ANNEX AN – THE GOLD STANDARD MICRO-PROGRAMME OF ACTIVITIES DESIGN DOCUMENT TEMPLATE

CONTENTS

Annexes

NOTE: At the time of requesting registration, this form must be accompanied by a VPA-DD applying a real case.

SECTION A. General description of micro-scale programme of activities (PoA)

A.1 Title of the micro-scale programme of activities (PoA):

Title: Sustainable Safe Water Program

Version: 01

Date: 18/09/2015

A.2. Description of the micro-scale programme of activities (PoA):

1. General operating and implementing framework of PoA

Many families in developing countries do not have access to an improved water source.[1] Worldwide, lack of access to safe drinking water and inadequate sanitation and hygiene are responsible for 1,600 death cases for children under the age of five every day.[2] To improve the water quality at home, globally almost 600 million people boil their drinking water,[3] many of them using non-renewable firewood or charcoal. This not only leads to significant greenhouse gas emissions but families also spend a lot of time on collecting firewood or money on buying charcoal, LPG or kerosene. In addition, firewood collection and charcoal production leads to deforestation and environmental degradation.

The purpose of the PoA is to use carbon finance for the introduction of low greenhouse gas emitting water purification methods to provide clean drinking water in developing countries. The targeted users of the technology will be households and/or communities.

The PoA is promoted by South Pole Carbon Asset Management Ltd. (SPCAM), a leading carbon project developer in the world. SPCAM is the Coordinating/Managing Entity (CME) and the developer of the program, who will collaborate with various local partners to implement the program, e.g.:

- National and local authorities
- International and local non-government organizations
- Community-based organizations
- International development agencies
- Companies

[1] Joint Monitoring Programme WHO/UNICEF, 2015
[2] UNICEF "Committing to Child Survival", 2013
[3] Source: Rosa G., Clasen T. (2010) Estimating the Scope of Household Water Treatment in Low- and Medium-Income Countries. The American Journal of Tropical Medicine and Hygiene, 82(2), pp. 289 – 300

All selected activities need to be designed to sustainably deliver safe drinking water and raise hygiene awareness in the target communities.

2. Policy/measure or stated goal of the PoA

This PoA seeks to increase the access of households and communities to safe drinking water, by promoting new 'zero emission' technology for safe water. This PoA is thus primarily designed for the long-term improvement of the living conditions of local people. The safe water methods include, but are not limited to:

- Household water filters
- Solar disinfection methods
- Household chlorination products
- Chlorine dispensers at water point level
- Water treatment at kiosk level
- Borehole pumps (not fossil fuel driven) and their repair/maintenance/operation

The selection of the type of safe water technology will be based on the local conditions of each target area and made in consultation with relevant stakeholders.

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

Besides the direct emission reductions, the PoA will provide numerous socio-economic and health benefits to the targeted households and/or communities:

- Reduction of the burden of disease from diarrheal associated with consuming unsafe drinking water, particularly in children under five. This will decrease child mortality and increase the productivity amongst children and provide the opportunity for today's children to achieve their full potential as economically productive adults.
- Reduced time spent on collecting firewood and boiling water to make it safe for drinking.
- Reduction in deforestation and degradation of surrounding forests, as less wood and charcoal will be needed to boil water. This will lead to reduced soil erosion and nutrient loss.
- Reduced adverse health effects associated with indoor air particulate matter inhalation from the smoke due to the burning of firewood.
- Reduced hazards due to the exposure of the firewood collectors (mainly women) to the deep forest, related to rape cases and animal attacks during wood collection.
- Low greenhouse gas emitting water purification technology offers scope for micro-entrepreneurs, thereby creating jobs and supporting families.

3. Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity

The coordinating/managing entity (CME) of the proposed PoA is South Pole Carbon Asset Management Ltd. (SPCAM). It does not have any legal or other obligations to further the spread of water purification technologies. Therefore all its activities are undertaken purely voluntarily.

A.3. Coordinating/managing entity and participants of PoA:

The coordinating/managing entity (CME) of this PoA and the entity which communicates with Gold Standard is South Pole Carbon Asset Management Ltd. (SPCAM), a leading carbon project developer in the world. Contact details are provided in Annex 1.

A.4. Technical description of the micro-scale programme of activities:

A.4.1. Location of the micro-scale programme of activities:

A.4.1.1. Host Party(ies):

Activities under this PoA will be located in several developing countries. However, in its initial phase only the Republic of Tanzania is included as host country. According to EB60, Annex 26, "The Board clarified that the boundary of the programme can be amended post-registration to include an additional Host Party". Therefore, further countries can be added after registration of the program.

Figure: Location of Host Party (Republic of Tanzania)

A.4.1.2. Physical/ Geographical boundary:

Definition of the boundary for the PoA in terms of a geographical area (e.g. municipality, region within a country, country or several countries) within which all micro-scale programme activities (VPAs) included in the PoA will be implemented, taking into consideration the requirement that all applicable national and/or sectoral policies and regulations of each host country within that chosen boundary.

The boundary of this PoA is defined as the geographical area within which all the micro-scale GS VER Program Activities (VPAs) included in this PoA will be implemented. The geographical boundary of the PoA will be the national boundaries of all the host country states listed in section A.4.1.1.

The boundary for each micro-scale VPA includes the physical, geographical sites of the low greenhouse gas emitting technologies for water purification installed by the project activity and the household/institutional buildings where the consumers of safe water provided by the systems are located.

The physical boundary of each micro-scale VPA will be defined in each VPA-DD.

A.4.2. Description of typical micro-scale programme activity(ies):

A typical micro-scale programme activity will involve (i) the distribution or sales of household water treatment products, (ii) the installation of water treatment units at water points or (iii) the installation or repair of non-fossil fuel driven borehole pumps. For all project activities hygiene promotion campaigns will be carried out to prevent contamination of the water source and recontamination of water during transport and storage.

The goal of the programme activity is to improve the drinking water quality at household level and thus to replace the need of boiling drinking water. Carbon credits can be claimed for households that are currently using fossil fuel or non-renewable biomass[4] for boiling water and for households without access to safe drinking water (suppressed demand). The interventions will be carried out through a local implementer of the project activity. The project activity implementer will monitor the number of units sold, installed or constructed, and the quantity of safe water provided to end users. The project implementer will also keep track of the sustainable development indicators and provide ongoing support to customers.

South Pole will be responsible for capacity building of the project activity implementer thereby ensuring proper operation and implementation of the project activity.

[4] Eligible fuels are limited to firewood, charcoal, LPG and kerosene

South Pole and the local project activity implementer will together define areas of intervention. The micro-scale project activity will only be implemented in host countries included in this programme and each VPA is limited by the micro-scale threshold of 10,000 tCO_2e. A central database with unique identification for every unit sold, installed or constructed will ensure that no double counting occurs.

