baseline scenario"                     | <p>The following equation will be used for calculating the outcomes:</p> $P_{\text{safe}} = P_y * (1 - C_j) * (1 - X_{\text{boil}}) * U_{p,y}$ <p>The more specific explanation is provided below this table.</p> <p>As example it is reported the calculation for GS7566:</p> $P_{\text{safe}} = 6,021 * (1 - 0.02) * (1 - 0.149) * 0.90 = 4,519$ <p>number of persons</p> <p>No specific calculation.</p>                  |
| SDG 6 /<br>Indicator<br>6.1.1   | "Frequency of water-borne diseases (like e.g. diarrhea)"                                                                      | <p>Annual Usage Survey will study based on the qualitative auto-evaluation of the sample families the frequency of suffering of diarrhea and other water-borne diseases in the project scenario in comparison with the baseline scenario (The sample of project households are asked to evaluate if they experience less, more or the same amount of diarrhea and other water-borne diseases than prior to the project).</p> |
| SDG 6 /<br>Indicator<br>6.1.1   | "Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario" | <p>The following equation will be used for calculating the outcomes:</p> $P_{\text{access}} = P_y * (1 - C_j) * (1 - X_{\text{boil}})$ <p>The more specific explanation is provided below this table.</p> <p>As example it is reported the calculation for GS7566:</p> $P_{\text{access}} = 6,021 * (1 - 0.02) * (1 - 0.149) = 5,021$ <p>number of persons</p>                                                               |
| SDG 12 /<br>Indicator<br>12.8.1 | "Number of campaigns on water, sanitation and health related issues"                                                          | <p><i>No specific calculations.</i></p> <p>Number and description of the made hygiene campaigns will be reported annually.</p>                                                                                                                                                                                                                                                                                               |

### E.3. Calculation of leakage

As the leakage risks related to the safe water supply and treatment technologies can be deemed very low, the leakage can be ignored and leakage is expected to be 0. However, to confirm that leakage can be deemed very low, the below described leakage assessment regarding the potential leakage sources (listed in the methodology TPDDTEC, pages 15-16) shall be completed every other year, starting on time for the first verification in line with the section 2.6 ("Leakage") of the applied TPDDTEC methodology.

a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.

Not applicable and therefore not counted. In these VPAs the baseline technologies are referring to the methodologies used for water boiling which are traditional charcoal stoves and three stone fires. As these baseline methodologies will be continued to be used by the families for cooking activities (even though the project will replace the need for boiling the water for purification purposes), it's not foreseen that the project would lead to the displacement of the baseline technologies outside the project boundary.

b) Non-project users who previously used lower emitting energy sources use the non-renewable biomass or fossil fuels saved under the project activity.

Not applicable and therefore not counted. The energy sources used in the baseline for water boiling are charcoal and firewood. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like use of liquid chlorine for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario.

Not applicable and therefore not counted. Due to the small size of the VPA, it's not expected that it will have significant influence on the national NRB fraction.

d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.

Not applicable and therefore not counted. It is unlikely that households would have used the boiling of drinking water for space heating. In addition, end-users retain use of the baseline technologies for cooking and the difference in heat effects from no longer boiling water can be considered minimal. Any retaining use of inefficient technology for water boiling will, anyhow, be covered in the results of the water consumption field test (WCFT).

e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.

Not applicable and therefore not counted. The technologies used in the baseline for water boiling are three stone fires and traditional charcoal stoves with either non-renewable biomass or fossil fuels and/or the end-users are lacking access to safe water. It is very unlikely that users who previously (in the baseline) used for example non-GHG emitting methods like use of liquid chlorine for water purification would switch to boiling drinking water because another 'zero emission' technology is promoted by the project.

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

GS7566

| SDG | SDG Impact                                                                                                        | Baseline estimate | Project estimate | Net benefit |
|-----|-------------------------------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                                              | 8,188             | N/A              | 7,369       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario                     | 1,502             | 6,021            | 4,519       |
| 6   | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 1,000             | 6,021            | 5,021       |
| 12  | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0                 | 1                | 1           |

GS7567

| SDG | SDG Impact                                                                                                        | Baseline estimate | Project estimate | Net benefit |
|-----|-------------------------------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                                              | 7,696             | N/A              | 6,926       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario                     | 1,501             | 6,018            | 4,517       |
| 6   | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 1,000             | 6,018            | 5,018       |
| 12  | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0                 | 1                | 1           |

