

Gold Standard for the Global Goals Key Project Information & VPA Design Document (PDD)



July 2017, Version 1

KEY PROJECT INFORMATION

Title of Project:	Title: GS5658 VPA 14: Water is Life, Madagascar GS ID: GS7566
Title of the PoA:	GS5658 "PoA – Climate Finance for Sustainable Development"
Brief description of Project:	The micro-scale voluntary Project Activity (VPA) "Water is Life, Madagascar" is developed by an Italian Associazione Mondobimbi Veneto Onlus in collaboration with Carbonsink. The project foresees to provide safe drinking water for the local families living in villages of Belembohy Androvakely and Andranomena (located in the surroundings of the city of Tulear), in the Region of Atsimo-Andrefana, Madagascar. The construction of the safe water systems started in May 2019 and both water systems were ready and producing drinking water in september 2019. 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. 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 (CO₂) emission reductions are achieved through the reduced wood/charcoal combustion and the need for water purification through boiling is reduced. The project will also raise awareness among population regarding hygiene and contribute to sustainable development.
Expected Implementation Date:	15/05/2019
Expected duration of Project:	Expected duration of the project is 15 years
Project Developer:	Associazione Mondobimbi Veneto Onlus (Mondobimbi)
Project Representative:	Carbonsink Group S.r.l (Carbonsink)
Project Participants and any communities involved:	N/A
Version of PDD:	08
Date of Version:	11/02/2021
Host Country / Location:	Madagascar
Certification Pathway (Project Certification/Impact Statements & Products)	Impact Statements & Products
Activity Requirements applied: (mark GS4GG if none relevant)	Community Services Activity Requirements (version 1.2)
Methodologies applied:	Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1
Product Requirements applied:	N/A
Regular/Retroactive:	Regular
SDG Impacts:	1 – SDG 13: Climate Action 2 – SDG 3: Good Health and Well-being

	3 – SDG 6: Clean Water and Sanitation 4 – SDG 12: Responsible Consumption and Production
Estimated amount of SDG Impact Certified	SDG 13: Annually 8,307 Verified Emission Reductions (VERs) SDG 3: People are suffering less of diarrhea and other water-borne diseases in the project scenario compared to the baseline scenario. Totally 4,503 additional persons using safe water in the project activity compared to the baseline scenario SDG 6: 5,004 additional persons having access to a safe water source in the project activity compared to the baseline scenario SDG 12: Annually at least one campaign on water, sanitation and health related issues made in the project area

SECTION A. Description of project

A.1. Purpose and general description of project

Purpose of project activity

The micro-scale voluntary Project Activity (VPA) “Water is Life, Madagascar” is developed by an Italian Associazione Mondobimbi Veneto Onlus in collaboration with Carbonsink.

The project activity includes the construction of a new borehole for increasing accessibility to safe and clean drinking water for local families living in the villages of Beleboky Androvakely and Andranomena (located in the surroundings of the city of Tulear), in the Region of Atsimo-Andrefana, in Toliara Province, Madagascar. The construction of the safe water systems started in May 2019 and both water systems were ready and producing drinking water in September 2019.

In targeted area, 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. 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 (CO₂) emission reductions are achieved through the reduced wood/charcoal combustion and the need for water purification through boiling is reduced. The project will also raise awareness among population regarding hygiene and contribute to sustainable development.

Technology of project activity

The project activity includes the construction of a new borehole with solar powered pump in each village (Beleboky Androvakely and Andranomena). The installed submersible pump (LSPI Series DC Brush Plastic Impeller Solar Pump)¹ has a capacity of 2,500 litres/hour and it's connected to a storage battery (DC12-150)². The battery is placed in the water system technology already fully charged before the end of the construction work and it's 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 (Imagine A-1) to ensure that several people can fill their safe water containers contemporarily.

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 (For more details on water system design/structure, please see Imagine A-4). 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.

The water system can supply more than 30,000³ litres of water per day⁴.

¹ See “Technical characteristics of the water pump” uploaded to SC application

² See “Technical characteristics of the battery” uploaded to SC application

³ For more details, please refer to “BenConsAndStorage” Tab in ERs calculations uploaded to Sustaincert

⁴ 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.



Imagine A-1. Project water system constructed in Belembohy Androvakely village



Imagine A-2. Project water system constructed in Andranomena village

A.2. Eligibility of the project under approved PoA

Table. A-1. Demonstration how the VPA meets the eligibility criteria as defined in approved PoA

No.	Eligibility criteria		Means of proof	Confirmation
	Description	Conditions to be met		
1.	Scale of the activity	The annual emission reductions achieved by the VPA are limited to a maximum of 10,000 tons of CO ₂ e, in each and every year of the crediting period. Whenever actual emission reductions as per the verification report exceed the upper threshold for a given registered project, the project can still request for issuance, but the claimable emission reductions are capped at 10,000 tonnes of CO ₂ per year.	The annual ex-ante emission reductions are maximum of 10,000 tons of CO ₂ e in any year of the crediting period as described in the Section B.6.5. of this VPA-DD. In case the VPA is found to exceed the applicable limit during any verification, the claimable emission reductions shall be capped at 10,000 CO ₂ per year.	✓

2.	Type of activity, scope and used technology	The VPA is a Community Service Activity (end-use energy efficiency project) which provides or improves access to clean water.	The VPA provides access to clean water for household being thus a Community Service WASH activity. In more details, the VPA includes the excavation of a new water supply system which will be equipped with solar powered pump to extract the water from the borehole.	✓
3.	Target group and distribution mechanism	The target group of the activity can be households, SMEs, institutions and/or communities boiling water with non-renewable biomass or fossil fuels and/or lacking access to safe water. The distribution of the project technologies needs to be recorded via an accurate and complete sales/dissemination/installation record.	The target group of the activity are the households living in the project area currently boiling water with non-renewable biomass or lacking access to safe water. Each installed water supply system will be recorded in the project database together with the GPS coordinates as described in Section B.7.3 of this VPA-DD.	✓
4.	Host country, boundary and location	The VPA is located within the host parties listed in section A.4.1.1. of the PoA-DD.	VPA is located in Madagascar which is one of the Host parties of the PoA. The detailed VPA location is described in Section A.4.4 of this VPA-DD.	✓
5.	Crediting period duration	The duration of the crediting period of the VPA doesn't exceed the end date of the registered PoA or shall be capped by the end date of the PoA. The final date for which ERs can be credited shall be no later than 20 years after the start date of the PoA.	The start date of the crediting period of this VPA is 22/09/2019 ⁵ and, thereafter, the duration of the crediting period will not exceed the end date of the registered PoA (i.e. 03/08/2036).	✓
6.	Financial Additionality & Ongoing Financial Need	All VPAs are micro-scale projects and can thus be considered as deemed additional in line with the paragraph 2.5.2 of the Community Services Activity Requirements (Version 1) ⁶ . The Financial Additionality is not required to be proven at the time of Design Certification. Either there is no need to demonstrate	This is a micro-scale VPA and can thus be considered as deemed additional as demonstrated in section B.5 of this VPA-DD.	✓

⁵ This is the date when the water system included in this VPA was ready and producing safe water. The start date of crediting period is set as the following date after concluding the construction works. Supporting document has been uploaded to Sustaincert.

⁶ This is also in line with the latest version (version 1.2) of Community Services Activity Requirements paragraph 4.1.9. Please note that the version 1 of "Community Services Activity Requirements" was the latest version available at the time of PoA approval and thus referred here.

		the ongoing financial need at Certification Renewal.		
7.	Conditions to check the start date of the VPA through documentary evidence	The start date of an activity being defined as the earliest date on which the Project Developer has committed to expenditures related to the implementation of the Project will be defined for each activity. Examples of start date may be the date on which contracts have been signed for equipment or construction/operation services required for the Project.	The start date of the activity is 15/05/2019 i.e. the date when the borehole construction contract was signed.	✓
8.	Regular and retroactive project activities	Regular VPAs (Projects where the Stakeholder Consultation meeting has taken place prior to the Project Start Date) submit the required documents to GS (time of first submission) within three months of the event (though this date may be after the Project Start Date). Retroactive VPAs (with a start date before or after the time of first submission of PoA) submit the required documents to GS (time of first submission) within one year of its start date.	This VPA is a regular project activity since the stakeholder consultation meeting took place on 16/07/2018 (which is prior to Project Start Date 15/05/2019) and since the Stakeholder Consultation Report was submitted to GS by 16/10/2018 i.e. with 3 months from the meeting date ⁷ .	✓
9.	Stakeholder inclusivity	VPAs shall identify and engage relevant stakeholders and seek expert stakeholder input where necessary in the design planning and implementation. The activity level stakeholder consultation is carried out, either for a single VPA or for a group of VPAs in a two-step process, i.e. the Stakeholder Consultation meeting and Stakeholder Feedback Round (SFR) in line with the Gold Standard "Stakeholder Procedure, Requirements & Guidelines (version 1)" and	The Section E of this VPA-DD includes the demonstration that the stakeholder consultation process was conducted in line with the Gold Standard requirements. ⁹ The previous grouped stakeholder consultation can be applied for this VPA as the following conditions are fulfilled: 1) The VPA is implemented in the surroundings of the city of Tulear in Atsimo-Andrefana Region, Madagascar, 2) The VPA includes the installation of 'zero emission' water supply system/systems 3) The VPA is implemented by Associazione	✓

⁷ First submission of the grouped stakeholder consultation report to Gold Standard was made at the time of the Preliminary Review the project GS6752, which is the first VPA applying this grouped stakeholder consultation. More precisely, the first submission was made on 27/08/2018, i.e. within the time limit of 3 months from the physical meeting date as evidenced in the Preliminary Review report of the VPA GS6752 approved by GS.

⁹ For the grouped Stakeholder Consultation meeting, which took place on 16/07/2018, the latest versions available at that time were followed i.e. Version 1.1 of "Stakeholder Consultation Requirements Guidelines" and version 1.1. of "Community Services Activity Requirements". For the SFR the latest versions of these same guidelines available at the time of starting SFR were followed.