A.4.2.1. First technology or practice to be employed in the PoA and the eligibility criteria for inclusion of the technology or practice in the PoA:

In this micro-scale programme of activities safe water technology is employed providing safe drinking water at household level and thus replace the need of boiling drinking water. The technology employed in this programme does not lead to greenhouse gas emissions.

Examples of the safe water technology are household water filters (ceramic pot or candle filters, biosand filters, membrane filters), solar disinfection methods (SODIS, Solvatten, WADI®), household chlorination products (WaterGuard™, NaDCC tablets), chlorine dispensers at water point level, water treatment at kiosk level (UV-disinfection, chlorination, membrane filtration) and borehole pumps (not fossil fuel driven) and their repair/maintenance/operation. The same baseline and project emission calculations apply for all types of safe water technology.

South Pole Carbon Asset Management Ltd, as the PoA coordinating entity, shall verify that eligibility conditions are met before allowing a micro-scale project activity to be included under this micro-scale PoA. The eligibility criteria for the inclusion of a project activity in this micro-scale PoA, which shall be stated and confirmed in each micro-scale scheme project design document, are as follows:

No.	Eligibility criteria		Means of proof	Confirmation
	Description	Conditions to be met		
1.	Boundary and location of the project activity	The project activity is located within the boundary of one of the host parties listed in section A.4.1.1.	Location and boundary is defined in the specific VPA-DD.	Yes/No
2.	Micro-scale limit for VPAs	The aggregated annual emission reductions for all systems involved shall be not greater than 10,000 tCO_2e.	In case a VPA exceeds the applicable limit, the claimable emission reduction shall be capped at 10,000 tCO_2e.	Yes/No

3.	Technology	A safe water technology is employed, e.g. household water filter, solar disinfection, HH chlorination products, chlorine dispensers, water kiosks, borehole pumps.	Technology description in the VPA-DD.	Yes/No
4.	Avoiding double counting	The project activity includes a means of uniquely identifying each unit (sold, installed or constructed) or its users.	A unique identification number or other means of unique identification. Database and/or distribution record showing the unit location along with the ID.	Yes/No
5.	Fuel usage	The water treatment technology does not involve consumption of fossil fuel (this does not refer to life cycle emissions such as upstream emissions associated with the production or delivery of the technology)	Description provided in the project activity design document.	Yes/No
6.	Place of installation	The safe water technology is installed in households, at water points, commercial premises or institutional premises.	Description provided in the project activity design document.	Yes/No
7.	Distance of water from households	The water in its improved form shall be made available within 1 km distance from the benefitting households.	Description provided in the project activity design document.	Yes/No

8.	Project activity crediting period does not exceed micro-scale PoA life	The duration of the crediting period of each project activity to be included in the micro-scale PoA shall not exceed the end date of the registered micro-scale PoA.	Each VPA-DD shall indicate the duration of the project activity crediting period, either for a single 10 year crediting period or a 7 year renewable crediting period. The final date for which ERs can be credited shall be no later than 28 years after the date of registration of the micro-scale PoA.	Yes/No
9.	Additionality	The project activity needs to meet following criteria (see section A.4.3.): a. The water purification system or product installed in each household or community is operating as an independent subsystem b. The users of the water purification system or product are either households or communities c. Each individual appliance achieves emissions reductions of equal to or less than 600 tCO_2 per year.	The VPA-DD shall demonstrate the emissions reduction capacity of each independent subsystem at household or community level.	Yes/No

10.	Local Stakeholder Consultation	LSC needs to be carried out, either for a single VPA or for a group of VPAs. In case of a grouped LSC, the following conditions need to be fulfilled: i) same host country, ii) same technology iii) similar distribution mechanism shall be employed. VPAs implementation shall start within 3 years from the date of grouped LSC approval.	The VPA shall demonstrate that a LSC was conducted. In case of a grouped LSC, it shall be demonstrated that all three conditions are met and that the start date of the VPA is maximal 3 years after the date of grouped LSC approval.	Yes/No

A.4.2.2. Second technology or practice to be employed in the PoA and the eligibility criteria for inclusion of the technology or practice in the PoA:

Not Applicable

A.4.3. Description of how the anthropogenic emissions of GHG by sources are reduced by the technology or practice below those that would have occurred in the absence of the registered PoA (assessment and demonstration of additionality):

The following shall be demonstrated here:

(i) The proposed PoA is a voluntary coordinated action;

The coordinating/managing entity is South Pole Carbon Asset Management Ltd. It does not have any legal or other obligations to further the spread of water purification technologies. The PoA is not implementing a mandatory policy/regulation. Therefore all its activities are undertaken purely voluntarily.

(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;

The voluntary coordinated action would not be implemented in the absence of the PoA.

According to the Guideline of "Demonstrating additionality of microscale project activities", Version 05.0[5], all the project activities under this proposed PoA meet the criteria (c): *"Type III: other project activities not included in Type I or Type II that aim to achieve GHG emissions reductions at a scale of no more than 20 kt CO_2e per year"*, as each project activity under this PoA is limited by the micro-scale threshold of 10,000 tCO_2e.

Based on the requirement from paragraph 10 of the same Guideline, Type III project activities that aim to achieve emission reductions at a scale of no more than 20 $ktCO_2e$ per year are additional if any one of the following conditions is satisfied:

a. *The geographic location of the project activity is an LDC/SIDS or SUZ of the host country as identified by the government in accordance with the paragraph 8(a)(i) above;*
b. *The project activity is an emission reduction activity with both conditions (i) and (ii) below satisfied:*
   (i) *Each of the independent subsystems/measures in the project activity achieves an estimated annual emission reduction equal to or less than 600 tCO2e per year; and*
   (ii) *End users of the subsystems or measures are households/communities/SMEs.*

All project activities under this PoA will be implemented within the geographical boundaries of the developing countries outlined in Section A.4.1.1. For these activities, each of the individual appliances will achieve annual emission reductions equal to or less than 600 tCO_2, and each users of the subsystems or measures are households and/or communities, so condition (b) is satisfied and the corresponding VPAs can be deemed additional.

In order to demonstrate compliance with these conditions for a VPA, the following will be checked via the eligibility criteria defined in section A.4.2.1 in the respective VPA-DD:

- VPAs are located in one of the developing countries listed in section A.4.1.1.
- The water purification system or product installed in each household or community is operating as an independent subsystem
- The users of the water purification system or product are either households or communities
- Each individual appliance achieves emissions reductions of equal to or less than 600 tCO_2 per year

Verifiable evidence will be provided for each of the above criteria to confirm compliance.

(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;

[5] http://cdm.unfccc.int/filestorage/j/t/RQWC4U9O0D3MYLBV6SAPEX8J12I7FK.pdf/eb73_repan13.pdf?t=ZEZ8bmNldmtpfDDY3onPytCJHyC-mtvUsJwm

The PoA is not implementing any mandatory policy/regulation. There are no laws in the included countries (see A.4.1.1) requiring using safe water technology.

(iv) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.

No mandatory policy/regulation is enforced. There are no laws in the included countries (see A.4.1.1) using safe water technology.