GS10657

| SDG | SDG Impact                                                                                    | Baseline estimate | Project estimate | Net benefit |
|-----|-----------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                          | 8,441             | N/A              | 7,596       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario | 1,504             | 6,028            | 4,524       |

|    |                                                                                                                   |       |       |       |
|----|-------------------------------------------------------------------------------------------------------------------|-------|-------|-------|
| 6  | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 1,001 | 6,028 | 5,027 |
| 12 | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0     | 1     | 1     |

GS10658

| SDG | SDG Impact                                                                                                        | Baseline estimate | Project estimate | Net benefit |
|-----|-------------------------------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                                              | 6,556             | N/A              | 5,900       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario                     | 1,275             | 5,110            | 3,835       |
| 6   | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 849               | 5,110            | 4,261       |
| 12  | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0                 | 1                | 1           |

GS10659

| SDG | SDG Impact                                                                                                        | Baseline estimate | Project estimate | Net benefit |
|-----|-------------------------------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                                              | 8,589             | N/A              | 7,729       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario                     | 1,504             | 6,029            | 4,525       |
| 6   | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 1,001             | 6,029            | 5,028       |
| 12  | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0                 | 1                | 1           |

GS10783

| SDG | SDG Impact                                                                                    | Baseline estimate | Project estimate | Net benefit |
|-----|-----------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                          | 8,143             | N/A              | 7,328       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario | 1,696             | 6,797            | 5,101       |

|    |                                                                                                                   |       |       |       |
|----|-------------------------------------------------------------------------------------------------------------------|-------|-------|-------|
| 6  | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 1,129 | 6,797 | 5,668 |
| 12 | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0     | 1     | 1     |

GS10784

| SDG | SDG Impact                                                                                                        | Baseline estimate | Project estimate | Net benefit |
|-----|-------------------------------------------------------------------------------------------------------------------|-------------------|------------------|-------------|
| 13  | Emissions Reductions                                                                                              | 7,764             | N/A              | 6,986       |
| 3   | Additional persons using safe water in the project activity compared to the baseline scenario                     | 1,519             | 6,090            | 4,571       |
| 6   | Additional persons having access to a safe water source in the project activity compared to the baseline scenario | 1,012             | 6,090            | 5,078       |
| 12  | Hygiene campaign on water, sanitation and health related issues made in the project area                          | 0                 | 1                | 1           |

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

GS7566

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>31</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 13  | 8,807 tCO <sub>2</sub> e                                                           | 7,369 tCO <sub>2</sub> e                                           |
| 3   | 4,503                                                                              | 4,519                                                              |
| 6   | 5,004                                                                              | 5,021                                                              |
| 12  | One hygiene campaign within the first 12 months for each VPA                       | Hygiene campaign: 10/05/2023                                       |

GS7567

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>32</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 13  | 8,830tCO <sub>2</sub> e                                                            | 6,926 tCO <sub>2</sub> e                                           |
| 3   | 4,503                                                                              | 4,517                                                              |
| 6   | 5,004                                                                              | 5,018                                                              |
| 12  | One hygiene campaign within the first 12 months for each VPA                       | Hygiene campaign: 10/05/2023                                       |

GS10657

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>33</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 13  | 8,807 tCO <sub>2</sub> e                                                           | 7,596 tCO <sub>2</sub> e                                           |

<sup>31</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

<sup>32</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

<sup>33</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

|    |                                                              |                              |
|----|--------------------------------------------------------------|------------------------------|
| 3  | 4,503                                                        | 4,524                        |
| 6  | 5,004                                                        | 5,027                        |
| 12 | One hygiene campaign within the first 12 months for each VPA | Hygiene campaign: 10/05/2023 |

GS10658

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>34</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 13  | 8,830 tCO <sub>2</sub> e                                                           | 5,900 tCO <sub>2</sub> e                                           |
| 3   | 4,503                                                                              | 3,835                                                              |
| 6   | 5,004                                                                              | 4,261                                                              |
| 12  | One hygiene campaign within the first 12 months for each VPA                       | Hygiene campaign: 11/05/2023                                       |

GS10659

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>35</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 13  | 8,807 tCO <sub>2</sub> e                                                           | 7,729 tCO <sub>2</sub> e                                           |
| 3   | 4,503                                                                              | 4,525                                                              |
| 6   | 5,004                                                                              | 5,028                                                              |
| 12  | One hygiene campaign within the first 12 months for each VPA                       | Hygiene campaigns: 14/05/2023                                      |

GS10783

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>36</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|

<sup>34</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

<sup>35</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

<sup>36</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

|    |                                                              |                               |
|----|--------------------------------------------------------------|-------------------------------|
| 13 | 8,830 tCO <sub>2</sub> e                                     | 7,328 tCO <sub>2</sub> e      |
| 3  | 4,503                                                        | 5,101                         |
| 6  | 5,004                                                        | 5,668                         |
| 12 | One hygiene campaign within the first 12 months for each VPA | Hygiene campaigns: 20/05/2023 |

