PROGRAMME DESIGN DOCUMENT FOR PROGRAMMES OF ACTIVITIES

(UNFCCC VERSION 03.0)

"Utsil Naj – Casa saludable para todos"

Large-scale PoA

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PART I. Programme of activities (PoA)

SECTION A. General description of PoA

A.1 Title of the PoA

Utsil Naj – Casa saludable para todos

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A.2. Purpose and general description of the PoA

PoA objective:

The Utsil Naj large-scale Programme of activities, a MICROSOL voluntary initiative, has been designed as a multi-technology PoA for Latin America. It aims to disseminate technologies with strong social impacts to poor populations of the continent in order to improve their living conditions in a sustainable way.

Latin American context[1]:

- *Household air pollution*

Air pollution within the home endangers human health and harms the environment. The harmful emissions from the incomplete combustion of solid fuels to heat the home and cook can result in indoor concentrations of particulate matter and gases that are 60-fold higher than those in outdoor urban air pollution. Women and children, who spend the greatest amount of time in close proximity to the stove, are most exposed. Indoor air pollution is the third leading environmental risk factor for death and the second leading environmental risk factor for DALYs[2] in middle- and low-income countries in the Americas. Using the latest reliable data available up to December 2011, approximately 87 million people in Latin America and the Caribbean—15.2% of the Region's population and among them, the poorest in the Americas—burned biomass as their main fuel source.

Acute lower respiratory infections (ALRIs) are the leading cause of death in children under 5 years old in developing countries. If it continues unabated, the exposure to high concentrations of toxic, burnt-biomass particles in the Region may jeopardize the advances made in the Americas on chronic respiratory and cardiovascular diseases, may erode the gains attained in child survival, and may hinder efforts towards

[1] All the text comes from the WHO latest publication "Health in the Americas" (2012), Chapter 3. The Environment and the Human security.
http://new.paho.org/saludenlasamericas/index.php?option=com_docman&task=doc_view&gid=157&Itemid

[2] DALY (Disability-Adjusted Life Year) : WHO metric system to quantify the burden of disease from mortality and morbidity.

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health equity. A greater awareness of the social gradient of those who rely on biomass could help define priority areas of action, and eventually could influence national energy, housing, and cook stove policies and regulations in the coming years.

There are interventions that can reduce household emissions of air pollution from cook stoves in the Americas. The Global Alliance for Clean Cook stoves was launched precisely to achieve the universal adoption of clean cook stoves and fuels worldwide.

- *Water access*

The United Nations General Assembly officially recognized access to water and sanitation as a human right by adopting a resolution in that regard in July 2010. This landmark acknowledgment changes the view of water as a purely ‘‘commercial’’ good, instead considering water and sanitation as central to human development and dignity, as a fundamental social determinant of health, and as essential to alleviating poverty.

Improving water, sanitation, and hygiene may well be the single most-effective intervention towards enhancing human health and preventing illness and death in the Americas. While the Region has achieved Millennium Development Goal 7’s target regarding sustainable access to drinking water with 90% coverage or more, progress has been uneven, and significant gaps remain between and within countries. Moreover, some 38 million people (7% of the Region’s total population) still lack access to improved drinking water sources. Most countries also face serious water-quality problems, mainly as a consequence of deficiencies in the operation and maintenance of services.

According to a WHO report on the global burden of disease based on data for the year 2004, 59,000 deaths in Latin America and the Caribbean were attributable to illnesses linked to water, sanitation, and hygiene. Clearly, even small improvements in the coverage of water and sanitation services could reduce mortality rates in children under 5; even greater reductions could be achieved by combining interventions in both areas. For example, interventions that only target water supply have been shown to have the lowest effectiveness. Interventions that focus on water quality, on the other hand, are the most effective in reducing rates of morbidity and mortality related to diarrhea, especially among children under 5 years old, achieving reductions of 30%-40%. Water-quality interventions are particularly effective at the household level where water is actually consumed.

Technologies to be included:

The Utsil Naj PoA is designed to facilitate the meeting of these two human basic needs by removing indoor air pollution and/or giving access to safe drinking water. To reach this target, the technologies selected in this PoA are improved cook stoves (ICS) and safe water supply devices (SWSD).

However, other technologies could be added to the PoA thanks to appropriate design change procedures in order to meet other basic needs of targeted populations:

- Cooking: solar cookers, plant oil fired stoves, ovens, heat retention cookers;
- Heating: water heaters, thermal insulation, space heaters;
- Electricity: solar lanterns, micro-photovoltaic systems, micro-wind turbine systems, micro-hydroelectric systems;
- Other uses: bio-digesters, solar dryers, greenhouses.

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Emission reductions:

Initially, the end users have a device of low quality or they do not have any. The new technology or practice implemented emits less GHGs than the baseline scenario.

Contribution of the PoA project activities:

The principal benefits of the PoA are environmental care, health benefits, economic or time savings due to the reduction of fuel consumption.

A.3. CMEs and participants of PoA

The company MICROSOL is in charge of the coordination of the PoA: it is the managing entity.

MICROSOL is a French company having its central office in Paris, France and activities occurring in Latin America with two local offices, in Peru and Mexico. MICROSOL develops and coordinates PoAs with very strong social impacts.

MICROSOL's teams:

- Design the PoA;
- Define the program activities alongside with the Local Project Participants (LPPs) of each VPA;
- Adapt project activities to carbon markets rules, requirements and processes;
- Redact the PoA-DD, VPA-DDs, Gold Standard Passports, LSC reports, Monitoring reports and other documents related to carbon market processes including answers to DOE and Gold Standard;
- Train all the LPPs on monitoring processes and other carbon related activities;
- Control and compute data produced by the LPPs during carbon monitoring;
- Coordinate locally the whole steps of carbon market processes (local stakeholder consultation, monitoring activities, validation, Gold Standard registration, verification, VERs issuance).

MICROSOL is hence the entity which communicates with the Gold Standard and the DOEs.