A.4.4. Operational, management and monitoring plan for the programme of activities (PoA):

A.4.4.1. Operational and management plan:

Steps 1 - 6 describe the procedures for the implementation of the water quality intervention and steps 7 - 11 describe the procedures for the monitoring of emissions reductions.

Project implementation

1. The CME will coordinate the activities to be undertaken by each VPA implementer involved in the micro-scale PoA. As part of the inclusion of a VPA under the micro-scale PoA, a legally-binding contractual agreement will be signed by the VPA implementer and the CME. Under the agreement, the roles and responsibilities of the CME and the VPA implementer will be clearly spelled out. Further, the VPA implementer will ascribe its activity to the micro-scale PoA as part of entering into this agreement. Any parties that the VPA implementer may contract will also be required to enter into a contractual agreement, similarly ascribing their activities to the micro-scale PoA. Suitable training will be conducted for VPA implementers taking part in new VPAs to make them aware of the GS rules and procedures with respect to micro-scale PoA and their requirements in terms of distribution and data collection. The agreement will also define carbon ownership rights.

2. The VPA implementer is responsible to keep records of all unique identification numbers (or other means of unique identification) in a central database. This will enable cross-checking of the individual units claimed to have been sold, distributed or constructed by each implementer as part of the micro-scale PoA, thus helping to avoid double counting and improve accountability.

3. The VPA implementer will be responsible for the sales, distribution or implementation of the project technology. Safe water will be made available to end users by the VPA implementer directly or via retailers, agents or other third parties that are sub-contracted by the VPA implementer. Any such third parties will be trained by the VPA implementer who will be responsible for ensuring correct procedures according to the micro-scale PoA are fulfilled, as will be required of the VPA implementer by its agreement with the CME.

4. During the distribution/implementation itself, each VPA implementer shall make sure that necessary data is correctly obtained from the customer/beneficiary and recorded in a central database (e.g. Excel file), firstly to avoid double counting and secondly to enable tracking of all units for monitoring purposes.

5. The VPA implementer is responsible for ensuring that the data contained in the database is provided in the correct format, and is complete and accurate.

6. The CME will perform cross-checks on the information received from each VPA implementer. The CME will be responsible for maintaining a secure database, covering the VPAs within the micro-scale PoA. The unique identification number linked to each unit and a unique VPA ID number eliminates any risk of double-counting within and between VPAs.

Procedures for the monitoring of emissions reductions

7. The CME will coordinate all ex-post monitoring activities in the micro-scale PoA. It will be responsible to ensure good quality of data obtained and use this data for emissions reduction calculations. However, the actual field measurements to be conducted during monitoring will most likely be performed by the project implementer or an assigned third party. The detailed monitoring plan will be provided at VPA-level.

8. Monitoring activities will involve selecting a sample of households (or water points) from the micro-scale PoA database and visiting them to monitor the required parameters as part of the PoA.

9. During monitoring, the individuals carrying out the monitoring activities (either the VPA implementer or a third party) on behalf of the CME will follow the instructions provided during training, to check and record the monitoring parameters.

10. The CME will perform cross-checks on the data provided from monitoring. This data will be contained in a secure database and will be maintained by the CME.

11. The database will provide the necessary data for emissions reduction calculations and provide the outputs which will form the basis of the Monitoring Report to be produced by the CME at the end of each monitoring period. The data will be made available to the DOE during verification.

A.4.5. Public funding of the programme of activities (PoA):

An ODA declaration form will be provided for each VPA-DD.

SECTION B. Duration of the micro-scale programme of activities (PoA)

B.1. Starting date of the programme of activities (PoA):

23/01/2015

B.2. Length of the programme of activities (PoA):

4 x 7 years = 28 years

SECTION C. Stakeholders' comments

C.1. Summary of stakeholder comments on the PoA design:

Please see the 'PoA Design Consultation Report' for a full report on stakeholder comments on the design of the PoA.

C.2. Please indicate the level at which local stakeholder consultation is conducted. Justify the choice:

1. Local stakeholder consultation is done at PoA level ☐
2. Local stakeholder consultation is done at VPA level ☑

VPAs will eventually be realized in several host countries and different areas within the same host country. Therefore, it is justifiable (and preferable) to conduct the local stakeholder consultation at the VPA level, in order to include opinions and comments of those in the immediate project area about the specific project design. A grouped LSC may be organized for multiple VPAs if this can be justified.

C.3. Brief description how comments by local stakeholders have been invited and compiled:

Not applicable (LSC conducted at VPA level)

C.4. Summary of the comments received:

Not applicable (LSC conducted at VPA level)

C.5. Report on how due account was taken of any comments received and on measures taken to address concerns raised:

Not applicable (LSC conducted at VPA level)

C.6. Discussion on continuous input/grievance mechanism:

Not applicable (LSC and discussion on continuous input/grievance mechanism conducted at VPA level)

C.7. Report on stakeholder consultation feedback round at the PoA level:

Not applicable (LSC and stakeholder feedback round conducted at VPA level)

SECTION D. Application of an existing baseline and monitoring methodology or of a new methodology submitted as part of this micro-programme of activities

D.1. Title and reference of an approved baseline and monitoring methodology, or full description of a new methodology, applied to technologies or practices included in the PoA:

"Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 02 – 24/04/2015"[6] (Gold Standard methodology)

[6] http://www.goldstandard.org/wp-content/uploads/2011/10/GS_110411_TPDDTEC_Methodology.pdf

D.1.1 Justification of the choice of the methodology and why it is applicable to a considered technology or practice (s):

The Gold Standard methodology TPDDTEC version 02.

Methodology Applicability requirement	This micro-scale PoA justification
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 activities under this micro-scale PoA include safe water supply and treatment technology that displace water boiling. The targeted end users of the technology are households and/or communities, who would use fossil fuel or non-renewable biomass to boil water as a mean of water purification method in the absence of this PoA.
The project boundary can 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). Project proponents must have a survey mechanism in place together with appropriate mitigation measures so as to prevent double-counting in case of another similar activity with some of the target area in common.	The project boundary can be clearly identified and will be defined in each VPA-DD. The boundary of the PoA is defined as the geographical area within which all the micro-scale VPAs included in this PoA will be implemented. The boundary for each micro-scale VPA includes the physical, geographical sites of the safe water supply and treatment technologies installed by the project activity. The technology will only be implemented in host countries included in the PoA, and a central database with unique identification numbers for every unit sold, installed or constructed will ensure that no double counting occurs.
Only end users that boil water or are currently using unsafe water are eligible for crediting. The baseline scenario is the existing practice of treating water for consumption by boiling using high emission fuels including non-renewable biomass and fossil fuels. Suppressed demand can be applied in instances where inadequate safe water is available or where treatment is not practiced.	In the baseline scenario, parts of the households are currently using fossil fuel (LPG or kerosene) or non-renewable biomass (firewood or charcoal) for boiling water, and parts of the households have no access to safe drinking water (suppressed demand).