		“Community Service Activity Requirements (version 1)”⁸. In case of a grouped stakeholder consultation, the following conditions need to be fulfilled: i) same host country, ii) same technology iii) similar distribution mechanism shall be employed. VPA's implementation shall start within 3 years from the date of grouped stakeholder consultation approval.	Mondobimbi Veneto Onlus, and 4) The VPA implementation start date is within 3 years from the date of grouped stakeholder consultation approval.	
10.	Baseline and Monitoring Methodology	The VPA applies the following GS methodology: Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1.	The VPA applies the GS methodology “Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), version 3.1”. The applicability of the methodology is demonstrated in Section B.2 and the defined Baseline and Project Scenarios in Section B.4 and B.6 of this VPA-DD respectively.	✓
11.	Conditions related to environmental impact analysis	The VPA has to fulfill host country requirements concerning environmental impact analysis.	N/A. The legislation of Madagascar (Mise en Compatibilité des Investissements avec l'Environnement)¹⁰ doesn't require environmental impact analysis for activities as the project activity to be made.	✓
12.	Conditions to provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of ODA	In case that any of the VPA receives ODA, it is ensured that there is no diversion of ODA, i.e. that no ODA is provided under the condition that all or part of the carbon credits have to be returned to the donor country/entity providing ODA.	The VPA has a signed ODA declaration confirming that there is no diversion of ODA as described in Section A.7 of this VPA-DD.	✓
13.	Credit ownership	The transfer of credit ownership all along the investment chain is clearly described and communicated to all project participants and proofed that end-users are aware of and willing to give up their rights on emission reductions. For technology producers and the retailers of the improved	The transfer of credit ownership from end-users to the project developer is proofed with a written assertions signed by a relevant re-presentative.¹¹ Moreover, the credit ownership was also discussed during the stakeholder meeting and mentioned in the Project	✓

⁸ Version 1 of “Stakeholder Procedure, Requirements & Guidelines” and Version 1 of “Community Services Activity Requirements” were the latest versions of these documents when the PoA was approved

¹⁰ See Article 4 and Annex I of the “Décret MECIE – 2004” uploaded to Sustaincert

¹¹ The Carbon Rights Assertions will be uploaded to Sustaincert at VPA verification phase

		technology or the renewable fuel in use, this must be communicated by contract or clear written assertions in the transaction paperwork. The end-users will need to be informed and notified that they cannot claim for emission reductions from the project. This can be proofed for example with the waiver forms signed by end-users.	Summary provided to stakeholders.	
14.	Avoiding double counting	The VPA applies an identification system enabling unique identifying of each unit (sold, installed or constructed) or its users so that the double counting of emission reductions can be avoided. The VPA will also shows that it is exclusive to the PoA and not registered as a standalone project activity or as part of another PoA.	The avoiding of the double counting is confirmed in two ways: - The relevant online carbon registries have been consulted to confirm that the proposed activity is neither registered as a standalone project activity or as a part of a PoA with GS or other carbon standard. - Each project water system will be identified with unique gps coordinates of its location which enables the unique identification of the borehole to be part of this VPA.	✓
15.	Conditions related to sampling requirements for the PoA	The VPA complies with the sampling plan as outlined in PoA-DD, section B.3 and VPA-DD, section B.6.1.	The VPA-DD outlines the sampling plan in section B.7.2 which is in line with the one stipulated in the PoA-DD.	✓

A.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

In line with the GS4GG Principles and Requirements (Version 1.2) / Section 3.1.1 Associazione Mondobimbi Veneto Onlus has full and uncontested legal ownership of the Verified Emission Reductions (VERs) that are generated under Gold Standard Certification has been demonstrated as follows:

- Before starting the inclusion process of this VPA in to the PoA, a legally-binding contractual agreement between CME/project developer (Carbonsink) and the VPA owner (Associazione Mondobimbi Veneto Onlus) has been made. As part of this agreement, the ownership and selling rights of the emission reductions resulting from the project activity are clearly defined.
- The transfer of credit ownership from end-users to the project developer has be proven with a written assertion¹².

¹² The Carbon Rights Assertions will be uploaded to Sustaincert at VPA verification phase

A.4. Location of project

A.4.1. Host Country

The Republic of Madagascar

A.4.2. Region/State/Province etc.

Atsimo-Andrefana Region, in Province of Toliara

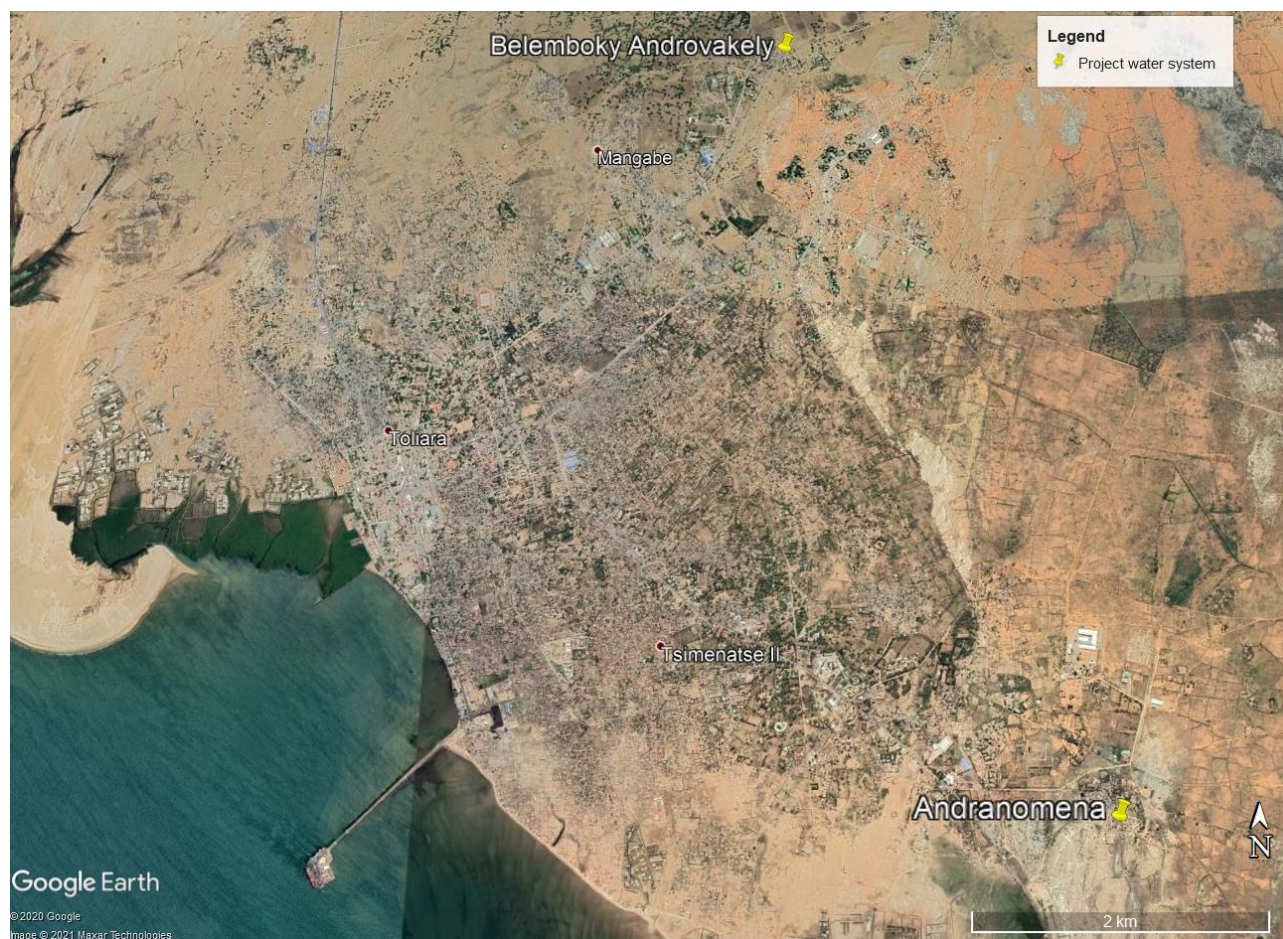
A.4.3. City/Town/Community etc.

Villages of Belembokely Androvakely and Andranomena in the district of Tulear

A.4.4. Physical/Geographical location

The GPS coordinates of the project water systems:

Project water system	GPS Coordinates	
Belembokely Androvakely	-23.322094	43.69457
Andranomena	-23.375258	43.717394



Imagine A-3. The location of the Project Water Systems.

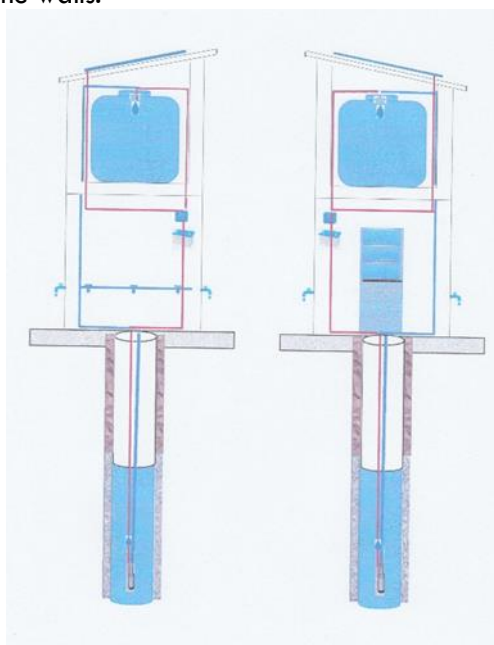
A.5. Technologies and/or measures

The project activity includes the excavation of a new water supply system in each village, which is equipped with a solar powered pump (LSPI Series DC Brush Plastic Impeller Solar Pump)¹³ to extract the water from the borehole. The pump is connected to a battery (DC12-150)¹⁴ which in turn is connected to a solar panel.

The water extracted with the pump, passing through a skimmer that provides for the chlorine purification, is transferred to a tank. From the tank the water will be piped further to 9 water taps. The water tank will serve also as a storage. The battery storage is useful to ensure the correct and continuous operation of the water pump even during cloudy weather or nighttime. In these mentioned conditions, the battery energy supply is active every time the floating sensor measures a level of water lower than 1.5 mt and its charge can last up to 4,5 hours continuously¹⁵ each day (hence assuring eventual availability of water supply even over the 10 average daily sunlight hours). 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.

Regular maintenance operations are required every three months to ensure the quality of the water supplied:

- Checking the chlorine level inside the skimmer and eventual replacement 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.



Imagine A-4. Project Water System structure.

Contribution to sustainable development

In the project area most of the water supply takes place from unsafe sources. Local people typically use wood fuel or charcoal on inefficient stoves to purify their drinking water. This process results in the release of greenhouse gas (GHG) emissions from the combustion of wood/charcoal.

Thanks to the project activity, safe drinking water will be provided to the communities so that local use of boiling methods for water purification will be reduced and consequently GHG emissions will be reduced. Moreover, the concept of suppressed demand is applied in cases where safe water is not available and where an adequate treatment is not practiced i.e. because the society member cannot afford to use biomass energy to treat their water due to costs issues.

¹³ See "Technical characteristics of Water Pump" uploaded to SC application

¹⁴ See "Technical characteristics of the battery" uploaded to SC application

¹⁵ Assuming 10 sunlight hours + 4,5 hours of storage energy. For more details please refer to "BenConsAndStorage" Tab in ERs calculations uploaded to Sustaincert.

Gold Standard[®]

Besides reducing GHG emission in line with the UN's Sustainable Development Goal (SDG) number 13, this VPA will contribute also to the following other Sustainable Development Goals:

- SDG 6: ensuring easy access to clean and safe water to families
- SDG 3: reducing adverse health effects related to water-borne diseases associated with unsafe water usage and related to harmful gases during combustion of firewood for boiling water.
- SDG 12: raising awareness among population for sustainable development including themes like hygiene.