The proper implementation of the technologies will be performed by the LPPs, which are local organizations working on site and familiar with the specific projects' regions. They can be, for example:

- Local NGOs;
- Local branch of international NGOs;
- International institutions;
- National, regional and local authorities (Ministries, regional governments, municipalities, etc.);
- Local manufacturers and distributors;
- International and national companies;
- Inhabitants organized in communities or associations.

A LPP can also be an institution that supports technically and/or financially a local organization working on site.

The LPPs are all trained and assisted by MICROSOL during the whole crediting period.

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A.4. Party(ies)

Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) VPA implementer(s) (as applicable)	Indicate if the Party involved wishes to be considered as VPA implementer (Yes/No)
El Salvador (host)	- To be defined at VPA level	No
Guatemala (host)	- To be defined at VPA level	No
Honduras (host)	- To be defined at VPA level	No
Mexico (host)	- To be defined at VPA level	No
France	- MICROSOL S.A.R.L (private entity) (CME)	No

A.5. Physical/ Geographical boundary of the PoA

The geographical boundary of the Programme corresponds to several countries, as listed above.

Each project activity implements technology(ies) and/or practice(s) that reduce or displace greenhouse gas emissions from the thermal energy consumption of households and/or non-domestic premises. Each project activity is implemented by one or various LPPs within a designated area that can be located in any part of these countries.

Each VPA will include one or various project activities, implemented in one or various locations of one of the host countries. These locations will be described with precision in the corresponding VPA-DDs.

A.6. Technologies/measures

- **Improved cook stoves (ICS)**

The first technology to be employed in the PoA is the improved cook stove. It will imply the implementation of a new technology to cook with wood.
The specific models of ICS that will be disseminated may vary in some details, due to:

- The specific needs of the population;
- The ability and experience of each LPP;
- The presence and nature of local materials often used in the cook stove construction process.

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However, some points do not vary in the stove technology that is being disseminated. In comparison to a stove used in baseline[3], the improved cook stove has a closed combustion chamber which design optimizes air flows enabling a more efficient and cleaner wood combustion.

Each VPA-DD will specify the type of improved cook stoves disseminated by each LPP of the VPA. Photos will be presented in the VPA-DD.

- **Safe water supply devices (SWSD)**

The second technology to be employed in the PoA corresponds to different technologies or practices ensuring safe water supply (such as water filters, ultraviolet radiation treatment, etc.). It will imply the implementation of a new technology or practice.
The project technologies and practices will reduce the amount of CO2-emitting fuel consumed by changing kitchen practice from water boiling purification technique to the introduction of new technologies that provide safe water.
The specific technology model or practice that will be disseminated may vary in some details, due to:

- The specific needs of the population;
- The ability and experience of each LPP;
- The presence and nature of local materials often used in the SWSD construction process.

However, one point does not vary in the safe water supply technologies being disseminated: with appropriate maintenance and utilization, they provide safe drinking water.

Each VPA-DD will mention the type of safe water supply technologies or practices disseminated by each LPP of the VPA. Photos will be presented in the VPA-DD.

A.7. Public funding of PoA

The PoA makes no use of public funding. MICROSOL has signed the 'ODA Declaration form' as presented in Appendix 2.

Whenever a VPA would include activities partially or totally financed through public funding, then an assertion within the VPA will mention that fact and will ensure that the ODA has not been received on the condition that the credits are transferred to the donor country of the assistance.
For this purpose, each LPP will sign an 'ODA Declaration form' that will be provided at the moment of inclusion of the project activity (as an Appendix of the corresponding VPA Passport).

[3] Please refer to section B.4 in Part II for detailed definition of a baseline stove.

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SECTION B. Demonstration of additionality and development of eligibility criteria

B.1. Demonstration of additionality for PoA

The following information will demonstrate that the proposed PoA is a voluntary coordinated action that would not be implemented in the absence of the PoA.

The PoA has never been publicly announced to be implemented without carbon credits. For each LPP, an assessment will be made by MICROSOL at VPA-DD level in order to demonstrate that carbon revenues were considered before the project activities implementation.

Level of the additionality demonstration

The CME proposes to demonstrate additionality at PoA level only since all project activities to be included in the PoA will have the same characteristics:

- Project activities will be implemented in one of the host countries of the PoA boundary (which is limited to five countries), that is to say Latin American developing countries that struggle with poverty.
- Inside these countries, project activities will target "poor" households since the main objective of this PoA is poverty reduction. As it is very difficult to monitor households' revenues, the poverty level of the project activities end users will be determined based on their cooking practice (much easier to monitor). Indeed, it is well established that the fuel used to cook depends on the economic situation of a household[4]. This is why we consider in this PoA that project end users are poor as long as they are cooking with wood.
- Project activities will implement improved cook stoves in order to reduce household air pollution or safe water supply devices to give households access to safe water.
- Project activities will be implemented by LPPs that rely mainly on external funding for the technologies installation and systematically lack of resources to guarantee the long-term sustainability of their projects.

Therefore the information presented below constitutes the demonstration of additionality of the PoA as a whole. It will include specific criteria for additionality demonstration that will be applied for the inclusion of any project activity.

Tool used to demonstrate additionality

Regular and retroactive project activities can be included in the PoA. In both cases, additionality is demonstrated following the UNFCCC "Tool for the demonstration and assessment of additionality" (EB 70,

[4] Correlation between poverty and utilization of wood for cooking is further demonstrated in Appendix 7.

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Annex 8)[5] according to which a project activity is considered additional if it follows successively the following steps:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind
Step 1: Identification of alternatives to the project activity consistent with current laws and regulations
Step 3: Barrier analysis (preferred to Step 2: Investment analysis)
Step 4: Common practice analysis

Additionality demonstration

- **Demonstration for improved cook stoves project activities**

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

Based on credible sources of information[6], it is demonstrated that among people using wood for cooking in the PoA host countries improved cook stoves have been adopted in the following proportions:

Host country	ICS adoption rate
El Salvador	5.1%
Guatemala	10.8%
Honduras	12.4%
Mexico	13.6%
Peru	17.6%

Since the improved cook stoves technology has been adopted in each PoA host country by less than 20% of the target population, the technology can be qualified as "first-of-its-kind" according to the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption"[7] v.1 (the methodology applied in the PoA).
Since the improved cook stoves technology is the first-of-its-kind, the additionality of the improved cook stoves project activities is demonstrated for the five PoA host countries. Steps 1, 3 and 4 are therefore not necessary to demonstrate.
The demonstration will be renewed every time a new improved cook stoves project activity will be included in the PoA. Whenever it is not possible to demonstrate that the improved cook stoves technology is "first-of-its-kind", additionality of the new project activities will be demonstrated based on the latest UNFCCC "Tool for the demonstration and assessment of additionality".