The technologies each have continuous useful energy outputs of less than 150kW per unit (defined 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 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.	All types of safe water technology included in this PoA will not deliver any thermal energy in the project scenario but only seek to displace the use of high emission fuels including non-renewable biomass and fossil fuels for boiling water in the baseline scenario. The useful energy output per single unit in the baseline scenario is less than 150kW.
The use of the baseline technology as a 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, 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, corresponding emissions must of course be accounted for as part of the project emissions.	The baseline technology identified is the use of fossil fuel or non-renewable biomass for boiling water. The ratio of households that are still boiling drinking water in the project scenario will monitored and accounted for to calculate the fuel consumption and the corresponding project emissions thereon.

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. This must be communicated to the technology producers and the retailers of the improved technology or the renewable fuel in use in the project situation 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 notified that they cannot claim for emission reductions from the project.	Contracts will be signed between all project participants and CME, within which the ownership rights and selling rights of the emission reductions resulting from this PoA will be clearly defined (CME will have the ownership and selling rights of the emission reductions of this PoA).
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.	No biomass feedstock will be used in the project situation.

D.1.2 Justification of the choice of the methodology and why it is applicable to another considered technology or practice:

Not applicable

D.2. Title and reference of another approved baseline and monitoring methodology, or full description of a new methodology, applied to technologies or practices included in the PoA:

Not applicable

D.2.1 Justification of the choice of the methodology and why it is applicable to a considered technology or practice:

Not applicable

D.2.2 Justification of the choice of the methodology and why it is applicable to another considered technology or practice:

Not applicable

D.3. Description of the sources and gases included in the VPA (s) boundary

D.3.1 Description of the sources and gases included in the technology or practice boundary

The project boundary is the geographical area where the safe water technology is in use.

The table below illustrates the GHG emissions sources included:

	Source	Gas	Included?	Justification / Explanation
Baseline	Combustion of fossil fuel or non-renewable biomass for boiling water	CO_2	Yes	Important source of emissions
		CH_4	No	Minor emissions
		N_2O	No	Minor emissions
Project	Combustion of fossil fuel or non-renewable biomass for boiling water	CO_2	Yes	Important source of emissions
		CH_4	No	Minor emissions
		N_2O	No	Minor emissions

D.4. Description of how the baseline scenario is identified and description of the identified baseline scenario for technology(ies) or practice(s):

D.4.1 Description of how the baseline scenario is identified and description of the identified baseline scenario for each type of technology or practice:

According to the applied GS methodology, a baseline is defined by the typical baseline fuel consumption patterns in the population that is targeted for adoption of the project technology.

Irrespective of the type of safe water technology implemented, the baseline scenario is identified at VPA level using the following baseline studies:

a. Baseline Non-Renewable Biomass (NRB) Assessment

As woody biomass is one of the baseline fuels (firewood and charcoal), the fractional non-renewability of biomass needs to be established. If available, a national value shall be applied. The table below summarized default values provided by the CDM executive board and endorsed by the DNA of the host country. Alternatively the f_{NRB} shall be assessed based on Section II.4.A and appropriate annex in the applied methodology.

Country	Default value for f_{NRB}	Data source
Tanzania	96%	EB 67 Report Annex 22 Page 1

b. Baseline Water Boiling Test

The 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 (at a rolling boil) using technologies and fuels representative of the baseline scenario ($W_{b,y}$). The BWBT should be conducted using the 90/30 rule for selection of samples, accounting for variability in the types of prevalent baseline technologies (the endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean).

The BWBT may be performed ex ante or as part of the first monitoring survey.

Monitoring surveys will assess the prevalence of water boiling technologies in the project scenario and the BWBT will be repeated in case significant changes of the water boiling technologies can be observed.

c. Baseline Access to Safe Drinking Water (C_j, X_{boil})

According to the methodology TPDDTEC version 02 the principles of suppressed demand can be applied to safe water shortages. Purifying water normally requires users to collect or purchase biomass fuel and boil water for 10 minutes. In circumstances, energy poverty barriers result in less than the minimum required amount of potable water. To account for this suppressed demand, the baseline scenario can be defined on the bases on the quantity of safe water used in the project scenario. This water quantity is calculated based on all activities where the use of contaminated water would imply a

health or livelihood risk. Default values as presented in the applied methodology (page 39) for the volume of safe water that would provide the premises with satisfactory level of service.

The portion of users of the project technology who in the baseline were already consuming safe water without boiling it (C_j) needs to be established and the emission reduction calculation needs to be adjusted accordingly. C_j is assessed during the baseline survey by

a. collecting drinking water samples at household level and conduct an E.coli test (samples showing less than 1 CFU E.Coli per 100 ml shall be considered as 'safe'); or

b. establishing the number of households collecting water from an improved water source and/or using an adequate household water treatment method.

Premises with a piped water supply can also be excluded from the C_j factor when it can be demonstrated that the piped water supply in not a clean water source. Water quality testing shall be carried out over a representative period of time or by referring to relevant third party studies in the target area. Premises with a piped water supply that boil water or would have boiled water (suppressed demand situation) in the baseline situation are eligible and can be included in the calculation of baseline emissions from boiling water.

In addition, for households under suppressed demand it needs to be assessed if they would have used other non-GHG emitting water treatment (like chlorine) in the absence of the project activity. This parameter (X_{boil}) is established by

a. asking households not currently boiling their drinking water (in the baseline survey) whether they would have chosen to boil their drinking water if they had enough time and/or money

b. using the fraction of households that report to boil to households that report to use non-GHG emitting water treatment in the baseline situation.

The baseline survey requires in person interviews with a robust sample of end users without project technologies that are representative of end users targeted in the project activity. A baseline report will be produced, which gives full details of the baseline studies for each VPA.

Following the guidelines below regarding minimum sample size:

Group size < 300: Minimum sample size 30 or population size, whichever is smaller
Group size 300 to 1000: Minimum sample size 10% of group size
Group size > 1000: Minimum sample size 100

d. <u>Target Population Characteristics</u>

The type of fuel and technology used for water treatment in the baseline scenario may be performed ex ante combined with the baseline survey about access to safe drinking water including in person interviews with a robust sample of end users without project technologies that are representative

of end users targeted in the project activity. Alternatively, the target population characteristics are collected during project survey (PS), see Section D.6.1.

- Types of cook stoves and fuels used (Baseline or PS)
- Seasonal variations in water treatment technology and fuel use (Baseline or PS)

D.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the technology(ies) or practice(s) being included as registered PoA (assessment and demonstration of additionality of VPA):

D.5.1. Assessment and demonstration of additionality for a typical technology or practice:

As explained in section A.4.3, additionality of the PoA is demonstrated based on the requirements of the Guideline of "Demonstrating additionality of microscale project activities", Version 05.0, using the criteria (c): *"Type III: other project activities not included in Type I or Type II that aim to achieve GHG emissions reductions at a scale of no more than 20 kt CO_2e per year"*, as each project activity under this PoA is limited by the micro-scale threshold of 10,000 tCO_2e; and satisfying with the condition b. of paragraph 10 of the Guideline: *(i) Each of the independent subsystems/measures in the project activity achieves an estimated annual emission reduction equal to or less than 600 tCO_2e per year; and (ii) End users of the subsystems or measures are households/communities/SMEs*.