A.6. Scale of the project

The VPA is a micro-scale project. In line with section 3.1.2 of the Community Services Activity Requirements the micro-scale projects are defined as projects issuing emission reductions less than or equal to 10,000 tons of CO₂eq per year.

A.7. Funding sources of project

The VPA is funded by private sources of the Project Owner and its partners. No public funding sources are used and there are neither official development assistance (ODA) funding for this project activity. Please see the signed ODA declaration uploaded to SC application.

SECTION B. Application of selected approved Gold Standard methodology

B.1. Reference of approved methodology

Technologies and practices to displace decentralized thermal energy consumption (TPDDTEC), Version 3.1. - Published August 2017.¹⁶

B.2. Applicability of methodology

The choice of the selected methodology is justified by demonstrating in (see the below table) that the project meets each applicability condition of the applied methodology.

Table B-1. Applicability of the TPDDTEC methodology

Methodology applicability requirement	Justification regarding this VPA	Confirmation
This methodology is applicable to programs or activities introducing technologies and/or practices that reduce or displace greenhouse gas (GHG) emissions from the thermal energy consumption of households and non-domestic premises. The project technologies/practices must introduce 'zero emission technology' for safe water, instead of boiling water as a purification technique.	This VPA includes construction of 'zero emission' safe water supply system which will reduce GHG emissions by removing the need to boil water as a form of purification before consumption. The targeted end-users are households which would use biomass to boil water as a form of purification and/or are lacking the access to safe drinking water (suppressed demand) in the absence of this VPA and which are living in the area of Belembokely Androvakely and Andranomena villages.	✓
The project activity is implemented by a project proponent and can include additional project participants. The individual households and institutions do not act as project participants.	The project activity is implemented by Associazione Mondobimbi Veneto Onlus, who is the Project Proponent of this VPA, in collaboration with Carbonsink. The individual households and institutions will not act as project participants.	✓
The project boundary needs to be clearly identified, and the technologies counted in the project are not included in another voluntary market or CDM project activity (i.e. no double counting takes place). In some cases there maybe another similar activity within the same target area. Project proponents must therefore have a survey mechanism in place together with appropriate mitigation measures so as to prevent any possibility of double counting.	The VPA is implemented in Madagascar which is the host country of the PoA as stated in the section A.3 of the PoA-DD. The detailed VPA location is described the Section A.4.4 of this VPA-DD. The unique identification of each new water system will be made recording the GPS coordinates of their location as outlined in Section B.7.3 of this VPA-DD. Moreover, the relevant online carbon registries has been checked to confirm that there are no risks for double counting.	✓
Technologies each have a continuous useful energy output of less than 150kW per unit (defines as total energy delivered usefully from start to end of operation of a unit divided by time of operation). For technologies or practices that do not deliver	The safe water supply technologies included in this VPA will not deliver any thermal energy in the project scenario but only seek to displace the use of non-renewable biomass used for boiling water in the baseline scenario and to provide the safe	✓

¹⁶ Available at Gold Standard website: <https://www.goldstandard.org/project-developers/standard-documents> (Site visited 10/10/2019)

thermal energy in the project scenario but only displace thermal energy supplied in the baseline scenario, the 150kW threshold applies to the displaced baseline technology.	water for consumers without access to safe drinking water (suppressed demand). The useful energy output per single unit in the baseline scenario is less than 150kW. This has been demonstrated with the calculations (see tab 'Energy output'/ER calculation spreadsheet).	
The use of baseline technology as backup or auxiliary technology in parallel with the improved technology introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old technology (e.g. discounted price for the improved technology) and the definitive discontinuity of its use. The project documentation must provide a clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline technology is still in use after the introduction of the improved technology. For example, whether the existing baseline technology is not surrendered at the time of the introduction of the improved technology, or whether a new baseline technology is acquired and put to use by targeted end users during the project crediting period. The success of the mechanism put into place must therefore be monitored and the approach must be adjusted if proven unsuccessful. If an old technology remains in use in parallel with the improved technology, the corresponding emissions must be accounted for as part of the project emissions.	Hygiene campaigns including the education of local people on the extensive health and environmental benefits (see section B.7.3 of the VPA-DD) of using safe water supply sources will encourage the removal of the old technology. The success of this mechanism will be monitored and adjusted if proven unsuccessful. The ratio of end-user that are still boiling drinking water in the project scenario will be monitored (via Water Consumption Field Test as described in Section B.7.3 of this VPA-DD) and accounted for to calculate the fuel consumption and the corresponding project emissions.	✓
The project proponent must clearly communicate to all project participants the entity that is claiming ownership rights of and selling the emission reductions resulting from the project activity. For technology producers and the retailers of the improved technology or the renewable fuel in the project situation, this must be communicated by contract or clear written assertions in the transaction paperwork. If the claimants are not the project technology end-users, the end-users should be informed and notified that they cannot claim for emission reductions from the project. For example, leaflets distributed with the products alerting the end-users to the waiving of their carbon rights in exchange for pricing or the improved technology, which discounts its true cost (waivers forms signed by end-users are another example).	Before starting the inclusion process of this VPA in to the PoA, a legally-binding contractual agreement between the PoA CME (Carbonsink) and the VPA developer (Mondobimbi) has been made. As part of this agreement, the ownership and selling rights of the emission reductions resulting from the project activity are clearly defined. The transfer of credit ownership from end-users to the project developer will be proofed with a written assertions signed by the local representatives on behalf of the communities¹⁷. Moreover, the end-users were informed about the transfer of carbon credit ownership during the stakeholder consultation process.	✓

¹⁷The Carbon Transfer Assertion template will be uploaded to Sustaincert at VPA verification phase.

Gold Standard[®]

Project activities making use of a new biomass feedstock in the project situation (e.g. shift from non-renewable to green charcoal, plant oil or renewable biomass briquettes) must comply with relevant Gold standard specific requirements for biomass related project activities, as defined in the latest version of the Gold standard rules ¹⁸ .	No new biomass feedstock will be used in the project situation and therefore this condition is not applicable.	N/A
The water in its improved form should be available within 1 km walking/pedaling distance from the households.	The households included in this VPA are located within the 1 km walking/pedaling distance from the safe water supply source (see Section B.7.3 of this VPA for further details).	✓

¹⁸ Gold Standard version 2.2. Toolkit, Annex C, and rule updates released prior to the time of first submission of the project activity to the Gold Standard.

B.3. Project boundary

The project boundary is the physical, geographical sites of the project technologies, in other words, the physical location of the project borehole (as described in Section A.5. above) and the location of the families living in each village maximumly within 1 Km walking/pedalling distance from the project water sources and consuming the water provided by these systems.

The sources and gases included in the project boundary are described in the below table.

For the purpose of GHG mitigation/sequestration following table shall be completed

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Heat delivery	CO ₂	Yes	Important source of emissions as CO ₂ is emitted any time biomass or fossil fuels are burned.
		CH ₄	Yes	Important source of emissions released during partial or incomplete combustion of biomass during water boiling.
		N ₂ O	Yes	Important source of emissions released during partial or incomplete combustion of biomass during water boiling.
Project scenario	Heat delivery	CO ₂	Yes	Important source of emissions as CO ₂ is emitted any time biomass is burned.
		CH ₄	Yes	Important source of emissions released during partial or incomplete combustion of biomass during water boiling.
		N ₂ O	Yes	Important source of emissions released during partial or incomplete combustion of biomass during water boiling.

B.4. Establishment and description of baseline scenario

According to the applied TPDDTEC methodology, the baseline scenario is the existing practice of boiling water using high emission fuels including non-renewable biomass and fossil fuels to treat it for consumption within in the population that is targeted for adoption of the project technology. Suppressed demand can be applied in instances where inadequate safe water is available or where treatment is not practiced. Only end users that boil water or are currently using unsafe water (or are under suppressed demand situation) are eligible for crediting.

A project activity may have multiple baseline scenarios that are applicable in relation to the different project technologies in the project activity depending on local fuel and technology use patterns. Furthermore, additional baseline scenarios can be added to a project activity at any time during the crediting period through a design change as per Gold Standard rules or alternatively, adjustment factors can be applied to existing baseline scenario to account for less significant variability in fuel consumption or technology, without the need to create a new baseline scenario.

The following baseline studies has been made:

A. Baseline Non-Renewable Biomass (NRB) assessment, if biomass is one of the baseline fuels

As the biomass is the baseline fuel of the VPA, the fractional non-renewability of biomass needs to be established. The national default value provided by the CDM Executive Board and endorsed by the DNA of the host country Madagascar¹⁹ is used in this VPA.

Country	Default Value of of fNRB ²⁰
---------	--

¹⁹ <http://cdm.unfccc.int/DNA/fNRB/index.html> (Site visited 10/10/2019)

²⁰ <http://cdm.unfccc.int/DNA/fNRB/index.html> (Site visited 10/10/2019).

Madagascar	0.72 ²¹
------------	--------------------

B. Target population characteristics

The baseline survey has been made between 13th July and 30th August 2018 with in person interviews with a robust sample of targeted end-users without project technologies that are representative of end-users targeted in the project activity (totally 101 persons were interviewed). The baseline survey was made to provide information on target population characteristics, baseline technology use, fuel consumption, leakage and sustainable development indicators. Moreover, it is used for determining the baseline access to safe drinking water and the suppressed demand situation in the project area. The baseline report described full details of the implemented baseline studies and the achieved results²².

The survey was carried out following the below guidelines for minimum sample size and was tailored to gather the following data:

²¹ 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. The current national fNRB default value of 0.72 (with the validity from 23 July 2012 to 22 July 2017) was determined based on the Global Forest Resources Assessment 2010 - FRA 2010. As the forest area in Madagascar has kept on decreasing, the use of the this expired value can ben deemed conservative. In fact, based on the latest Global Forest Resources Assessment 2015 - FRA 2015 (<http://www.fao.org/3/a-i4808e.pdf>), the decrease of the forest area in Madagascar between 2010-2015 is reported to be 80.000 hectares

²² Baseline Survey Report is uploaded to Sustaincert

Sample sizing

- Group size > 1000: Minimum sample size 100

Data collected²³

- Address or location and telephone number (mobile or landline where possible)
- The number of people served by the baseline technology and typical usage patterns and tasks (e.g. commercial, institutional, domestic, etc.)
- Types of baseline technologies used and estimated frequency
- Types of fuels used and estimated quantities
- Seasonal variations in baseline technology and fuel use
- Sources of fuels (purchased or hand-collected, etc.) and prices paid or effort made (e.g. walking distances, persons collecting, opportunity costs)
- Sources for water supply, effort made and seasonal variations
- Indicators of suppressed demand (e.g. reasons for not purifying, eventual barriers, preferred purification methods in case the barriers would not exist)
- Renewability and non-renewability indicator
- s as required by Annex 1 of the applied methodology

The main outcomes of the Baseline Survey are summarized below. The full description of the achieved results are made in the separate Baseline Survey Report²⁴.