[5] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[6] See "Appendix 8 – Additionality supporting information – ICS – v4".
[7] http://www.cdmgoldstandard.org/wp-content/uploads/2011/10/GS_110411_TPDDTEC_Methodology.pdf

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➢ **Demonstration for safe water supply project activities**

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

Safe water supply devices have not been adopted widely in the PoA host countries but no credible sources of information is available, therefore the technology is not considered as first-of-its-kind.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a. Define alternatives to the project activity:

Four alternatives to the project activities are credible:

Alternative 1.1: Boiling water (baseline)
Alternative 1.2: Using unsafe water (baseline)
Alternative 2: Buying safe water
Alternative 3: Project activity without carbon funding

Sub-step 1b. Consistency with mandatory laws and regulations:

Except in Mexico, there are no national laws or regulations in the PoA's host countries[8] that would restrict the implementation of any of these alternative project activities.

In Mexico, the regulation NOM-244-SSA1-2008[9] defines the standards that any domestic water treatment equipment needs to comply with. Therefore, any LPP implementing safe water supply devices in Mexico has to be in line with this regulation in order to operate.
In the other host countries, there are regulations that define drinking water quality standards but they are not designed for domestic water treatment devices.

Therefore, all alternative scenarios considered are in compliance with national mandatory regulations.

Step 3. Barrier analysis

Sub-step 3a. Identify barriers that would prevent the implementation of the proposed project activity:

All the barriers faced by the alternatives to the project activity have a financial component: they are either investment barriers or economic ones.

Indeed, the installation of the project activity technology described above can involve significant costs that might not be suitable in a context of poverty. This can be explained by the fact that in poverty context, access to credit and banks is very limited which makes impossible people investment in expensive technologies.

Moreover, successful technology acceptance may require strong efforts of the project developer in terms of sensitization and capacity building of the end users.

- Sensitization is required to change habits of people: to make the change acceptable for the end user it might be necessary to explain in a very detailed way why it should change and which benefits it will find.

[8] See "Appendix 9 – Additionality supporting information - SWSD" sheet n°1.
[9] http://members.wto.org/crnattachments/2009/sps/MEX/09_3138_00_s.pdf

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- Capacity building is necessary to guarantee efficient use of the technology which is a crucial condition to its acceptation by the end user. If an end user does not use properly its new technology, it will hardly perceive its benefits and the acceptation of it will be in jeopardy.

Such sensitization and capacity building involve significant additional costs that might not be suitable for end users nor institutions in charge of implementation of the project activity.

On the other side, the alternative described above of buying safe water involves a significant increase in variable costs supported by the households for living that might not be suitable in a context of poverty.

Sub-step 3 b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)

The analysis of the barriers faced by the different alternatives leads to conclude that the only relevant alternative to the project scenario is alternative 1 (Boiling water or Using unsafe water):

	Alternatives 1: Boiling water or Using unsafe water	Alternative 2: Buying safe water	Alternative 3: Project activity without carbon funding
Economic barrier		(1)	
Investment barrier			(2)

(1) Based on a WHO document[10] that defines the water requirement for survival (drinking and food) at 2.5 litres/person/day, the minimal drinking water need for a household in the PoA host countries is between 9.8 – 12.3 litres[11] depending on the national average household size.
Since the average price of 1 liter of drinking water in the PoA host countries is between 0.07 – 0.28 USD[12], the daily budget of buying safe water for a household would be:

Country	Water need litres/ household/day	Drinking water price (USD/litre)	Drinking water cost (USD/household/day)
El Salvador	9.8	0.09	**0.88**
Guatemala	12.3	0.07	**0.86**
Honduras	11.8	0.09	**1.08**
Mexico	9.8	0.08	**0.74**
Peru	9.3	0.28	**2.63**

See "Appendix 9 – Additionality supporting information - SWSD" for detailed information

[10] (http://www.who.int/water_sanitation_health/publications/2011/tn9_how_much_water_en.pdf). We select the lower estimation (2.5 lpd) to be conservative.
[11] See "Appendix 9 – Additionality supporting information - SWSD" sheet n°2.
[12] See "Appendix 9 – Additionality supporting information - SWSD" sheet n°3.

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Besides the fact that safe water distributors are not always easily available in regions of implementation of the project activities (or if so, at higher cost), we see that the cost of buying safe water (average of 1.24 USD/household/day) is hardly suitable for a poor household. Indeed, based on the poverty line defined by each country[13] (to estimate the household income) and a household expenditure on drinking water purchase estimated at 1%[14], it can be stated that poor households cannot afford buying drinking water.

Country	Household income (USD/day)	Budget for drinking water (USD/day)
El Salvador	4.85	0.05
Guatemala	4.74	0.05
Honduras	7.01	0.07
Mexico	11.8	0.12
Peru	7.17	0.07

See "Appendix 9 – Additionality supporting information - SWSD" for detailed information

Therefore, economic barriers make alternative 2 "Buying safe water" very unlikely.

(2) Because boiling water before consumption is mainly done at no cost (with wood collected for free) in the baseline scenario, it does not imply any significant cost and investment from the household. On the contrary, utilization of a safe water supply device requires an initial investment and other costs that households cannot easily afford. Based on available information from Latin American manufacturers, we estimate that the cheapest safe water supply device costs around 46 USD[15] in the PoA host countries.