Therefore, in order to make the assessment of additionality, the project participants will conduct the following checks via the eligibility criteria defined in section A.4.2.1 in the respective VPA-DD:

- Each VPA is located in one of the developing countries listed in section A.4.1.1
- The water purification system or product installed in each household or community is operating as an independent subsystem
- The users of the water purification system or product are either households or communities
- Each individual appliance achieves emissions reductions of equal to or less than 600 tCO_2 per year

To be additional, each VPA will have to fulfill the criteria mentioned above.

D.5.2. Key criteria and data for assessing additionality of a technology or practice:

In order to demonstrate the additionality of a technology, some key criteria and data assessments should be carried out (see eligibility criteria "additionality" in section A.4.2.1):

	Criteria	Confirmation
1	Is the water purification system or product installed in each household or community operating as an independent subsystem?	Yes/No
2	Are the users of the safe water technology households or communities?	Yes/No
3	Are the annual emissions reductions of each individual appliance equal to or less than 600 tCO^2?	Yes/No

Any projects that fulfill all the conditions from the assessments above are additional.

D.6. Estimation of Emission reductions of technology(ies) or practice(s):

D.6.1. Explanation of methodological choices, provided in the baseline and monitoring methodology applied, selected for a technology or practice:

The adopted methodology is the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 02 – 24/04/2015". It is applicable since the project activity is to introduce a technology that reduce or displace greenhouse gas (GHG) emissions from the thermal energy consumption of households. The safe water supply or treatment method will be disseminated and emission reductions for each VPA will be calculated according to this methodology. Below is an outline of the methodological choices selected from the baseline and monitoring methodologies:

(i) Project Boundary

The project boundary will be defined at VPA level, but all project activities will be within the geographical boundaries outlined in Section A.4.1.1. The emission sources included in the project boundary are outlined in Section D.3.1.

(ii) Selection of Baseline Scenarios and Project Scenarios

Baseline Scenario

As per the methodology, the baseline scenario for this PoA is the existing practice of treating water for consumption by boiling using high emission fuels including non-renewable biomass and fossil fuels, and suppressed demand where only unsafe drinking water is available and no treatment is practiced.

Only end users that boil water or are currently using unsafe water are eligible for crediting.

Project Scenario

The project scenario is defined by the fuel consumption of end users within a target population that adopt a project technology. Emission reductions are credited by comparing fuel consumption in a project scenario to the applicable baseline scenario. For this proposed PoA, the project scenario is the introduction of a safe water supply or treatment method to remove the need for boiling water using fossil fuel or non-renewable biomass.

(iii) Additionality

This is a micro-scale PoA and additionality is demonstrated in accordance with the Guideline of "Demonstrating additionality of microscale project activities", Version 05.0 (see section A.4.3).

(iv) Baseline Emissions

For the fraction of non-renewable biomass (f_{NRB}) default values on national level will be used as specified in section D.4.

Suppressed demand, as per the methodology, will be defined on the basis of the quantity of safe water used in the project scenario for all purposes where contaminated water would imply a health or livelihood risk (consumption of unsafe water in the baseline scenario). This is measured in the project scenario (after the introduction of the safe water supply technology) as the sum of the amount of safe water supplied and the amount of raw water still boiled. This represents the amount of safe water that would provide households with a satisfactory level of service.

Quantities of fuel consumed in the baseline scenarios can be derived from the statistical analysis of the data collected from the baseline water boiling test (see Section D.4.1).

The calculations used to determine baseline emissions are shown in Section D.6.2.

(v) Project Emissions

The project proponent must conduct project studies for each clean water project scenario prior to verifying emission reductions associated with the given project scenario. This approach uses ex-post project studies from which fuel consumption in the baseline scenario is back-calculated.

The on-going monitoring studies shall also ensure that parameters used in the baseline scenario are still up to date.

An accurate and complete record is maintained about the safe water units sold, distributed or installed. The records are backed up electronically.

The record shall contain:

a. Date of sale, distribution or installation
b. Geographical area
c. Model/type of project technology sold, distributed or installed
d. Quantity of project technologies sold, distributed or installed
e. Name, telephone number (if available) and address of end users. Except in cases where this is justified as not feasible (e.g. water filters sold in market stalls or shops where the retailer cannot reasonably be expected to collect customers' names and addressed during busy times). In such cases the number of names/telephone numbers/addresses collected must be as many as commensurate with representative sampling, i.e. the number records shall be large enough so that surveys and tests can be based on representative, purely randomly selected samples. In all cases this should not be less than 10 times the survey and field test sample size in order to ensure an adequate end user pool to which random sampling can be applied.
f. Mode of use: domestic, commercial, or other

All records are compiled in a project database. The differentiation of the project database into sections is based on the results of the applicable monitoring studies for each project scenario, in order that ER calculations can be conducted appropriately section by section.

The annually conducted monitoring survey contains the water consumption field test, the usage survey and the water quality survey. The monitoring survey also assesses key parameters of the end users characteristics. In case of significant changes the BWBT and NRB assessment will be repeated.

The sampling approach taken to conduct the monitoring survey must in any case be such that:

- it is transparent and can easily be replicated,
- it is evidently conservative,
- the sample is randomly selected so as to not introduce a material bias,
- and the impact of daily and seasonal variations is accounted for.

Any sampling methods can be used, provided that the sample is selected randomly. If sampling approach other than simple random sampling is applied, '*Guidelines for sampling and survey for CDM project activities and program of activities*' must be followed.

The project proponent must conduct the following project studies for each project scenario:

a. Target Population Characteristics

Household interviews with a representative sample of targeted end users will provide information on target population characteristics, baseline technology use, fuel consumption and sustainable development indicators. Project survey (PS) of end user characteristics are conducted with end users representative of the project scenario target population and currently using the safe water project technology.

The interviews are designed to capture the target population characteristics listed below. The questions should be asked twice, first in regards 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 methods and boiling technologies.

The type of fuel and technology used for water treatment in the baseline scenario may be performed ex ante combined with the baseline survey about access to safe drinking water (see Section D4.1) including in person interviews with a robust sample of end users without project technologies that are representative of end users targeted in the project activity.