GS10784

| SDG | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values <sup>37</sup> achieved during this monitoring period |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 13  | 8,830 tCO <sub>2</sub> e                                                           | 6,986 tCO <sub>2</sub> e                                           |
| 3   | 4,503                                                                              | 4,571                                                              |
| 6   | 5,004                                                                              | 5,078                                                              |
| 12  | One hygiene campaign within the first 12 months for each VPA                       | Hygiene campaign: 13/05/2023                                       |

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

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

The equation used to calculate the emission reductions in line with the Gold Standard TPDDTEC methodology version 3.1 and registered VPA-DD is as follows:

$$BE_{b,y} = B_{b,y} * ((f_{NRB} * EF_{fuel,CO_2}) + EF_{fuel,non-CO_2}) * NCV_{b,fuel}$$

$$PE_{p,y} = B_{p,y} * ((f_{NRB} * EF_{fuel,CO_2}) + EF_{fuel,non-CO_2}) * NCV_{p,fuel}$$

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

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

<sup>37</sup> Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

|                     |                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| $f_{NRB}$           | Fraction of biomass used that can be established as non-renewable biomass                                                           |
| $EF_{fuel,CO2}$     | CO2 emission factor of the fuel that is substituted or reduced                                                                      |
| $EF_{fuel,non-CO2}$ | Non-CO2 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 (tCO2e/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 (tCO2e/yr)                                                                                |

The transparent calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate Excel Spreadsheet uploaded to GS Registry. For the used data/parameters the sections D.1 and D.2 can be referred.

### Calculation of net benefits for SDG 3, SDG 6 and SDG 12 outcomes

Outcomes of SDG 3 regarding the parameter indicating the additional number of persons using safe water thanks to the project activities compared to the baseline scenario ( $P_{safe}$ ) are calculated as follows:

$$P_{safe} = P_y * (1 - C_j) * (1 - X_{boil}) * U_{p,y}$$

Where:

|            |                                                                                                                                                                                            |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $P_{safe}$ | Number of additional persons using safe water in the project activity compared to the baseline scenario                                                                                    |
| $P_y$      | Number of persons having access to safe water in the project activity                                                                                                                      |
| $C_j$      | Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it                                       |
| $X_{boil}$ | 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 |
| $U_{p,y}$  | Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate                                                        |

Outcomes of SDG 6 regarding the parameter indicating the number of additional persons having access to a safe water source in the project activity compared to the baseline scenario ( $P_{\text{access}}$ ) are calculated as follows:

$$P_{\text{access}} = P_y * (1 - C_j) * (1 - X_{\text{boil}})$$

Where:

|                     |                                                                                                                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $P_{\text{access}}$ | Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario                                                                |
| $P_y$               | Number of persons having access to safe water in the project activity                                                                                                                      |
| $C_j$               | Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it                                       |
| $X_{\text{boil}}$   | 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 |

Outcomes of SDG 12 regarding the parameter indicating the number of campaigns on water, sanitation and health related issues don't need specific calculation. Please refer to hygiene campaigns reports.

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

Regarding the outcome of SDG 13 "Climate Change Mitigation measured as reduced tCO<sub>2</sub>e" the real achieved values are lower than the one estimated ex-ante for all projects

SDG 3 and SDG 6 achieved higher values as the actual number of users is slightly higher than the ex-ante estimate of 3,000 users per village for most of the villages. The table below summarizes the difference as percentage of ex ante estimate:

Table.E-5 Population for each project

| $P_y$ | Number of people | Ex ante estimate | Difference |
|-------|------------------|------------------|------------|
| 7567  | 6,018            | 6,000            | 0.30%      |
| 7566  | 6,021            | 6,000            | 0.35%      |

|       |       |       |         |
|-------|-------|-------|---------|
| 10657 | 6,028 | 6,000 | 0.47%   |
| 10658 | 5,110 | 6,000 | -14.83% |
| 10659 | 6,029 | 6,000 | 0.48%   |
| 10783 | 6,797 | 6,000 | 13.28%  |
| 10784 | 6,090 | 6,000 | 1.50%   |

## SECTION F. SAFEGUARDS REPORTING

No mitigation measures added to the monitoring plan, hence no safeguarding reporting is needed.

## SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

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

No inputs/grievances have been received for this project during this monitoring period. Maintenance days are reported for each year and dropped from total operational days as follows:

2023: 198 days

2024: 240 days

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

N/A

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

There are no legal contest that has arisen with the project during the monitoring period.

## Revision History

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