Moreover, a SWSD project requires a series of activities (promotional campaigns, dissemination, training, monitoring) to ensure its success that implies that its cost cannot be limited to the production. The upstream activities of sensitization and capacity-building of the end users are crucial because in poor and rural populations of Mexico, Guatemala, Honduras, Salvador and Peru, significant number of households still do not have access to safe water supply and only a minority of them use a water treatment method. The PoA precisely targets the households that are consuming unsafe water without any treatment or are boiling it.

It is true that the WHO[16] gives high rates of access to improved water sources in the PoA host countries. In the rural area, the statistics were in 2010: 76% in El Salvador, 87% in Guatemala, 79% in

[13] See "Appendix 9 – Additionality supporting information - SWSD" sheet n°4.
[14] The only available data for the expenditure rate of households on drinking water is from El Salvador. The study shows that 0.16% of the households' budget is reserved for drinking water purchase. To be conservative we apply a 1% rate for all PoA host countries. See "Appendix 9 – Additionality supporting information - SWSD" sheet n°5.
[15] See "Appendix 9 – Additionality supporting information - SWSD" sheet n°7.
[16] Progress on Drinking water and Sanitation, WHO, 2012 (pages 42-51).
http://www.unicef.org/media/files/JMPreport2012.pdf

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Honduras, 91% in Mexico and 65% in Peru. Nevertheless, in another report"[17] the WHO explains that the usual distinction between improved (piped water, public tap, borehole, etc.) and unimproved sources (unprotected dug well, tanker truck, surface water, etc.) of water is not sufficient to determine if people are drinking safe or unsafe water in developing countries. Indeed, the WHO states that:

"Current estimates of the number of people using microbiologically unsafe water are probably low. This is because the assumptions about the safety or quality of water based on its source, extent of treatment or consumer handling do not take into consideration several well-documented problems.

- One problem is that co-called protected or improved sources, such as boreholes and treated urban supplies, can still be fecally contaminated and deliver microbially unsafe water. In some cities the water systems abstract unsafe water from unprotected or contaminated sources and deliver it to consumers with no or inadequate treatment, yet these water systems are classified or categorized as improved and safe.
- Another problem contributing to the underestimation of the population served by unsafe water is contamination of water during distribution whether water is piped or carried into the home. Many communities have protected or improved water supplies and treated water that is microbiologically safe when collected or when it leaves a treatment plant. However, substandard water distribution systems, intermittent water pressure due to power outages and other disruptions, and illegal connections to the distribution system often lead to the introduction of fecal contamination and therefore, microbiologically contaminated water at the consumer's tap or collection point.
- A further problem is that water collected for domestic use often becomes re-contaminated or further contaminated by unsafe consumer storage and handling practices at the household level. Many of the world's people continue to obtain their water on a daily or other frequent basis from any available source and either carry it or otherwise have it delivered to the home for personal use. Typically, this water is gathered and stored in vessels of various designs and materials. Often, the water is not treated or otherwise protected from subsequent contamination during use. Such household water is at high risk of being contaminated by various pathogenic viruses, bacteria and parasites associated with fecal wastes and other sources. This is because water is typically obtained from the most convenient source, which is often fecally contaminated, and typically, additional contamination occurs due to a variety of unsanitary conditions and practices during storage and use.

Effective measures are needed immediately to provide at risk populations with safer water at the household level until the long-term goal of providing safe, piped, community water supplies can be achieved."

For all the reasons mentioned above, it is legitimate to say that even if the PoA host countries present high rates of access to water improved sources, there is a very high probability that water consumed by the PoA target population is unsafe.

[17] Managing water in the home - Accelerated health gains from improved water supply, WHO, 2002. http://www.who.int/water_sanitation_health/dwq/wsh0207/en/

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Fortunately, a minority of people already treat water before consuming it. In Latin America, the percentage of rural households reporting the use a treating water method classified as "adequate" is 35.6%[18]. This value can be decomposed among households who boil water (17.5%), those who bleach it (19.9%), those who use a water filter (4.7%) or solar treatment (0.2%)[19]. One of the main reasons explaining why people from poor communities do not all treat their water is their lack of knowledge concerning the risk of consuming unsafe water and the water treatment solutions.

Indeed, very few people from the PoA target areas are aware that consumption of unsafe water and inadequate sanitation and hygiene are the main factors of diarrhea[20]. Yet, in 2010 this disease was still responsible for 5%[21] of child mortality in the PoA host countries. One of the obstacles faced in the adoption of water treatment methods is the belief that diarrhea is not a disease. "A majority of the studies in this review, which includes studies in Latin America, Africa and Asia, have consistently found insufficient knowledge of the pathogenic causes of diarrhea among mothers and caretakers. Some studies identified this lack of knowledge as a barrier to sustained water treatment. Among several studies a common finding is the belief among mothers that diarrhea is part of growing up and is due to causes unrelated to personal hygiene or unsafe drinking water. Diarrhea was commonly perceived as a sign of the body's self-cleaning of harmful wastes."[22]

Another example of old cultural belief that must be faced in the adoption of water treatment methods is the importance of water temperature. "In Latin America, a common belief is that an imbalance of hot and cold causes illness. In Peru and Sri Lanka, culture-specific beliefs of hot and cold clearly defined the type of water that people consume and the time of the day they consume it. Both studies found that boiled water was primarily prepared for ill people and for those in transitional or delicate states, such as infants and pregnant women"[23].

The adoption of any water treatment method requires changing end users' perceptions and behaviors upstream. Thus, the success of a SWSD project highly relies on sensitization / marketing campaigns, capacity building, follow-up and monitoring of the end users. Only such activities can guarantee a good adoption of the technology and an appropriate utilization of it in the long run. These activities imply significant costs for a SWSD project that are not often possible to spend in projects without carbon revenues.

[18] 'Estimating the Scope of Household Water Treatment in Low- and Medium-Income Countries', G.Rosa & T.Clasen, 2010.f http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2813171/table/T2/

[19] Respondents may report multiple treatment methods.