- Name, address and phone number (PS)
- Number of people served by the technology (PS)
- Estimated frequency of boiling drinking water (PS)
- Types of cook stoves and fuels used (Baseline or PS)
- Seasonal variations in water treatment technology and fuel use (Baseline or PS)

Following the guidelines below regarding minimum sample size:

Group size < 300: Minimum sample size 30 or population size, whichever is smaller
Group size 300 to 1000: Minimum sample size 10% of group size
Group size > 1000: Minimum sample size 100

b. Project Non-Renewable Biomass (NRB) Assessment

As woody biomass is one of the baseline fuels (firewood and charcoal), the fractional non-renewability of biomass needs to be established. If available, a national value shall be applied. The table below summarized default values provided by the CDM executive board and endorsed by the DNA of the host country. Alternatively the f_{NRB} shall be assessed based on Section II.4.A and appropriate annex in the applied methodology.

Country	**Default value for f_{NRB}**	**Data source**
Tanzania	96%	EB 67 Report Annex 22 Page 1

c. Baseline Water Boiling Test (BWBT)

The 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 (at a rolling boil) using technologies and fuels representative of the baseline scenario ($W_{b,y}$). The BWBT should be conducted using the 90/30 rule for selection of samples, accounting for variability in the types of prevalent baseline technologies (the endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean).

The BWBT may be performed ex ante or as part of the first monitoring survey.

Monitoring surveys will assess the prevalence of water boiling technologies in the project scenario and the BWBT will be repeated in case significant changes of the water boiling technologies can be observed.

d. Water Consumption Field Test (WCFT)

The water consumption field test (WCFT) is conducted with end users representative of the project target population and currently using the project technology. Default values will be applied for ($Q_{p,y}$ + $Q_{p,rawboil,y}$), see Section 6.2. Thus, in the WCFT only $Q_{p,rawboil,y}$ and $Q_{p,cleanboil,y}$ need to be established.

$Q_{p,rawboil,y}$	Quantity of raw or unsafe water boiled in the project scenario p per person per day
$Q_{p,cleanboil,y}$	Quantity of safe (treated, or from safe supply) water boiled in the project scenario p per person per day

The volume of drinking water still boiled in the project scenario must be measured with a representative sample of end users under the project scenario. As under this PoA a baseline default factor is used, a single sample test is conducted.

Two valid options are allowed for the statistical analysis. In all cases, the sample size must be greater than 20:

a. 90/30 rule. When the sample sizes are large enough to satisfy the “90/30 rule”, i.e. the endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean, overall emission reductions can be calculated on the basis on the estimated MEAN annual volume of drinking water still boiled during the project scenario.

b. 90% confidence rule. When the sample size is such that the “90/30 rule” is not complied with, the result used for the amount of drinking water sill boiled during the project scenario 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).

e. Usage Survey

A usage survey is completed at least annually, and in all cases on time for any requires of issuance. The usage survey provides a single usage parameter that is weighted based on drop off rates that are representative of the age distribution for project technologies in the total sales/distribution/installation 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 (age_{0-1}) are being credited, a usage parameter must be established through a usage survey for technologies age_{0-1}. If an equal number of technologies in the first year of use (age_{0-1}) and second year of use (age_{1-2}) are credited, a usage parameter is required that is weighted to be equally representative of drop off rates for technologies age_{0-1} and age_{1-2}. To ensure conservativeness, the usage survey with technoloiges in the first year of use (age_{0-1}) must have technologies that have been in use on average longer than 0.5 years. For technologies in the second year of use (age_{1-2}), the usage survey must be conducted with technologies that have been in use on average at least 1.5 years, and so on.

The minimum total sample size is 100, with at least 30 samples for project technologies of each age being credited. The majority of interviews in a usage survey 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.

f. Water Quality Testing

Water quality must be tested every quarter, with the first test within 6 month of the started project start date. In addition, water quality is tested at least once during seasons where there is a high chance of contamination, for example, the rainy season. Local non-accredited laboratories can do the quarterly water quality testing. If accredited laboratory results differ materially from non-accredited laboratory results, testing with the aberrant non-accredited laboratory must be discontinued. If local labs conduct the testing, the testing protocol should be provided to the DOE for validation. An IDEXX presence/absence test in 100 ml for E. Coli conducted by the project proponent shall be accepted as a test by an accredited laboratory. The easy to use IDEXX tests are recognized in most developed countries and provide reliable results for determining the presence of less than Colony Forming Unit (CFU) of E. Coli /100 ml.[7]

[7] https://www.idexx.com/pdf/en_us/water/water-acceptances-worldwide.pdf

Tanzania. The 'National Environmental Standards Compendium' issued by the Tanzanian Bureau of Standards[8] does only specify the water quality requirements for drinking water distributed in the food industry, domestic and catering purposes, and for community piped water supplies. The standard does not apply for water treated with household water treatment methods or supplied at point-sources such as boreholes. Thus, the water quality standard provided in the TPDDTEC methodology (ver02) is applied: < 1 Colony Forming Unit (CFU) of E. Coli /100 ml. For 'point of use' water treatment methods such as water filters, the quality testing shall be done at the water outlet (i.e. after treatment). For boreholes and chlorine dispensers, testing shall be done for samples collected at the source. Water supplied by water kiosks fall under the 'National Environmental Standards Compendium' issued by the Tanzanian Bureau of Standards. Compliance with National guidelines will be specified at VPA level.

The 90/10 confidence/precision rule must be followed in calculating the annual sample size required for testing water quality. The required water quality tests shall be equally distributed over the quarterly (or more frequent) water quality surveys.

g. Hygiene Campaigns

The activities related to the mandatory hygiene campaigns must be reported each year in the annual monitoring report. Any major changes in the health status of the water users as a result of contaminated water (e.g. an outbreak of water related disease) must be reported and, if relevant, a strategy put in place to address it through the hygiene campaign. The detailed method used to assess hygienic handling of clean water must be provided with the VPA-DD and validated by the DOE. The details of the method should be adjusted to suit circumstances of each project and also to suit learning year to year.

(vi) Leakage

The potential sources of leakage listed in the methodology are investigated and addressed below:

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. The scenarios replaced are using NRB or fossil fuel for boiling water, or using unsafe water directly. These actions are not a product and cannot be 'reused' somewhere else.

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

[8] http://www.tzdpg.or.tz/fileadmin/_migrated/content_uploads/National_Environmental_Standards_Compendium.pdf

It is very unlikely that users of a 'zero emission' technology (in the baseline scenario) would switch to boiling drinking water because another 'zero emission' technology is promoted.

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.

The project will have no influence on the national default NRB fractions commonly used in CDM or VER project activities.

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.

It is unlikely that households would keep boiling their drinking water in order to heat their houses. Any compensation will, however, be covered in the results of the water consumption field test (WCFT) and thus there is no need to assess this separately.

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.

The recipients of water technology products use NRB/fossil fuel or use unsafe water directly. The only scenario producing this leakage would be a recipient reducing use of renewable fuels such as crop residues. As the project activities promote 'zero emission technologies', the substitution would not have any effect on the total emission reductions.

In accordance with the methodology, leakage risks deemed very low can be ignored. As explored above, leakage in this project is expected to be 0.

Leakage will be investigated every two years as part of the monitoring.

(vii) Calculation of Emission Reductions

The equations used in the calculations are outlined in Section D.6.2 below.