- Totally 101 persons were interviewed between 13th July and 30th August 2018
- Only biomass based fuels were found to be used in the baseline situation: 87% of the baseline households are using charcoal and 13% wood as their fuel.
- 45 out of 101 respondents (44.6%) declared to purify the water before drinking it. The most common purification method used in the area is boiling, in fact 43 respondents (42.6% of the sample) stated to use boiling and only 2 respondents (2,0% of the sample) to use liquid chlorine for purification purposes.
- The reasons why baseline households do not purify water are to be sought, on the one hand (53,5% out of 56 respondents), in the time taken to get fuel and its cost, and on the other hand (46,5% out of 56 respondents), by the fact that the respondents do not consider to receive benefits from purification or do think that their drinking water is safe and clean. However, the water sources currently present in project area can't be considered clean and safe.

In conclusion of the Baseline Survey, the following values are to be applied in the Emission Reduction calculations:

- As described in the Baseline Survey report, 87% of the families living in the area are using mainly charcoal and (13%) mainly firewood as cooking fuel during their daily cooking activities. However, part of the families indicated to differ the used cooking fuels during the different seasons. Especially the families who indicated to use firewood as their secondary fuel stated to prefer tree stone fires (i.e. firewood) during the wet season. The baseline survey found, in fact, that within the 87 families using mainly charcoal totally 29 households use firewood as their secondary fuel.
For the ex-ante estimation, among all of the families who stated to use wood as their secondary cooking fuel (28.7%), half has been accounted as households whose fuel consumption relies exclusively on wood (0.5*28.7%). So, for the ex-ante baseline estimation, it is accounted that 27.4% of the households (13% wood consumers + 0.5*28,7%) would be using wood and 72.7% charcoal as their main cooking fuel. For the ex-post calculations, this percentage will be monitor to determine the % users per fuel and accordingly will be applied the ratio to determine the total fuel consumption at project level.
- The majority of the respondents that currently do not purify their water (40.6%, 41 respondents out of 101) stated that they would boil their water for making it safe to drink in case the earlier stated barriers would not exist. The remaining part (14.9 %) stated that they would prefer to use chlorine liquid for the purification (i.e. to use on-GHG emitting technologies). Consequently, the value 0.149 may be applied for the parameter X_{boil} ("Percentage of premises that in the absence of the project activity would have used non-

²³ Questions about end-user characteristics and baseline technology and fuels should be treated as specific to safe water supply and boiling

²⁴ Baseline Survey Report has been uploaded to Sustaincert portal

Gold Standard[®]

GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary”) for the Emission Reduction calculations made in line with the TPDDTEC (ver 3.1).

- 2% of the baseline households consume non-boiling safe water supply. Consequently, the value 0.02 may be applied for the parameter C_j (“Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply the households using in baseline situation a non boiling safe water supply”) for the Emission Reduction calculations made in line with the TPDDTEC (ver 3.1).

C. Baseline Water Boiling Test

In line with BAMG report, the following default values for baseline fuels will be used for ex-ante calculations:

- 0.4 Kg/l for wood
- 0.1 Kg/l for charcoal

Eventually, a separate baseline water boiling test (BWBT) may be conducted in line with both the applied methodology²⁵ and the indications of the BAMG report. If this option is selected, the entire BWBT will be conducted using fuels and technologies representative of the baseline scenario with at least 20 samples using the 90/30 rule²⁶ in case of application in a single Voluntary Project Activity (VPA) or using the 95/10 rule²⁷ in case of application in a multiple VPAs. Further, if the separate BWBT is made, a separate report giving full details of the test and results will be shared at the time of the first verification.

Based on percentage of users that will use wood or charcoal in project scenario and on above default values the parameters $W_{b,y}$ and $W_{p,y}$ will be calculated.

If the later monitoring surveys reveal that the same water boiling technologies are prevalent in the baseline and project scenarios, $W_{b,y}$ and $W_{p,y}$ are equal. The BWBT should be updated if monitoring surveys show that water boiling technologies changes over time.

²⁵ Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 3.1

²⁶ The endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean

²⁷ The endpoints of the 95% confidence interval lie within +/- 10% of the estimated mean

B.5. Demonstration of additionality

The below table is only applicable if the proposed project type is deemed additional, as defined by the applied approved methodology or activity requirement or product requirement.

Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	Community Services Activity Requirements (Version 1.2), paragraph 4.1.9: “Projects that meet any of the following criteria are considered as deemed additional and therefore are not required to prove Financial Additionality at the time of Design Certification: (a) Positive list (Annex B) (b) Projects located in LDC, SIDS, LLDC (c) Micro-scale projects”
Describe how the proposed project meets the criteria for deemed additionality.	The VPA meets the criteria (c) “Micro-scale projects” of the section 3.1.2 of the Community Services Activity Requirements as demonstrated in the section A.6 of this VPA-DD. The demonstration of the VPA being a “Community Services Activity” is made instead in section A.2. of this VPA-DD.

B.6. Sustainable Development Goals (SDG) outcomes

B.6.1. Relevant target for each of the three SDGs

Sustainable Development Goal (SDG)	Relevant target ²⁸
1 – SDG 13	Climate Change Mitigation measured as reduced tCO _{2e} ²⁹
2 – SDG 3	Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination Indicator 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
3 – SDG 6	Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all Indicator 6.1.1: Proportion of population using safely managed drinking water services
4 – SDG 12	Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature Indicator 12.8.1: Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment

B.6.2. Explanation of methodological choices/approaches for estimating the SDG outcome

Methodological choices/approaches related to SDG 13

The outcomes of the SDG 13 will be measured as reduced CO_{2e} emissions applying the Gold Standard TPDDTEC methodology described below. The SDG 13 outcomes will later be certified as “Certified SDG 13 Impacts” allowing the generation of carbon credits (VERs).

According to the Annex 3 of the applied TPDDTEC methodology, emission reductions calculation for safe water supply projects can be conducted as follows:

Baseline Scenario Fuel Consumption Calculation

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

Where:

$B_{b,y}$ Quantity of fuel consumed in baseline scenario b during the year in tons (L/p/d)

²⁸ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> (Site visited 10/10/2019)

²⁹ In line with the GG4GG Claims Guideline: “Unlike other SDGs the targets and Indicators associated with SDG13 cross-reference the Paris Agreement. A specific target is therefore not provided, Gold Standard interprets this as mitigation, measured as tCO_{2e} for the purpose of this document.”

Gold Standard

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_i	Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply
$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y
$W_{b,y}$	Quantity of fuel in 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 total safe water consumed in the project scenario is the amount of safe water supplied by the project technology and consumed in the project scenario, plus the amount of raw water boiled after introducing the project technology (respectively represented above as $Q_{p,y} + Q_{p,rawboil,y}$). This total is assumed to be equivalent to the water boiled in the baseline. If the total of these two volumes exceed the cap stipulated in the below table (in line with the page 39 of applied TPDDTEC methodology), the project proponent's claim for emission reductions may not exceed the cap.

Type of Premises	Default value (litres/person/day)	Capped value (litres/person/day)	Applicability	Reference
Full-day premises	4	7	Premises like households etc.	WHO Technical Notes for Emergencies, Technical Note No. 9, Minimum Water Quantity Needed

Project Scenario Fuel Consumption Calculation

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

Where:

$B_{p,y}$	Quantity of fuel f consumed in project scenario p during the year y in tons
C_i	Percentage of users of project safe water supply who were already in baseline using a non boiling safe water supply
$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y
$W_{b,y}$	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test.
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day
$Q_{p,cleannoil,y}$	Quantity of safe water boiled in the project scenario p per person per day in year y

Emission Reductions

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

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

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

Where:

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

Gold Standard®

$EF_{p,fuel,CO_2}$	CO ₂ emission factor arising from use of fuels in project scenario
$EF_{p,fuel,non-CO_2}$	Non-CO ₂ emission factor arising from use of fuels in project scenario
$NCV_{b,fuel}$	Net calorific value of the fuels used in the baseline
$NCV_{p,fuel}$	Net calorific value of the fuels used in the project
ER_y	Emission reduction for total project activity in year y (tCO ₂ e/yr)
$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate
$LE_{p,y}$	Leakage from project scenario p in year y (tCO ₂ e/yr)

Methodological choices/approaches related to SDG 3, SDG 6 and SDG 12

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 2017. The project outcomes of these SDGs will be made instead following the below described approaches.

SDG Indicator	Selected parameter	Approach for estimation fo the outcome
SDG 3 / Indicator 3.9.2	"Number of additional persons usingsafe water in the project activity compared to the baseline scenario"	The following equation will be used for calculating the outcomes: $P_{safe} = P_y * (1 - C_i) * (1 - X_{boil}) * U_{p,y}$ The more specific explanation is provided below this table.
	"Frequency of water-borne diseases (like e.g. diarrhea)"	No specific calculations. 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).
SDG 6 / Indicator 6.1.1	"Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario"	The following equation will be used for calculating the outcomes: $P_{access} = P_y * (1 - C_i) * (1 - X_{boil})$ The more specific explanation is provided below this table.
SDG 12 / Indicator 12.8.1	"Number of campaigns on water, sanitation and health related issues"	No specific calculations. Number and description of the made hygiene campaigns will be reported annually.