[20] An estimated 94% of the diarrheal burden of disease is attributable to environment, and associated with risk factors such as unsafe drinking-water and poor sanitation and hygiene : 'Preventing disease through healthy environments', WHO, 2006 (page 9). http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf?ua=1

[21] The specific national child mortality rates are: 4% in Mexico and Peru, 5% in El Salvador and Honduras, 7% in Guatemala. 'Estadísticas sanitarias mundiales 2013', WHO, 2013 (pages 66-70).
http://apps.who.int/iris/bitstream/10665/82218/1/9789243564586_spa.pdf

[22] 'Social, Cultural and Behavioral Correlates of Household Water Treatment and Storage', Maria Elena Figueroa & D. Lawrence Kincaid, 2010 (pages 16-18).
http://www.jhuccp.org/sites/all/files/Household%20Water%20Treatment%20and%20Storage%202010.pdf

[23] Idem

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Based on other appropriate technology projects (improved cook stoves) that require the same kind of support activities, it has been estimated that the cost of production of a SWSD represents in average 50% or less of the total project cost[24]. In the PoA context of poverty, it is clear that households that have a monthly income between 142 and 354 USD per month cannot invest so much money (around 92 USD) for a technology (i) which benefits do not appear clearly to the targeted population, (ii) that does not involve short term and credible financial return on investment, and without (iii) access to credit.

(i) The benefits of SWSD are usually not easy to understand for populations targeted. Health improvements, time saved, environmental improvements are intangible benefits usually under-valorized by the populations targeted by the project.

(ii) SWSD do not involve direct financial return on investment for households. Some indirect financial benefits exist through improvement in health, but these benefits are usually not well perceived by the end users and thus would rarely motivate an investment from them.

(iii) The credit option is very unlikely since most of end users have simply no access to banking services[25] and would anyway be considered as unsolvable. Microfinance could be considered as a solution but as SWSD do not generate financial return on investment, such institutions would not be interested in such project.

As a consequence, end users are already very rarely able to finance the SWSD technology itself that costs in average 46 USD. This is why it must be almost always subsidized or distributed for free thanks to donations from other institutions. Two main schemes can be identified following the LPP's organizational structure:

- NGOs receive donations from national and/or international institutions that enable them to implement the technology for free. The end users' contribution consists in participating in the technology implementation and sometimes in providing basic materials.
- Enterprises either distribute the technology for free or at a subsidized price whenever the SWSD are financed by national and/or international institutions or they sell them directly to the end users.

However the financings provided by these public, private or non-profit institutions only cover the technology implementation, they are too limited to finance any side activities (sensitization campaigns, capacity building, follow-up and monitoring activities). It is neither conceivable for the project developers to incur these side activities additional costs by the end users. This is why this PoA has been designed: to bring through carbon credits the necessary revenues to implement all the support activities to ensure a high quality and sustainable project activity.

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[24] 'What Have We Learned about Household Biomass Cooking in Central America?', World Bank & ESMAP, 2013 (page 57). http://documents.worldbank.org/curated/en/2013/01/17524967/learned-household-biomass-cooking-central-america

[25] The share of the population having access to financial services in the PoA host countries is between 25 and 32%. See "Finance For All? Policies And Pitfalls In Expanding Access", World Bank, 2008. http://siteresources.worldbank.org/INTFINFORALL/Resources/4099583-1194373512632/FFA_book.pdf

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In such context alternative 3 “Project activity without carbon funding” is very unlikely.

As a summary, in the PoA context of poverty Alternative 2 is very unlikely because people cannot afford buying periodically bottles of safe water and Alternative 3 is also very unlikely because people cannot afford the initial investment required to access to the technology with adequate sensitization, capacity-building, follow-up and monitoring activities.

All alternatives face barriers except the Alternative 1 “Boiling water or Using unsafe water”, which corresponds to the baseline. Continuation of the baseline situation is thus the only credible alternative to project scenario.

Step 4. Common practice analysis

In the host countries targeted by the PoA, no similar projects exist (excluding the ones already registered on CDM or voluntary carbon markets). By “similar”, we mean:

- Large scale (Utsil Naj is an open PoA that targets the diffusion of more than 100,000 improved technology units within the five first years of the programme);
- Including long term monitoring of end users and sustainability activities that ensure better efficiency of the project in the long term.

Conclusion

The barriers explained above prevent the implementation of the project activity without carbon funding as well as the alternative scenarios “Buying safe water”.

The Gold Standard registration will provide carbon funding that is necessary to overcome these barriers with appropriate side activities. Indeed, a strong particularity of this PoA is to bring carbon revenues to the LPPs to finance efficiency and sustainability of their project: the natural correlation between carbon revenues and the project efficiency creates a virtuous cycle (the more efficient the project is, the more carbon revenues it gets), giving strong incentive for LPPs to implement sustainability activities. In addition to this natural incentive, each LPP included in this PoA commits to implement such activities, notably using future carbon revenues. Without support from carbon credits such activities would not be possible.

The following eligibility criteria have been defined to demonstrate the additionality of SWSD project activities at VPA level:

- ‘There is evidence that carbon funding was considered before the implementation of the project activity’: this criterion ensures the carbon previous consideration of any project to be included in the PoA.
- ‘The project technology must be consistent with applicable national laws and regulations concerning safe water supply devices’: this criterion ensures that if there is any national standard concerning safe water supply devices, an evidence will be provided to demonstrate that the project technology is in line with the applicable law or regulation.
- ‘End users of the project activity are using wood as main fuel for cooking’: this criterion guarantees that only poor households are included in the PoA.

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- 'Buying drinking water is not affordable for the end users of the project activity': since the end users are poor they face economic barriers that prevent them buying bottled water.
- 'The LPP committed to use future carbon revenues in priority to ensure the sustainability of the project activity': since the end users are poor they face investment barriers that prevent them buying a high quality and sustainable SWSD, this is why revenues from carbon credits will be used in priority to implement all the support activities to ensure a high quality and sustainable project activity.
- 'The LPP will implement a long term monitoring process as described in section II.B.7.2 of the PoA-DD': this criterion distinguishes the project activity from the other existing projects.