D.6.2. Equations, including fixed parametric values, to be used for calculation of emission reductions of a technology or practice:

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

Quantities of fuel consumed in the baseline and project scenarios ($B_{b,y}$ and $B_{p,y}$ respectively) are calculated by multiplying the safe water consumption of end users observed in the project scenario by the amount of fuel required to boil a specific quantity of water.

Baseline Scenario Fuel Consumption Calculation

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

Where:

$B_{b,y}$	Quantity of fuel f consumed in baseline scenario b during the year y in kilograms	
X_{boil}	Expressed as a percentage, this is the proportion of users of the project technology that would have used other non-GHG water treatment (like chlorine) in the absence of the project technology. This parameter is only applied for premises that are under suppressed demand situation (see section D.4.1.)	
C_j	Expressed as a percentage, this is the proportion of users of the project technology that in the baseline were already consuming safe water without boiling it (see section D.4.1.)	
$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y	
$W_{fuel,b,y}$	Quantity of fuel f (in kilograms) required to treat 1 litre of water using technologies representative of baseline scenario b in year y as per Baseline Water Boiling Test. This parameter should be updated whenever new water boiling technologies are introduced over time.	
$Q_{p,y}$	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day in year y.	$Q_{p,y} + Q_{p,rawboil,y}$ Default values will be used: - 4 L/person/day (full-day premises) - 7 L/person/day (boarding school) - 3 L/person/day (half-day premises) See methodology page 39.
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day.	

Project Scenario Fuel Consumption Calculation

$$B_{fuel,p,y} = (1 - C_j) * N_{p,y} * W_{fuel,p,y} * (Q_{p,rawboil,y} + Q_{p,cleanboil,y}) \quad (2)$$

Where:

$B_{fuel,p,y}$	Quantity of fuel f consumed in project scenario p during the year y in kilograms
C_j	Expressed as a percentage, this is the portion of users of the project technology who in the baseline were already consuming safe water without boiling it (see section C.4.1.)
$N_{p,y}$	Number of person.days consuming water supplied by project scenario p through year y
$W_{fuel,p,y}$	Quantity of fuel f (in kilograms) required to treat 1 litre of water using technologies representative of project scenario p in year y as per Baseline Water Boiling Test. This parameter should be updated whenever new water boiling technologies are introduced over time.
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day in year y as established in the Water Consumption Field Test (WCFT)
$Q_{p,cleanboil,y}$	Quantity of safe water boiled in the project scenario p per person per day in year y as established in the Water Consumption Field Test (WCFT)

Emission Reductions

$$BE_{fuel,b,y} = B_{fuel,b,y} * f_{NRB} * EF_{fuel,CO2} * NCV_{fuel} \quad (3)$$

$$PE_{fuel,p,y} = B_{fuel,p,y} * f_{NRB} * EF_{fuel,CO2} * NCV_{fuel} \quad (4)$$

Where:

$BE_{fuel,b,y}$	Emissions for baseline scenario b during year y in tCO_2e
$PE_{fuel,p,y}$	Emissions for project scenario p during year y in tCO_2e
f_{NRB}	Fraction of biomass used that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
$EF_{fuel,CO2}$	CO_2 emission factor of the fuel that is substituted or reduced [9]
NCV_{fuel}	Net calorific value of the fuel that is substituted or reduced

[9] Non-CO_2 emissions ($EF_{fuel,nonCO2}$) are not considered under this PoA. This leads to a more conservative estimate of the total ERs.

The overall GHG reductions are calculated as follows:

$$ER_y = (\sum BE_{fuel,b,y} - \sum PE_{fuel,p,y}) * U_{p,y} * TWQ_y - \sum LE_{p,y} \quad (5)$$

whereas fuel = firewood, charcoal, LPG and kerosene

Where:

$U_{p,y}$	Cumulative usage rate for technologies in project scenario p during year y
TWQ_y	Treated water quality, percentage of safe water provided by project technology
$LE_{p,y}$	Leakage from project scenario p in year y (tCO_2e/yr)

D.6.3. Data and parameters that are to be reported in VPA-DD form for a technology or practice:

Data / Parameter:	**C_j**
Data unit:	Percentage
Description:	Portion of users of project safe water supply who in the baseline (a) did not boil their drinking water and (b) had already access to safe drinking water.
Source of data used:	Baseline survey, or credible literature, studies, survey reports that are relevant to the project target area.
Value applied:	Specified in VPA-DD

Justification of the choice of data or description of measurement methods and procedures actually applied:	C_j = number of "no boilers" with safe drinking water / N All household that report to boil their drinking water more than 50% of the time throughout the year shall be considered to be "water boilers". The others shall be considered to be "no boilers". The percentage of "no boilers" that have access to safe water in the baseline scenario shall be determined by a. collecting drinking water samples at household level and conduct an E.coli test (samples showing less than 1 CFU E.Coli per 100 ml shall be considered as 'safe'); or b. establishing the number of households collecting water from an improved water source and/or using an adequate household water treatment method.
Any comment:	

Data / Parameter:	**X_{boil}**
Data unit:	Percentage
Description:	Percentage of premises that in the absence of the project activity would have used non-GHG emitting water treatment like chlorine treatment techniques.
Source of data used:	Survey
Value applied:	Specified in VPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied:	This parameter is established by: a. asking households not currently boiling their drinking water (in the baseline survey) whether they would have chosen to boil their drinking water if they had enough time and/or money, or b. using the fraction of households that report to boil and households that report to use non-GHG emitting water treatment in the baseline situation.
Any comment:	

Data / Parameter:	$W_{fuel,b,y}$, $W_{fuel,p,y}$
Data unit:	kg/L
Description:	Quantity of firewood, charcoal, kerosene and LPG required to boil 1 litre of water, using technologies representative of baseline scenario b during year y
Source of data used:	Baseline water boiling test (BWBT), either conducted freshly or as reported/ published in reliable literature relevant to project target population.
Value applied:	Specified in VPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied:	The BWBT follows the guidance in Annex 4 of the GS methodology and is conducted to calculate the quantity of fuel required to purify by boiling one litre of water for 10 minutes using technologies and fuels representative of the baseline scenario. The BWBT should be conducted using the 90/30 rule for selection of samples, accounting for variability in the types of prevalent baseline technologies and fuels.
Any comment:	Should be updated whenever new water boiling technologies are introduced over time.