Outcomes of SDG 3 regarding the parameter "Number of additional persons using safe water in the project activity compared to the baseline scenario" (P_{safe}) are calculated as follows:

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

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_i	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 persons having access to a safe water source in the project activity compared to the baseline scenario (P_{access}) are calculated as follows:

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

P_{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_i 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

B.6.3. Data and parameters fixed ex ante for monitoring contribution to each of the three SDGs

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e and SDG 3 / Indicator 3.9.2 and SDG 6 / Indicator 6.1.1
Data/parameter	X_{boil}
Unit	Percentage
Description	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary.
Source of data	Baseline Survey
Value(s) applied	0.149
Choice of data or Measurement methods and procedures	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.
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	Transparent data analysis and reporting. This parameter is only applied for premises that are under suppressed demand situation.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e, SDG 3 / Indicator 3.9.2 and SDG 6 / Indicator 6.1.1
Data/parameter	C_i
Unit	Percentage
Description	Percentage of users of project safe water supply who were already in baseline using a non-boiling safe water supply
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 ₂ e emission reductions
Additional comment	Transparent data analysis and reporting.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	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
Value(s) applied	Default values used for ex-ante calculations: 0.40 for wood 0.10 for charcoal (In compliance with BAMG report, these values may be updated in the first verification up to cap values due to a BWBT carried out in the field. Hence, the resulted value will be used in all crediting period)
Choice of data or Measurement methods and procedures	Default values from BAMG report. Eventually, the values may be updated up the cap values according to a BWBT carried in the field. Hence, the resulted value will be used for all verifications.
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	Transparent data analysis and reporting. 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 $W_{b,y}$. For example, for ex-ante $W_{b,y}$ is calculated as follows: $W_{b,y} = \text{household using charcoal (\%)} * \text{charcoal consumption converted as woody biomass consumption (Kg/Litre)} + \text{households using wood (\%)} * \text{woody biomass consumption (Kg/Litre)}$ $= 0.727 * (0.1 * 6) \text{ Kg/Litre} + 0.274 * 0.4 \text{ Kg/Litre}$ $= 0.0005 \text{ Tons/Litre}$

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	EF _{b,co2}
Unit	tCO ₂ /TJ
Description	CO ₂ emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value for wood
Value(s) applied	112
Choice of data or Measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	EF _{b,non co2}
Unit	tCO ₂ /TJ

Description	CO ₂ emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood
Value(s) applied	8.692
Choice of data or Measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	If EF is in units of tCO ₂ /t _{fuel} , remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. CO ₂ -emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	EF _{p,co2}
Unit	tCO ₂ /TJ
Description	CO ₂ 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 ₂ e emission reductions
Additional comment	If EF is in units of tCO ₂ /t _{fuel} , remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. CO ₂ -emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	EF _{p,non-co2}
Unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood
Value(s) applied	8.692
Choice of data or Measurement methods and procedures	Deemed valid by TPDDTEC Methodology
Purpose of data	Estimation of CO ₂ e emission reductions

Additional comment	If EF is in units of tCO₂/t_{fuel}, remove NCV term from emission calculations. Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. Non-CO₂-emission factors for charcoal may be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent EF for wood.
---------------------------	--

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	$f_{NRB,i,y}$
Unit	Fraction
Description	Non-renewability status of woody biomass fuel in scenario I during the year y
Source of data	Default f_{NRB} value provided by CDM Executive Board and endorsed by the host country DNA ³⁰ .
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.
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	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. 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

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	$NCV_{b, fuel}$
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 ₂ e emission reductions
Additional comment	Fixed for the entire VPA crediting period Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project.

³⁰ Available at <http://cdm.unfccc.int/DNA/fNRB/index.html> (Site visited 10/10/2019). The current national f_{NRB} default value of 0.72 (with the validity from 23 July 2012 to 22 July 2017) was determined based on the Global Forest Resources Assessment 2010 - FRA 2010. As the forest area in Madagascar has kept on decreasing, the use of this expired value can be deemed conservative. In fact, based on the latest Global Forest Resources Assessment 2015 - FRA 2015 (<http://www.fao.org/3/a-i4808e.pdf>), the decrease of the forest area in Madagascar between 2010-2015 is reported to be 80,000 hectares

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	NCV _{p, fuel}
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 ₂ e emission reductions
Additional comment	Fixed for the entire VPA crediting period Term can include a combination of emission factors from fuel production, transport and use in line with the emission sources included in the project. If EF in units of tCO ₂ /t _{fuel} , remove NCV term from emission calculations. This has same values as NCV _{baseline} in projects which reduce use of the same fuel.

B.6.4. Ex ante estimation of outcomes linked to each of the three SDGs

Ex-ante calculations related to the outcomes of SDG 13

The transparent ex-ante calculations of the outcomes of SDG 13 (i.e. CO₂e reductions) are provided in a separate Excel Spreadsheet uploaded to SC application. For data/parameters available before design certification values contained in section B.6.3 and for data/parameters not available before design certification the estimates contained in section B.7.1 have been used.

Ex-ante calculations related to the outcomes of SDG 3

The transparent ex-ante calculations of the outcomes of SDG 3 (i.e. Number of additional persons using safe water in the project activity compared to the baseline scenario) are provided in a separate Excel Spreadsheet uploaded to SC application.

Regarding the parameter “Frequency of water-borne diseases (like e.g. diarrhea)” no specific calculations are needed to be made but the outcomes are estimated directly via the qualitative auto-evaluation of the sample families. Please refer for Section B.7.1 and B.6.5 for further details on monitoring of this parameter.

Ex-ante calculations related to the outcomes of SDG 6

The transparent ex-ante calculations of the outcomes of SDG 6 (i.e. Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario) are provided in a separate Excel Spreadsheet uploaded to SC application.

Please refer for Section B.7.1 for further details on monitoring of this parameter.

Ex-ante calculations related to the outcomes of SDG 12

N/A. No specific calculations are needed to be made for the parameter “Number of campaigns on water, sanitation and health related issues”. Please refer for Section B.7.1 for further details on monitoring of this parameter.

B.6.5. Summary of ex ante estimates of each SDG outcome

Ex-ante estimations of SDG 13 Outcomes

CO₂e emissions reduction

Year	Baseline estimate (tCO ₂)	Project estimate (tCO ₂)	Net benefit (tCO ₂)
22/09/2019-31/12/2019	2,554	255	2,299
2020	9,230	923	8,307
2021	9,230	923	8,307
2022	9,230	923	8,307
2023	9,230	923	8,307
01/01/2024-21/09/2024	6,676	668	6,008
Total	46,149	4,615	41,534
Total number of crediting years	5		
Annual average over the crediting period	9,230	923	8,307

Ex-ante estimations of SDG 3 Outcomes

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.

Number of additional persons using safe water in the project activity compared to the baseline scenario

Project year	Baseline estimate (number of persons)	Project estimate (number of persons)	Net benefit (number of persons)
22/09/2019-31/12/2019	1,497	6,000	4,503
2020	1,497	6,000	4,503
2021	1,497	6,000	4,503
2022	1,497	6,000	4,503
2023	1,497	6,000	4,503
01/01/2024-21/09/2024	1,497	6,000	4,503

Ex-ante estimations of SDG 6 Outcomes

Number of additional persons having access to a safe water source in the project activity compared to the baseline scenario

Project year	Baseline estimate (number of persons)	Project estimate of (number of persons)	Net benefit (number of persons)
22/09/2019-31/12/2019	996	6,000	5,004
2020	996	6,000	5,004
2021	996	6,000	5,004
2022	996	6,000	5,004
2023	996	6,000	5,004
01/01/2024-21/09/2024	996	6,000	5,004

Ex-ante estimations of SDG 12 Outcomes

Number of campaigns on water, sanitation and health related issues:

- Annually one campaign on water, sanitation and health related issues

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e														
Data / Parameter	N _{p,y}														
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 will be monitored through the production of an end-users list The total number of operational days is monitored.														
Value(s) applied	Ex-ante estimation: 2,082,000														
Measurement methods and procedures	As per FT updates														
Monitoring frequency	annually														
QA/QC procedures	Transparent data analysis and reporting														
Purpose of data	Estimation of CO ₂ e emission reductions														
Additional comment	Calculated ex-ante: 6,000 persons * 347 days = 2,082,000 person.days. <table border="1"> <thead> <tr> <th>Project year</th><th>Operational days³¹</th></tr> </thead> <tbody> <tr> <td>2019 (22/09-31/12)</td><td>96</td></tr> <tr> <td>2020</td><td>347</td></tr> <tr> <td>2021</td><td>347</td></tr> <tr> <td>2022</td><td>347</td></tr> <tr> <td>2023</td><td>347</td></tr> <tr> <td>2024 (01/01-21/09)</td><td>251</td></tr> </tbody> </table> In ex-ante it is estimated that each project water system is used by around 395 families (3,000 persons / 7.6 persons / family = 395 families when assuming average family size to be 7.6 persons as found by the baseline survey). 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.	Project year	Operational days ³¹	2019 (22/09-31/12)	96	2020	347	2021	347	2022	347	2023	347	2024 (01/01-21/09)	251
Project year	Operational days ³¹														
2019 (22/09-31/12)	96														
2020	347														
2021	347														
2022	347														
2023	347														
2024 (01/01-21/09)	251														

³¹ The number of operation days ("Technology days") will be monitored for each supply systems and applied in the ex post calculation. To be conservative the value of technology days will be capped at 347 days as per GS recommendations.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data/parameter	Percentage of user per used fuel
Unit	%
Description	Percentage of user that are using firewood or charcoal
Source of data	Monitoring survey
Value(s) applied	Ex ante: 0.73 charcoal; 0.23 firewood To be updated ex-post
Choice of data or Measurement methods and procedures	This parameter will be used to calculate $W_{b,y}$ and $W_{p,y}$ Ex ante assumption is that the same water boiling technologies are prevalent in the baseline and project scenarios and therefore $W_{b,y}$ and $W_{p,y}$ are equal.
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	Transparent data analysis and reporting. The value will be updated during monitoring activities.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data / Parameter	$Q_{p,y}$
Unit	Liters per person per day (l/person/day)
Description	Quantity of safe water supplied in the project scenario p during the year y, using the “zero or low” emissions’ clean water supply technology
Source of data	Water Consumption Field Test (WCFT)
Value(s) applied	Ex - ante estimation: 7
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 ₂ e emission reductions
Additional comment	Ex-ante estimation is made based on the result of Baseline Survey (11 litres/person/day) and capped to be conservative and in line with limit of 7 litres described the page 39 of the applied methodology.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data / Parameter	$Q_{p, rawboil,y}$
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	Ex-ante estimation: 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 ₂ e emission reductions
Additional comment	N/A

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO _{2e}
Data / Parameter	$Q_{p, \text{cleanboil}, y}$
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	Ex-ante estimation: 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 _{2e} emission reductions
Additional comment	N/A

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO _{2e} and SDG 3 / Indicator 3.9.2
Data / Parameter	$U_{p, y}$
Unit	Percentage
Description	Usage rate in project scenario p during year y
Source of data	Annual usage survey
Value(s) applied	Ex-ante estimation: 0.90
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 _{2e} emission reductions and monitoring of SDG 3
Additional comment	A single usage parameter is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario – see section II. of the methodology. Value higher than 0.90 in the project scenario will be capped to 0.90, according to BAMG report.

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO _{2e}
Data / Parameter	$LE_{p, y}$
Unit	tCO _{2e} /year
Description	Leakage in project scenario p during year y
Source of data	Baseline and monitoring surveys
Value(s) applied	Ex-ante estimation: 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 _{2e} emission reductions
Additional comment	Aggregate leakage can be assessed for multiple project scenarios

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data / Parameter	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 ³²
Source of data	Water quality test
Value(s) applied	Ex-ante estimation: Zero Colony Forming Units (CFU) of E.Coli / 100 ml of safe water
Measurement methods and procedures	As per the local laboratory/hospital porecedures or alternatively conducted via field tests like IDEXX presence/absence tests in 100 ml for E. Coli.
Monitoring frequency	Quarterly
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	N/A

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e and SDG 12 / Indicator 12.8.1
Data / Parameter	Hygiene campaigns
Unit	-
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	Report of the annual hygiene campaign
Measurement methods and procedures	-
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Estimation of CO ₂ e emission reductions and monitoring of SDG 12
Additional comment	Prior to the project the local communities received no regular training on water, sanitation and health related issues

Relevant SDG Indicator	SDG 13 / Climate Change Mitigation measured as reduced tCO ₂ e
Data / Parameter	Capacity ³³
Unit	Litres per day
Description	Treatment capacity of the project technology/improved sources
Source of data	Manufacturer specification/design specification
Value(s) applied	34,792 litres per day ³⁴

³² See the National Water Quality Standard Madagascar uploaded to Sustaincert

³³ In line with the GS TAC rule update at <http://www.goldstandard.org/articles/tac-rule-updates> (Site visited 10/10/2019)

³⁴ Please refer to cells G23, W32 and AD32 of “BenConsAndStorage” in ERs calculations uploaded to Sustaincert.