For ICS project activities the following eligibility criteria have been defined to demonstrate the additionality at VPA level:

- 'There is evidence that carbon funding was considered before the implementation of the project activity': this criterion ensures the carbon previous consideration of any project to be included in the PoA.
- 'End users of the project activity are using wood as main fuel for cooking': this criterion guarantees that only poor households are included in the PoA.
- 'The LPP will implement a long term monitoring process as described in section II.B.7.2 of the PoA-DD': this criterion distinguishes the project activity from the other existing projects.

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B.2. Eligibility criteria for inclusion of a VPA in the PoA

The eligibility criteria that each project activity has to comply with in order to be included in the PoA are presented in the table below. For each project activity to be included in the PoA, the LPP will need to sign the corresponding 'LPP Eligibility Form' presented in Appendices 3 and 4 which list all the following eligibility criteria except some of them that will be supported by another type of documentation.

	Criteria description	Conditions to be met	Related technologies	Evidence
General framework	**Boundary and location of the VPA**	The project activity is located within one of the host countries listed in section I.A.4. of the PoA-DD or another country if an extension of the PoA boundary is approved at a future date.	ICS + SWSD	VPA-DD section A.6
	Crediting period of the VPA	The crediting period of the project activity shall not exceed the end date of the PoA.	ICS + SWSD	VPA-DD section A.9
Methodological framework	**Applicability of the methodology**	The proposed project activity shall not lead to double-counting of emission reductions: - The project activity is not registered as an individual project nor is part of another registered PoA on the official or voluntary carbon market (the technology units listed in the 'List of end users' provided by the LPP have never been presented to any carbon certification process); - The project activity has not been already presented in any other VPA of this PoA. If it turns out that a risk of double counting with another project exists, a comprehensive analysis would be realized by MICROSOL consisting in the following steps: - Contact the CME of the other project identified and check if some of the technologies are implemented in the same communities / families. - If so, double counted devices are identified more precisely through specific list of end users. - Then a treatment of these volumes is negotiated between MICROSOL or the LPP and the other project's CME: it is decided before first verification who is going to include each	ICS + SWSD	LPP Eligibility form (Appendix 4 of the VPA-DD) + VPA-DD section A.12

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		device at risk through written and signed document.		
		Technology devices implemented in a project activity has an individual continuous useful energy output lower than 150kW.	ICS + SWSD	Appendix 5 of the VPA-DD + VPA-DD section D.2
		The project technology end users will be encouraged to remove their baseline technology.	ICS	LPP Eligibility form
		The project technology end users will be notified that they cannot claim for emission reductions from the project in order to avoid doubts on the property of future carbon credits generated. Signed documents called 'delivery acts' will be provided at verification stage for all technology units presented for issuance. Other parts of the carbon property scheme are precisely defined through contracts between MICROSOL and each LPP as well as between Microsol and final buyers (available on demand). Whenever the implementation of a project activity is done as part of government's programs, as part of NGO's programs and/or a mix of government and NGO programs, additional measures will be taken to ensure the LPP's carbon property of the emission reductions. Two cases will be distinguished: - In case of institutions financing the project activities: the LPP will formally notify each major donor to ensure that no property can be claimed on the carbon credits resulting from the part of the project activities it financed. - In case of institutions that purchase the LPP's technology units in order to distribute them to the end users: the LPP will provide a statement signed by the institution that ensures that no property on the carbon credits resulting from the	ICS + SWSD	LPP Eligibility form + Contracts with LPP + Notification and agreements between LPPs and other institutions

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		technology units it purchased can be claimed.		
Technological framework	**Baseline technology**	Before receiving the safe water supply device, the end users were boiling water before consumption or were consuming unsafe water.	SWSD	LPP Eligibility form + Baseline surveys
	Project technology	The project activity introduces cook stoves with a closed combustion chamber which enable more efficient and cleaner wood combustion.	ICS	LPP Eligibility form + VPA-DD section A.5
		The project activity introduces new technology that provides safe water following WHO quality standard based on detection of the E.coli bacteria, that cannot exceed 1 MPN/100 ml of treated water.	SWSD	LPP Eligibility form + Water quality testing results
Additionality demonstration	**Additionality demonstration tool**	The project technology is "first-of-its-kind" as defined in the methodology. Otherwise the additionality demonstration is done based on the latest UNFCCC "Tool for the demonstration and assessment of additionality".	ICS	VPA-DD section D.5.1
		The project technology is "first-of-its-kind" as defined in the methodology. Otherwise the additionality demonstration is done using the latest UNFCCC "Tool for the demonstration and assessment of additionality" based on the inclusion criteria defined in section I.B.1 of the PoA-DD.	SWSD	VPA-DD section D.5.1
	Previous consideration	There is evidence that carbon funding was considered before the implementation of the project activity.	ICS + SWSD	LPP Eligibility form + VPA-DD section D.5.2
	Consistency with laws and regulations	The project technology must be consistent with applicable national laws and regulations concerning safe water supply devices.	SWSD	Evidence of consistency with laws and regulations (if applicable)
	Poverty	End users of the project activity are using wood as main fuel for cooking.	ICS + SWSD	LPP Eligibility form + monitoring surveys