Data / Parameter:	f_{NRB}
Data unit:	Percentage
Description:	Fraction of biomass used in year y that can be established as non-renewable biomass
Source of data used:	Default values as specified in D.4.1. Alternatively, the fraction of non-renewable biomass will be calculated according to one of the approaches outlined in Annex 1 of the GS methodology, and will be determined on a national level.
Value applied:	Specified in VPA-DD

Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	

Data / Parameter:	**$EF_{fuel,CO2}$**
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of fuels
Source of data used:	IPCC 2006 Vol 2 Chap 1 Table 1.4[10]
Value applied:	$EF_{firewood,CO2}$ = 112 tCO_2/TJ $EF_{charcoal,CO2}$ = 112 tCO_2/TJ $EF_{LPG,CO2}$ = 63.1 tCO_2/TJ $EF_{kerosene,CO2}$ = 71.9 tCO_2/TJ
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	

Data / Parameter:	**NCV_{fuel}**
Data unit:	TJ/kg
Description:	Net calorific value of the fuels used in the baseline
Source of data used:	IPCC 2006 Vol 2, Chap 1, Table 1.2[11]

[10] http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf

Value applied:	$NCV_{firewood}$ = 0.0000156 TJ/kg $NCV_{charcoal}$ = 0.0000295 TJ/kg NCV_{LPG} = 0.0000473 TJ/kg $NCV_{kerosene}$ = 0.0000438 TJ/kg
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	

D.7. Application of the monitoring methodology and description of the monitoring plan:

D.7.1. Data and parameters to be monitored by each technology or practice:

Data / Parameter:	**$Q_{p,y}$**
Data unit:	Liters per person per day (l/p/d)
Description:	Quantity of safe water supplied in the project scenario p during the year y, using the clean water supply technology for drinking water, hand washing and food washing.
Source of data to be used:	Default value for $Q_{p,y} + Q_{p,rawboil,y}$ (see methodology page 39)
Value of data applied for the purpose of calculating expected emission reductions:	4 L/person/day (full-day premises) 7 L/person/day (boarding school) 3 L/person/day (half-day premises)
QA/QC procedures to be applied:	

[11] http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf

Any comment:	

Data / Parameter:	**$Q_{p,rawboil,y}$**
Data unit:	Litres per person per day
Description:	Quantity of raw or unsafe water that is still boiled in the project scenario p, after installation of project technology
Source of data to be used:	Water consumption field test (WCFT)
Value of data applied for the purpose of calculating expected emission reductions	See VPA-DD
Description of measurement methods and procedures to be applied:	Water consumption field test (WCFT)
QA/QC procedures to be applied:	Transparent data analysis and reporting.
Any comment:	Default value of 4 Liter per person per day is applied for $Q_{p,y} + Q_{p,rawboil,y}$ in the baseline scenario.

Data / Parameter:	**$Q_{p,cleanboil,y}$**
Data unit:	Litres per person per 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 to be used:	Water consumption field test (WCFT)
Value of data applied for the purpose of calculating expected emission reductions	See VPA-DD

Description of measurement methods and procedures to be applied:	Water consumption field test (WCFT)
QA/QC procedures to be applied:	Transparent data analysis and reporting.
Any comment:	

Data / Parameter:	**TWQ** (Treated water quality)
Data unit:	Percentage
Description:	Proportion of treated water samples with less than 1 CFU E.Coli/100 ml.
Source of data to be used:	Water quality tests
Value of data applied for the purpose of calculating expected emission reductions	See VPA-DD
Description of measurement methods and procedures to be applied:	Water quality tests.
QA/QC procedures to be applied:	Transparent data analysis and reporting.
Any comment:	

Data / Parameter:	**$U_{p,y}$**
Data unit:	Percentage
Description:	Usage rate in project scenario p during year y

Source of data to be used:	Usage survey. Annual or more frequently, in all cases on time for any request for issuance.
Value of data applied for the purpose of calculating expected emission reductions	Specified in VPA-DD
Description of measurement methods and procedures to be applied:	A random sample of project technologies or their users (according to the project database) is visited. Usage and functionality shall be determined through interviews with end users and observations.
QA/QC procedures to be applied:	Transparent data analysis and reporting.
Any comment:	'Guidelines for carrying out usage surveys for projects implementing household water filtration technologies' need to be applied where applicable. In case of chlorination methods, water kiosks and borehole pumps, usage can by determined through direct observation (i.e. water meter readings, or volume of water that be treated with the chlorine solution sold/distributed). 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.

Data / Parameter:	**$N_{p,y}$**
Data unit:	person.days
Description:	Number of person.days consuming water supplied by project scenario p through year y
Source of data to be used:	Database of water supply and treatment technologies sold, installed or constructed
Value of data applied for the purpose of calculating expected emission reductions	Specified in VPA-DD

Description of measurement methods and procedures to be applied:	$N_{p,y}$ = # Units * # Users per unit * Monitoring period (in days) Data from distribution, sales, installation or construction records shall be entered in a central database (e.g. an Excel spreadsheet) and used as basis for the total number of units. The records shall include the number of users per unit.
QA/QC procedures to be applied:	Transparent data analysis and reporting.
Any comment:	

Data / Parameter:	**$LE_{p,y}$**
Data unit:	$t_{CO2}e$ per year
Description:	Leakage in project scenario p during year y
Source of data to be used:	Baseline and monitoring surveys
Value of data applied for the purpose of calculating expected emission reductions	See VPA-DD
Description of measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	**Hygiene campaigns**
Data unit:	

Description:	Hygiene campaigns carried out among project technology users
Source of data to be used:	Annual hygiene campaigns results
Value of data applied for the purpose of calculating expected emission reductions	
Description of measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	Transparent data analysis and reporting.
Any comment:	

D.7.2. Description of the monitoring plan for a technology(ies) or practice(s):

D.7.2.1 Description of the monitoring plan for a technology or practice:

The monitoring activities will involve data collection during distribution, installation and construction as well as post-implementation usage information. The data collected during distribution will involve information about the unique identification number, date of distribution, installation or construction, and the geographical location to enable unique identification of each unit and avoid double counting. This will form what is called the sales (or distribution, installation or construction) record. The CME will enter into a contract with the VPA implementer to implement the project activities, as well as carry out the related monitoring activities. The CME or through their associates will ensure that the project implementer is trained on how to capture the records and enter them in a central database.

The VPA implementer is fully responsible to ensure the correct distribution, installation or construction process and data gathering.

After project implementation, monitoring activities will involve selecting and visiting a sample of units from the central database:

- Check the amount of water still boiled for drinking water, hand washing and food washing
- Check the water quality
- Check the usage/functionality of the sold, distributed or constructed project technology
- Check if new water boiling technologies are introduced over time

The CME may undertake the actual monitoring activities itself or it may coordinate third parties contracted to undertake the actual monitoring activities. In the case of using contractors, it will be responsible for oversight and providing guidance and training to the parties involved.

The entity responsible for monitoring will ensure that the data collected for each monitoring period is provided to the CME. Either the originals or scanned copies of the data will be provided. The CME will maintain archives of the records and make these available during verification.

D.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

18/09/2015

Mr Lars Osterwalder & Ms Jane Duan
South Pole Carbon Asset Management Ltd.

Annex 1

CONTACT INFORMATION ON COORDINATING/MANAGING ENTITY and PARTICIPANTS IN THE MICRO - PROGRAMME of ACTIVITIES

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

An ODA declaration form will be provided in each VPA-DD.

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