Measurement methods and procedures	The capacity would be sufficient to provide at least 10 l/p/day to all people of each village (around 3.000 persons). The calculation is based on: - Capacity of water pump - Capacity of the battery - Number of water taps - Flow rate of each water tap - Peak demand simulation - Capacity of the tank
Monitoring frequency	Once at the time of registration or at inclusion of new technology.
QA/QC procedures	-
Purpose of data	Estimation of CO ₂ e emission reductions
Additional comment	The water volume values used in the calculations of emission reductions must be justified in terms of capacity of the project technology/improved sources.

Relevant SDG Indicator	SDG 3 / Indicator 3.9.2
Data / Parameter	Frequency of water-borne diseases (like e.g. diarrhea)
Unit	-
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	Ex-ante estimation: 100 % Less 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 will study 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 comment	Based on the Baseline Survey averagely 52.5 % of the families living in the project are suffering diarrhea and other water-borne diseases.

Relevant SDG Indicator	SDG 3 / Indicator 3.9.2 SDG 6 / Indicator 6.1.1
Data/parameter	P _y
Unit	Number
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	Estimated at 6,000. Value to be provided in time for first verification.

Choice of data or Measurement methods and procedures	Sum of the total number of people using each borehole in the project. The number of users included in the Project Database will be monitored throughout the project.
Purpose of data	Monitoring SDG 3 and SDG 6
Additional comment	

B.7.2. Sampling plan

The sampling of this VPA is foreseen to be made together with the eventual new VPAs implemented within the same area whenever applicable.

The sampling approach is to be used for 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 this VPA-DD) regarding the representativeness and sample sizing i.e. at least 100 households needs to be sampled when the target groups size is > 1000.
- When applicable the Project Survey and the Usage Survey will be implemented together using the same sample.
- This survey is foreseen to be made over several VPAs in case new VPAs are registered within the same area.

Baseline Water Boiling Test

- According to BAMG report, default values for baseline fuels will be used.
- Eventually, a BWBT may be conducted and, in that case, the 95/10³⁵ rule will be used for the selection of samples, accounting for variability in the types of prevalent baseline technologies in line with the TPDDTEC methodology and CDM guidelines³⁶.

Water Consumption Field Test (WCFT)

- Two valid options are allowed for the statistical analysis of the WCFT. In all cases, the sample size must be greater than 20:
 - a. 90/10 rule. When the sample sizes are large enough to satisfy the “90/10 rule”, i.e. the endpoints of the 90% confidence interval lie within $\pm 10\%$ of the estimated mean, overall emission reductions can be calculated on the basis on the estimated MEAN of each of the respective variable mentioned above.
 - b. 90% confidence rule. When the sample size is such that the “90/10 rule” is not complied with, the result used for the each of the respective variable mentioned above is not the mean (or average) test result, but a lower value, i.e. the lower bound of the one-sided 90% confidence interval (in order to reach a conservative estimate).

The WCFT is foreseen to be made over several VPAs in case new VPAs are registered within the same area³⁷.

Water quality testing

- The sample for water quality testing will be made following the 90/10 precision rule indicated by the applied TPDDTEC methodology. In future, the water quality testing may be made over several VPAs implemented within the near by areas.

Usage Survey

- The minimum total sample size for Usage Survey is 100 and in case of cross VPA sampling with at least 30 samples for project technologies of each age being credited. The majority of interviews in a usage survey

³⁵ The endpoints of the 90% confidence interval lie within $\pm 30\%$ of the estimated mean

³⁷ Please note that in case of VPAs cross sampling, the requirement from paragraph 10 of “Sampling and surveys for CDM project activities and programmes of activities” (version 4.0) will be followed: “Where two or more project activities, CPAs or PoAs are grouped for undertaking a common survey it shall be ensured that a confidence/precision of 95/10 is achieved for each of the project activity”.

Gold Standard[®]

must be conducted in person. Thus if technologies of age 1-5 are credited, the usage survey must include 30 representative samples from each age for total of 150 samples. The resulting usage parameter should be weighted based on the proportion of technologies in the total sales record of each age.³⁸

- In line with the applied TPDDTEC methodology, any sampling methods can be used, provided that the sample is selected randomly. If sampling approach other than simple random sampling is applied, 'Guidelines for sampling and survey for CDM project activities and program of activities'³⁹ must be followed.
- When applicable the Usage Survey and the Project Survey will be implemented together using the same sample.
- Usage Survey is foreseen to be made over several VPAs in case new VPAs are registered within the same area.

Leakage Assessment

- Leakage assessment regarding the potential leakage sources will be completed every other year together with the Usage Survey and therefore no separate sampling approach are used for the leakage assessment.

B.7.3. Other elements of monitoring plan

In line with the methodology TPDDTEC, the monitoring activities will involve data collection during distribution, installation and construction as well as post-implementation usage information regarding the project safe water supply / treatment technologies.

Firstly, the project proponent must to keep records of the information collected in an electronic database in line with the Section B.3 of the PoA-DD for enabling the unique identification of the project water supply systems. This database will include the following information:

- 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

The total number of persons using each water supply and treatment system will be monitored through the annual production of an end-users list. Using this method, the total number of people using each borehole can be monitored easily and it will be confirming that the end-user households locate within 1 km from the water source. The random selection of the people who will be interviewed for the various surveys provided for monitoring activities will be carried within this end-users list.

Secondly, after the project implementation start, the project proponent must conduct the following studies for each 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 will remain fixed for the entire crediting period, although the project proponent may choose to re-examine the assessment at any time following the guidelines of the applied TPDDTEC methodology. In case of a renewal of the crediting period and as per Gold Standard rules, the NRB fraction must be reassessed as any other baseline parameters and updated in line with most recent data available.

³⁸ Usage Survey is foreseen to be made in future together with the eventual new VPAs implemented within the same area under the same PoA (i.e. cross VPA sampling). This means that there will be separate water supply systems (installed in different time moments) monitored all within one Usage Survey. The PP considers that users of each water supply system installed in different time moments, longer than 12 months from each, can be considered as separate age groups in this case.

³⁹ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20151023152925068/Meth_GC48_%28ver04.0%29.pdf (site visited 10/10/2019)

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

The safe water 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. These questions should be asked twice, first regarding to the baseline scenario water supply and water treatment, including boiling technologies, and second in regards to the project scenario clean water supply, including treatment and boiling technologies.

During the monitoring activities the Project Survey and the below described Usage Survey will be implemented together.

C. Baseline Water Boiling Test (BWBT) - completed at least once

In line with BAMG report, the following default values for baseline fuels will be used:

- 0.4 Kg/l for wood
- 0.1 Kg/l for charcoal

Eventually, a separate baseline water boiling test (BWBT) may be conducted in line with both the applied methodology and BAMG report. In this case, the resulted value will be applied, up to 0.5 Kg/litre for wood and 0.125 Kg/litre for charcoal.

If the later monitoring surveys reveal that the same water boiling technologies are prevalent in the baseline and project scenarios, $W_{b,y}$ and $W_{p,y}$ are equal. The BWBT should be updated if monitoring surveys show that water boiling technologies change over time.

In case a new baseline water boiling test (BWBT) is conducted to calculate the quantity of fuel required to purify by boiling one liter of water for 10 minutes using technologies and fuels representative of the baseline scenario ($W_{b,y}$).

D. Water Consumption Field Test (WCFT) - completed at least biennially

The project proponent will carry out the WCFT to determine the actual safe water consumption and boiling volumes (both of raw/unsafe water and safe water)⁴⁰ for each project scenario. The WCFT is to be completed prior to first verification and then at least every two years after with randomly selected end-users representative of the project scenario target population and currently using the project technology following the WCFT Procedure designed for the project⁴¹.

Three different volumetric variables are measured:

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

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

Water quality testing – completed every quarter

⁴⁰ Measured as volume per person per day

⁴¹ WCFT Procedure has been uploaded to Sustaincert

Gold Standard[®]

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 water⁴². 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 quarterly water quality testing is foreseen to be made in the accredited laboratory of Institut Pasteur de Madagascar in Antananarivo⁴³ or alternatively conducted via field tests like IDEXX presence/absence tests in 100 ml for E. Coli. However, at least ones every two years, an accredited laboratory (like Institute Pasteur de Madagascar) will perform the water quality testing. It is the decision of the accredited laboratory whether they perform the test in the field using water quality field test kits or define an adequate procedure for transporting the water samples to their laboratory. The water quality testing with the accredited laboratory shall be carried out at a time when there is the most annual chance of contamination. If accredited laboratory results differ materially from non-accredited laboratory results, testing with the aberrant non-accredited laboratory must be discontinued.

Also, the monitoring of hygienic use of water at the end-user end⁴⁴ may further complement the testing process.

Usage Survey – completed at least annually

The Usage Survey is completed annually, or more frequently, and all cases on time for any request of issuance. The usage survey provided 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.

A usage parameter must be established to account for drop off rates as project technologies age are replaced. Prior to verification, a usage parameter is required that is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario. For example if only technologies in the first year of use (age₀₋₁) are being credited, a usage parameter must be established through a usage survey for technologies age₀₋₁. If an equal number of technologies in the first year of use (age₀₋₁) and second year of use (age₁₋₂) are credited, a usage parameter is required that is weighted to be equally representative of drop off rates for technologies age₀₋₁ and age₁₋₂. To ensure conservativeness, the usage survey with technologies in the first year of use (age₀₋₁) must have technologies that have been in use on average longer than 0.5 years. For technologies in the second year of use (age₁₋₂), the usage survey must be conducted with technologies that have been in use on average at least 1.5 years, and so on.

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 this VPA 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

⁴² See the document “Décret MECIE - 2004” uploaded in Sustaincert

⁴³ B.P. 1274, Ambatofotsikely Avaradoha, 101 Antananarivo

⁴⁴ This may include monitoring of e.g. the use of clean containers and devices used for carrying and/or storing drinking water or water used for food preparation, cooking or personal hygiene.

Gold Standard[®]

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. There are currently no other CDM or VER projects in the project area. 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.