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		Buying drinking water is not affordable for the end users of the project activity.	SWSD	VPA-DD section D.5.2
	Use of carbon revenues	The LPP committed to use future carbon revenues in priority to ensure the sustainability of the project activity.	SWSD	LPP Eligibility form
	Monitoring	The LPP committed to implement a long term monitoring process as described in section II.B.7.2 of the PoA-DD.	ICS + SWSD	LPP Eligibility form + VPA-DD section D.7.2
Sustainability	**Local Stakeholder consultation**	A local stakeholder consultation has to be carried out by each LPP prior to inclusion of the VPA unless MICROSOL can justify that different activities are sufficiently homogenous to organize one LSC for various LPPs or VPAs.	ICS + SWSD	LSC report
	Sustainability	The LPP committed to implement the Sustainability Monitoring Plan defined in the VPA passport.	ICS + SWSD	LPP Eligibility form
	Do No Harm assessment	The LPP has signed the "Do Not Harm Declaration".	ICS + SWSD	DNH form
		The LPP committed to provide information on the use of its carbon revenues in order to avoid corruption.	ICS + SWSD	LPP Eligibility form
Miscellaneous	**ODA**	The LPP has signed the "Official Development Assistance Declaration" which states that ODA was not received under the condition that the credits coming out of the project will be transferred to the donor country.	ICS + SWSD	ODA form (VPA Passport Appendix 1)
	Laws compliance	The LPP declares to be in line with laws and regulations of the host country available at the time of inclusion of the VPA in the PoA.	ICS + SWSD	LPP Eligibility form
		The LPP has provided the evidence that its entity is duly registered/ incorporated by the national authorities of its host country prior to inclusion.	ICS + SWSD	Evidence provided by LPP
	Contractual agreement with the CME	The LPP has signed contractual agreements with MICROSOL to participate in the PoA. These agreements include all rights and responsibilities of both parties. MICROSOL approved each VPA to be included in the PoA.	ICS + SWSD	Contractual agreement between the LPP and MICROSOL

As it is presented in the table above, there are several criteria that need to be met to demonstrate the additionality of a project activity. One of them concerns the end users of the project technology(ies): wood must be their main fuel for cooking. The target population of any project activity to be included in the PoA will need to comply with this criterion. To make sure that this is the case this parameter will be monitored in the Monitoring surveys. If it turns out that some end users do not comply with this criterion, the corresponding proportion (calculated through a linear statistical extrapolation) of end users will be removed from the emission reductions calculation.

Finally, some eligibility criteria refer to future actions to be implemented by the LPP at verification stage. If the LPP does not implement the required actions (ex: monitoring plan) or provide the required information (ex: carbon revenues use report) as described in the eligibility criteria, MICROSOL will reserve the right not to present the project activity for verification stage.

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B.3. Application of methodologies

One methodology is applied in the PoA, this is the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" v.1, released on 11/04/2011 (hereafter referred to as the Methodology). This methodology will be applied to all VPAs included in the PoA.

It is available on the Gold Standard website:
http://www.cdmgoldstandard.org/wp-content/uploads/2011/10/GS_110411_TPDDTEC_Methodology.pdf

This methodology was chosen because it does exactly match to improved cook stoves and safe water supply technologies and practices[26].

The first paragraph of the Methodology indeed clearly says:
"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".[27]
The following conditions apply to all the technologies eligible for the Methodology:

[26] For simplification, every time the word "technology" will be used from now on in this document, it will imply that "technologies and/or practices" are considered.
[27] Page 3 of the Methodology.

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Applicable conditions	Improved cook stoves	Safe water supply devices
1. 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. 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 will be clearly defined in each VPA-DD. Before the inclusion of any new project activity in the PoA, it will be verified[28] whether there is any other carbon project concerning the same technology registered in the same geographical boundary. In any case, to be eligible to the PoA, each LPP has to sign the 'LPP Eligibility form' (presented in Appendices 3 and 4) that contains a specific criterion on the double-counting issue. It says: "The project is not registered as an individual project activity nor is part of another registered PoA on the official or voluntary carbon market (the technology units listed in the 'End users list' provided by the LPP have never been presented to any carbon certification process) ".	
2. 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.	Specific calculations cannot be done at PoA level since the PoA is designed to include different models of improved cook stoves which will be presented in detail in each VPA. Therefore, the compliance with this applicability condition will be demonstrated for each project activity at VPA level. Nevertheless, no improved cook stove has a continuous useful energy output superior to 150kW. The Aprovecho Research Center Water Boiling Tests realized on nine different models of wood burning improved cook stoves show that the energy output reached during the WBT high power test is between 6.8kW (20L Can Rocket) and 13.3kW (with the ONIL stove)[29].	As the safe water supply technologies 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, which is boiling water. The Aprovecho Research Center Water Boiling Tests[30] show that the highest energy output reached by an improved cook stove during one of the phases of the WBT is 13,3kW (with the ONIL stove).

[28] The verification will be realized by MICROSOL on the CDM, Gold Standard and VCS registries.
[29] See "Test Results of Cook Stove Performance", Aprovecho Research Center, Shell Foundation and US EPA, 2010. http://www.pciaonline.org/files/Test-Results-Cookstove-Performance.pdf
[30] idem

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3. 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 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. The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful.	To be eligible to the PoA, each LPP has to sign the 'LPP Eligibility form' (presented in Appendices 3 and 4) that contains a specific criterion on the baseline technology issue. The LPP is asked to replace the baseline stove by the improved cook stove but it cannot make it compulsory. The end users can keep their old stove as an auxiliary or backup unit. In this case, the corresponding fuel consumption will be accounted as part of the project emissions since Field tests are performed on the total fuel consumption of the household. Nevertheless, the LPP will encourage the removal of the old technology and the definitive discontinuity of its use. For the LPP, the carbon mechanism is per se an incentive as whenever the baseline technology is still used, fuel consumption is higher, and therefore emission reductions and carbon incomes are lower. The removal of the baseline technology will be monitored in the Project surveys and Monitoring surveys by asking the end user whether it still uses its baseline stove, has destroyed it and if not, what it did with it[31].	Two baseline scenarios are identified in the case of safe water supply technology project activities: boiling water or consuming unsafe water. In the case of boiling water, the end users boil their water as a purification technique using their current stove, which corresponds to the baseline technology. The use of the stove is not limited to water boiling, it is above all used for cooking. Therefore, it will not be possible to encourage end users to remove their stove in exchange for the project technology.
4. 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	Each LPP of Utsil Naj PoA is considered as the owner of the emission reductions resulting from its project activities. The general transfer scheme of the emissions reductions ownership is as follows: End user → LPP → CME → Final buyer The improved technology end users will be notified that they cannot	

[31] However, as stated in the Methodology p.4, the removal and continued non-use of three stone fires and other easily constructed traditional devices is in many cases unlikely and impractical to monitor.