F. Hygiene Survey – completed annually

Project Proponent will carry out each year hygiene campaigns (as described below) and report the activities conducted as well as the number of the participants in the organized campaigns and the number of the trained personnel in the annual monitoring report. 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) will 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 behavior in respect to regular and correct use of such amenities. It also refers to behavior that prevents infections from water-related diseases.

Below are described the designed activities for promoting hygiene. These activities will be adjusted when needed to suit learning year on year or if proven unsuccessful.

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.

Description of hygiene campaigns:

Gold Standard[®]

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.

1) Initial hygiene campaign

Initial hygiene campaign will be organized within the first 12 months from the time the first project safe water system is ready. During this event water, sanitation and health related issues will be discussed and the benefits of consumption of safe water and the ways for hygienic handling during transport, storage and usage of clean water will be highlighted. The information sharing on hygienic handling may be promoted for example with offering for the event participants the possibility to buy new and hygienic water containers and by handing out to the end-users leaflets when possible.

2) Annual hygiene campaigns

Each year at least one campaign on water, sanitation and health related issues will be realized. The place and organization method of the event may vary from year to year and will be selected also to suit learning year on year. Examples of the methods which may be used for the campaigns are events, radio campaigns or sessions on hygiene included in some other event or training organized with the local stakeholders. Information is handed out to the end-users also via leaflets when applicable.

3) Information sharing done during the usage/monitoring survey and other monitoring activities

All the agents conducting the usage survey or other project monitoring activities will be trained on communicating hygiene information. In fact, the visiting of project households during the usage/monitoring survey (conducted annually for at least 100 project households), or during the other project monitoring activities when applicable, each interviewed family will be sensitized on the benefits of the hygiene in general and on the ways of the hygiene handling of clean water to encourage behavior change and prevent relapse after campaigns. Furthermore, the usage survey itself will include questions enabling to monitor the hygiene related issues:

- Usage/monitoring survey will study qualitatively the occurrence of diarrhea and other water borne diseases in the project scenario in comparison with the baseline scenario. The participants of the survey are asked to evaluate if they experience less, more or the same amount of diarrhea and other water borne diseases as before the project.
- Usage/monitoring survey will check qualitatively on the hygiene handling like use of clean/safe containers and devices for transport and storage of water used for drinking, cooking, food preparation and basic personal hygiene.

SECTION C. Duration and crediting period

C.1. Duration of project

C.1.1. Start date of project

15/05/2019

The above mentioned start date is being defined as the earliest date on which the Project Developer has committed to expenditures related to the implementation of the Project of construction⁴⁵, implementation or real action (i.e. the date of signing the contract for construction works of the first borehole), in compliance with section 4.1.39 of GS4GG Principles & Requirements (version 1.2).

⁴⁵ Contract of construction works uploaded to Sustaincert as evidence of the start date (Please refer to "GS7666_Start Date_15_05_2019").

C.1.2. Expected operational lifetime of project

15 years⁴⁶

C.2. Crediting period of project

C.2.1. Start date of crediting period

22/09/2019

The above mentioned date is the date when the project safe water systems started to produce clean water⁴⁷.

C.2.2. Total length of crediting period

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

SECTION D. Safeguarding principles assessment

D.1. Analysis of social, economic and environmental impacts

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Mitigation measure (if required)
Social & Economic Safeguarding Principles				
1 – Human Rights	1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights. 2. The Project shall not discriminate with regards to participation and inclusion.	No	The project is implemented respecting internationally proclaimed human rights and is no complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights. The Project will not discriminate with participation and inclusion as the safe water supply systems are free to be used for everybody.	N/A
2 - Gender Equality and Women's Rights	1. The Project shall complete the following gender assessment questions in order to	No	JUSTIFICATION POINT 1: The project activity doesn't endorse any	N/A

⁴⁶ If well used and maintained, the India Mark II hand pump has a lifespan up to 15 years. The monitoring activities (like quarterly water quality tests) will ensure that the constant monitoring of the conditions of the pump and making the required maintenance interventions in line with the manufactures guidelines: <https://www.rural-water-supply.net/ressources/documents/default/1-328-34-1384355371.pdf> (site visited 10/10/2019).

⁴⁷ This is the date when the water system started to produce clean and safe water. As supporting document (construction end date certificate) is uploaded to Sustaincert.

	inform Requirements 2-4, below: Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits? Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)? Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)? Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?		form of discrimination based on gender. Madagascar has ratified ILO Convention 100 and 111. The safe water supply system is located in the central place and will not put therefore at risk women's or any other marginalised groups access to or control to water resources. It's not foreseen either any reduction or risk related to any other resource, entitlement or benefit. It is thereafter not either foreseen that the Project would adversely affect man and women in marginalised or vulnerable communities. The Project takes into account gender roles and the abilities of women and men to participate in the decision/designs of the project activities. For example the stakeholder consultation made in the project design phase included both women and men participating in the consultation meeting. Moreover, for example, the future annual hygiene campaigns will be planned and organized in the way to avoid any discrimination of women or other marginalized groups. Infact, the women's participation will be essential for guaranteeing the success in improving the hygiene. In addition, the design of the hygiene campaigns as well as other project activities will take into account gender roles and the abilities of	
--	---	--	--	--

	Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities? Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits? Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services? Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards? 2. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women. Specifically, this		women and men to participate and benefit from the project activities. The project is not contributing to an increase in women's workload or preventing them from engaging in other activities. In fact, the availability of clean water is foreseen to reduce women's work load related to water supply distances and water purification activities. Moreover, potentially need for spending time for caring activities may reduce as the risk for for water born diseases will be reduced. The project is not foreseen to reproduce or deepen discrimination against women. The women will have the same possibilities to access clean water supply systems, hygiene campaigns and the feedback system regarding the project as any other community member. The project is not foreseen to limit women's ability to use, develop and protect natural resources. Instead the project gives an easy access for clean and safe drinking water. It's not either likely that the project activity would exposed women or girls to further risks or hazards as the project boreholes are located in the central places of the project villages and the distances need for water fenching is foreseen to be reduced. Moreover,	
--	---	--	---	--

	shall include (not exhaustive): Sexual harassment and/or any forms of violence against women - address the multiple risks of gender-based violence, including sexual exploitation or human trafficking. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. Restriction of women's rights or access to resources (natural or economic). Recognise women's ownership rights regardless of marital status - adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources. 3. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work, specifically: Where appropriate for the implementation of a Project, paid, volunteer work or community contributions will be organised to		the clean safe water and improved hygiene are foreseen to improve the conditions of women and girl. JUSTIFICATION POINT 2: The Project will not directly or indirectly lead or contribute to adverse impacts on gender equality or the situation of women. In fact, the within 1 km access to clean and safe water are foreseen to improve the general conditions of women and not to lead to any risk of contributing issues like sexual harassment/ exploitation, violence, human trafficking slavery, imprisonment, drudgery or restriction of women's rights or access to resources. The project activities are providing free access to clean and safe water for the local communities. It will not have any impact on women's ownership rights to inherit and own land, homes and other assets. JUSTIFICATION POINT 3: The Project applies the principles of non-discrimination and equal treatment and, in fact, the access to clean and safe water is free to everybody. For the water system construction works and for any other eventual paid or volunteer work the principle of the equal pay for equal work will be applied and organized in way to	
--	--	--	---	--

	provide the conditions for equitable participation of men and women in the identified tasks/activities. Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status. Ensure that these conditions do not limit the access of women or men, as the case may be, to Project participation and benefits. 4. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks. 5. Based on the Preliminary Review assessment of Requirement 1, above, Gold Standard may require that the Project seek the input of an Expert Stakeholder and to include their recommendations in the Project design.		provide the conditions for equitable participation of men and women. Project activities, like using the clean and safe water and participating in the annual hygiene campaigns, are planned in way that the participation of both women and men is guaranteed. There are no limitations on participation or benefiting from the Project depending on the pregnancy, maternity/paternity leave or marital status. JUSTIFICATION POINT 4: The Project will not include any specific gender related risks. JUSTIFICATION POINT 5: Not applicable.	
3 - Community Health, Safety and Working Conditions	1. The Project shall avoid community exposure to increased health risks and shall not adversely affect	No	The project activities doesn't include exposing the community to increased health risks and is not adversely affecting the health of	N/A

	the health of the workers and the community.		workers and the community. For example, the workers participating the project activity are not exposed to unsafe or unhealthy work environments as the construction of safe water supply system or the monitoring activities of the project will not include any hazardous chemicals or other hazardous material.	
4 - Cultural Heritage, Indigenous Peoples, Displacement and Resettlement	Sites of Cultural and Historical Heritage Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)? Forced Eviction and Displacement Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)? Land Tenure and Other Rights 1. Does the Project require any change to land tenure arrangements and/or other rights? 2. For Projects involving land-use tenure, are there any uncertainties with regards land tenure, access	No	The project activity doesn't include sites, structures or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture. The Project will introduce a clean and safe water source and it does not require alternation, damage or removal of any historical, artistic, traditional, religious or cultural heritage issues. The project activity consists of introducing clean and safe water sources and therefore no physical or economic relocation of people is involved. The project doesn't require any change to land tenure arrangements and/or other rights. There are no indigenous peoples present within the area of influence nor the project is located on territory claimed by indigenous people.	N/A

	rights, usage rights or land ownership? Indigenous Peoples Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?			
5 - Corruption	1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects.	No	The Project doesn't involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects. Madagascar has ratified the UN Convention against Corruption.	N/A
6 - Economic Impacts	Labour rights 1. The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. Where these are contradictory and a breach of one or other cannot be avoided, then guidance shall be sought from Gold Standard. 2. Workers shall be able to establish	No	JUSTIFICATIONS RELATED TO LABOUR RIGHTS: The employees' rights are a cross-cutting issue and respected in all of the projects of Associazione Mondobimbi Veneto Onlus. Madagascar has ratified ILO Convention 87 and 98. All employees (mainly hired temporarily for monitoring activities as well as for water system construction activities) will work voluntarily for the project, no forced labour is used and all employment is in compliance with national laws and consistency with the principles and standard ILO conventions. In fact, Madagascar has ratified ILO Convention 29 and 105.	N/A

	and join labour organisations. 3. Working agreements with all individual workers shall be documented and implemented. These shall at minimum comprise: (a) Working hours (must not exceed 48 hours per week on a regular basis), AND (b) Duties and tasks, AND (c) Remuneration (must include provision for payment of overtime), AND (d) Modalities on health insurance, AND (e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. The Project Developer shall justify that the employment model applied is locally and culturally appropriate. 5. Child labour, as defined by the ILO Minimum Age Convention is not allowed. The Project Developer		The workers are able to establish and join labour organizations. The working agreements with the individual workers will be documented and implemented and the minimum requirements stated in section 3.6.1. of GS4GG Safeguarding Principles & Requirements (version 1.1) will be respected whenever applicable. The employment model applied will be also locally and culturally appropriate. Moreover, all the possible staff hired has a minimum age of 18. Madagascar has ratified ILO Convention 138 and 182. All the works will be made by using appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.	
--	--	--	--	--

shall use adequate and verifiable mechanisms for age verification in recruitment procedures. Exceptions are children for work on their families' property as long as: (a) Their compulsory schooling (minimum of 6 schooling years) is not hindered, AND (b) The tasks they perform do not harm their physical and mental development, AND (c) The opinions and recommendations of an Expert Stakeholder shall be sought and demonstrated as being included in the Project design. 6. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures. Negative Economic Consequence 1. The Project Developer shall demonstrate the financial sustainability of the Projects implemented, also		JUSTIFICATION RELATED TO NEGATIVE ECONOMIC CONSEQUENCES:
---	--	--

	including those that will occur beyond the Project Certification period. 2. The Projects shall consider economic impacts and demonstrate a consideration of potential risks to the local economy and how these have been taken into account in Project design, implementation, operation and after the Project. Particular focus shall be given to vulnerable and marginalised social groups in targeted communities and that benefits are socially-inclusive and sustainable.		The main investment of the project activity is the initial construction cost of the safe water systems and it will be covered by the Project Developer. The use of the safe and clean water is free for the local communities. The safe water supply and the foreseen improved hygiene knowledge via the annual campaigns are foreseen to last beyond the Project Certification period. The use of clean and safe drinking water is free for everybody and therefore the project benefits can be considered socially-inclusive. The project water supply systems will be equipped by manual pumps to extract the water from the wells, hence energy use is not foreseen and can be considered sustainable. There are not expected any direct economic impact or potential risks to the local economy.	
Environmental & Ecological Safeguarding Principles				
1 – Climate and Energy	Emissions Will the Project increase greenhouse gas emissions over the Baseline Scenario? Energy Supply Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The project will reduce the GHG emissions as will be monitored and verified in line with the GS4GG. The project will use handle pumps and no energy from other sources is used.	N/A

2 - Water	Impact on Natural Water Patterns/Flows Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity? Erosion and/or Water Body Instability 1. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? If 'Yes' or 'Potentially' proceed to question 2. 2. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	The project water systems will use ground-water but will not affect negative natural or pre-existing pattern of watercourses, ground-water and/or watersheds. The project will not cause additional erosion and/or water body instability of or disrupt the natural pattern of erosion.	N/A
3 – Environment, ecology and land use	Landscape Modification and Soil Does the Project involve the use of land and soil for production of crops or other products? Vulnerability to Natural Disaster Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought	No	The Project provides safe and clean drinking water and doesn't involve the used of land and soil for production of crops or other projects. The Project provides supply of safe and clean drinking water and is not suscepled to or will lead to increased vulnerability to any extreme climatic conditions. The Project provides safe and clean drinking water and doesn't	N/A

	or other extreme climatic conditions? Genetic Resources Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)? Release of pollutants Could the Project potentially result in the release of pollutants to the environment? Hazardous and Non-hazardous Waste Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials? Pesticides & Fertilisers Will the Project involve the application of pesticides and/or fertilisers? Harvesting of Forest Will the Project involve the harvesting of forests? Food Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration		involve / or be negatively impacted by the use of genetically modified organisms or GMOs. The Project is not potentially resulting in release of pollutants to the environment. The Project is not involving the manufacture, trade, release, and/or use of hazardous chemicals and or materials. The Project doesn't involve the application of pesticides and/or fertilisers. Neither harvesting of forests is involved. The Project doesn't modify the quantity or nutritional quality of food available. The Project doesn't involve animal husbandry. The project is not located in an area within a high conservation value area or within critical natural habitats. Furthermore, the aim of the project is to reduce the quantity of firewood consumed in the project area for boiling the water (for purifying) which may save the natural resources. The project boundary is the physical, geographical sites of the project technologies, in other words, the physical location of the safe water supply systems installed by the project (as described in Section A.5. above) . There are	
--	---	--	--	--

	or export or economic incentives? Animal husbandry Will the Project involve animal husbandry? High Conservation Value Areas and Critical Habitats Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified? Endangered Species 1. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? 2. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?		no endangered species identified as potentially being present the project boundary. The safe water supply systems are not expected either potentially impact other areas where endangered species may be present through transboundary affects.	
--	--	--	---	--

Moreover, the project activity applies the GS Gender Equality Guidelines & Requirements by following the Pathway (a) "Foundation gender-sensitive requirements" as justified here below with the 3 steps.

STEP 1: BASIC CONTEXT

QUESTION 1: DOES THE PROJECT REFLECT THE KEY ISSUES AND REQUIREMENTS OF GENDER SENSITIVE DESIGN AND IMPLEMENTATION AS OUTLINED IN THE GENDER POLICY?

The project reflects the key issues and requirements of gender sensitive design and implementation: The project activities provide access to clean and safe water for local communities. The access to water is free and located in central places and thus will not put at risk the access of women or any other marginalized groups. The access to clean and safe water will contribute to improve health of the local population and will reduce the workload related to the water purification activities. The reduction on the workload benefits especially women and girls who are mainly responsible on fuel collection and water purification activities. The implemented activities related

Gold Standard[®]

to the stakeholder consultation as well as the future implementation of the project activities takes into the account gender roles and the abilities of women and men to participate in the decision/designs of the project activities. For example, the stakeholder consultation made in the project design phase was designed in a way which enabled both women and men participating in the consultation meeting (Please refer to the separate Stakeholder Consultation Report uploaded to SC application). Moreover, for example, the future annual hygiene campaigns will be planned and organized in the way to avoid any discrimination of women or other marginalized groups. In fact, the women's participation will be essential for guaranteeing the success of the project.

QUESTION 2: DOES THE PROJECT ALIGN WITH EXISTING COUNTRY POLICIES, STRATEGIES AND BEST PRACTICES?

Project activities are in line with the goals of Madagascar's national policies as stated in the " Plan d'Action National Genre et Développement (PANAGED)". In fact, the project activities are foreseen to improve the daily conditions of the local women and girls by providing access to clean and safe drinking water. The access to clean drinking water will, in addition on contributing on reduction of water borne diseases, replace the need for boiling the water for purification purposes and consequently will reduce thus efforts and time needed for procuring the fuel for purification purposes.

STEP 2: APPLY GOLD STANDARD SAFEGUARDING PRINCIPLES

QUESTION 3: DOES THE PROJECT ADDRESS THE QUESTIONS RAISED IN THE GOLD STANDARD SAFEGUARDING PRINCIPLES & REQUIREMENTS DOCUMENT?

The project addresses the questions raised in the GS Safeguarding Principles & Requirements document as described in Section D of the draft VPA-DD.

STEP 3: CONDUCT STAKEHOLDER CONSULTATION

QUESTION 4: DOES THE PROJECT APPLY THE STAKEHOLDER CONSULTATION & ENGAGEMENT PROCEDURE REQUIREMENTS?

The stakeholder consultation report describes how the Stakeholder Consultation process has been designed and implemented in line with the GS requirements. For, example, in the stakeholder meeting a wide range of community representatives and both women and men participants were present (40% of the participants were women). Also, the Stakeholder Feedback Round has been designed in line with GS requirements and is applying the "Stakeholder Consultation and Engagement Requirements (version 1.2)". The description of the design and the results of the feedback round will be provided for Project Design Certification.

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from stakeholders

For this VPA a grouped stakeholder consultation process described in attached "Local Stakeholder Consultation Report" is applied⁴⁸.

The physical stakeholder consultation meeting was organized on 16/07/2018 which is before the start date of this VPA (15/05/2019). The original stakeholder consultation report describing process and results of the meeting was submitted to Gold Standard on 27/08/2018 at the time of the start of the Preliminary Review of the first VPA applying this grouped stakeholder consultation (GS6752) and it was approved by Gold Standard on 30/01/2019 (together with the approval of the Preliminary Review of the VPA GS6752).

Below are described how this VPA fullfills the applicability conditions of this grouped stakeholder consultation for which the physical stakeholder consultation meeting was organized on 16/07/2018 i.e before the start date of this VPA (15/05/2019).

Grouped stakeholder applicability conditions	Justification in case of GS7566
The VPA is implemented in the surroundings of the city of Tulear in Atsimo-Andreafana Region.	As described in Section A.4 of this VPA-DD, the VPA is implemented in the villages of Belemboky Androvakely and Andranomena, which are located in

⁴⁸Local Stakeholder Consultation Report has been uploaded to SC application.

	Atsimo-Andreafana, in Toliara Province, Madagascar.
The VPA includes the installation of 'zero emission' water supply system/systems.	As described in Section A.5 of this VPA-DD, the VPA includes the installation of a solar powered 'zero emission' water supply system/systems.
The VPA is implemented by Associazione Mondobimbi Veneto Onlus.	As described in Section A.1, the VPA is implemented by Associazione Mondobimbi Veneto Onlus.
The VPA implementation start date is within 3 years from the date of grouped stakeholder consultation approval-	The grouped stakeholder consultation meeting was organized on 16/07/2018 and the corresponding report (describing processs and outcomes of the grouped consultation) was submitted to Gold Standard on 27/08/2018 (at the Preliminary Review start of the VPA GS6752). The Report and thus the grouped stakeholder consultation approval was taken place however only 30/01/2019 (this is date when the Preliminary review of GS6752 was accepted by GS). As described in Section C of this VPA-DD, the VPA has a start date 15/05/2019 and crediting period start date 22/09/2019. Thus, the implementation start of this VPA is after the physical stakeholder consultation meeting. Moreover, the implementation start of this VPA is after the date of grouped stakeholder consultation approval and thus can be considered to be in line with the requirement to be within 3 years from the date of the grouped stakeholder consultation approval.

A stakeholder feedback round (SFR) was organized between 7th of January and and 8th of March 2020. During this 2 months' consultation period the hard copies of the Stakeholder Consultation Report and VPA-DD draft (including the decription of the consultation process, it outcomes and how due account was taken in the project design) were made available for comments on-line in the GS Project Registry as well as in hard copy format in the Tulear Municipality in Afaka Village, Villa Star 3, West Bethany. No comments from the stakeholders were received during the SFR. The detailed description of the SFR process is included in the Stakeholder Consultation Report.

E.2. Summary of comments received

See the "Stakeholder Consultation Report".

E.3. Report on consideration of comments received

See the "Stakeholder Consultation Report".

Appendix 1. Contact information of project participants

Organization name	Carbonsink Group S.r.l. (Carbonsink)
Registration number with relevant authority	
Street/P.O. Box	Piazza Beverni
Building	4
City	La Spezia
State/Region	
Postcode	19121
Country	Italy
Telephone	+39 055 4574675
Fax	
E-mail	info@carbonsink.it
Website	www.carbonsink.it
Contact person	Ulla Mauno
Title	
Salutation	Ms.
Last name	Mauno
Middle name	
First name	Ulla
Department	
Mobile	
Direct fax	
Direct tel.	+39 055 4574675
Personal e-mail	ulla.mauno@carbonsink.it

Appendix 2. Summary of post registration design changes