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technology producers and the retailers of the improved technology 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.	claim for emission reductions from the project: they will be informed of the carbon market certification process occurring and must not have any opposition to it. Other parts of the carbon property scheme are precisely defined through contracts between MICROSOL and each LPP as well as between Microsol and final buyers (available on demand). Whenever the implementation of a project activity is done as part of government's programs, as part of NGO's programs and/or a mix of government and NGO programs, additional measures will be taken to ensure the LPP's carbon property of the emission reductions. Two cases will be distinguished: - In case of institutions financing the project activities: the LPP will formally notify each major donor to ensure that no property can be claimed on the carbon credits resulting from the part of the project activities it financed. - In case of institutions that purchase the LPP's technology units in order to distribute them to the end users: the LPP will provide a statement signed by the institution that ensures that no property on the carbon credits resulting from the technology units it purchased can be claimed.	
5. 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.	Not applicable. The project activities will not make use of any new biomass feedstock in the project situation. The biomass type in the baseline is the same as the biomass type in the project scenario.	Not applicable.

Therefore the Methodology is applicable to improved cook stoves and safe water supply technologies.

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SECTION C. Management system

(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of project activities:

Two entities are involved in the process of inclusion of project activities: MICROSOL (the CME) and the respective LPP. The following table presents the operational and management arrangements established by the CME for the implementation of the PoA, describing the allocation of the different responsibilities between MICROSOL and the LPP. This organizational scheme corresponds to the standard inclusion conditions that MICROSOL offers to all LPPs:

Task	MICROSOL	LPP
Project implementation	- Advices and exchange of best practices	- Identification of the end users - Sensitization and capacity building of the end users - Diffusion of the technology - Follow-up and maintenance
Stakeholder consultation	- Organization of the Design consultation of the PoA - Capacity building and support of the LPPs in the organization of the Local stakeholder consultations - Quality control of the information supplied by the LPPs	- Organization of the Local stakeholder consultation
Monitoring	- Capacity building and support of the LPPs in the monitoring process - Quality control of the information supplied by the LPPs	- Implementation of the monitoring process following all the rules and requirements set by MICROSOL
Carbon documentation	- Analysis and quality control of the information supplied by the LPPs - Implementation of a procedure to avoid double accounting - Writing of all the carbon documentation (Design consultation report, PoA-DD, VPA-DD, Monitoring reports, etc) - Management of the validation, registration, inclusion and verification processes including the requests of clearance from the DOE and the Gold Standard - DOE contracting and site-visits	- Transfer of all the required information regarding its institution and its projects (including the complete list of end users, carbon property evidences, etc) - Availability for DOEs site-visits

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VERs issuance	- Sales of VERs - Transfer of the revenues from the VERs sale to the LPPs after the deduction of MICROSOL's share	

Even if the organizational scheme is fixed in theory, a degree of flexibility is considered and if needed, will be applied on a case-by-case basis. Thus a new distribution of roles could possibly be defined between MICROSOL and a LPP at the moment of signing the contractual agreement and this new organizational scheme would be described in the corresponding VPA-DD. A new task allocation would of course result in an adjustment in the carbon revenues allocation between MICROSOL and the LPP. This flexibility mechanism was a request addressed during the Design consultation of the PoA.

(b) Records of arrangements for training and capacity development for personnel:

Trainings are performed at various levels to guarantee correct application of PoA rules and efficiency of the projects:

- For each LPP, MICROSOL conducts various trainings corresponding to each key step of the carbon process. Usually, when a LPP enter in the PoA, it receives two trainings: one on the PoA rules and the eligibility documents to produce and another one on the local stakeholder consultation organization and the baseline monitoring process. Then, before first verification, a third training is performed by MICROSOL to prepare the LPP for the verification monitoring activities and the verification documents to produce. Depending on the content, each training can last from one to three days and can include a visit in the field for a better understanding of the monitoring requirements. After first verification, MICROSOL reproduces training whenever needs are identified (new rules, new people, etc.).

- Each end user is trained by the LPP's staff[32] during the technology implementation. The capacity building covers the technology construction/installation, its adequate use and reparation, as well as a sensitization on the benefits of its utilization. These trainings take place either in group during the LPP's demonstration of the technology in front of the community or during the installation of the technology, in the house of the end user.

(c) A procedure for technical review of inclusion of project activities:

MICROSOL is responsible for the technical review of inclusion of the project activities:

First of all, a Carbon Management staff's member carries out, based on the documentation produced by the LPP, a preliminary check of the compliance of the project activity with the eligibility criteria established in the PoA-DD. An Eligibility report is written and communicated to the Carbon Management Director.

[32] In the case of sale of the technology to organizations that distribute them to the end users, the capacity building can be performed by the organization's staff that has been trained beforehand by the LPP.

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If the Eligibility report is positive and it is validated by the Carbon Management Direction, a Carbon Management staff's member writes the corresponding VPA-DD. This comprises a technical review of the project activity documentation to demonstrate its compliance with each eligibility criterion. All necessary evidences to prove the eligibility of the project activity needs to be provided along with the VPA-DD.

Finally, the Carbon Management Director performs a double-check of the technical review made on the project activity and of the VPA-DD documentation. If this assessment is positive, the project activity is submitted to the DOE for inclusion.

(d) A procedure to avoid double counting:

Before the inclusion of a project activity in the PoA, the MICROSOL's Carbon Management Direction verifies (on the CDM, Gold Standard and VCS registries) whether there is any other carbon project concerning the same technology registered in the same geographical boundary. If it turns out there is, an assessment is conducted on both project documentations to make sure they correspond to two different project activities.

In any case, to be eligible to the PoA, each LPP has to sign the 'LPP Eligibility form' (presented in Appendix 4) that contains a specific criterion on the double-counting issue. It says: "The project is not registered as an individual project activity nor is part of another registered PoA on the official or voluntary carbon market (the technology units listed in the 'End users list' provided by the LPP have never been presented to any carbon certification process)".

Finally, an internal control is also realized among the PoA's LPPs to make sure there is no end users in common between them. A software has been designed that enables to cross-reference two lists of end users from the PoA's LPPs and suppress all redundant names. This control is conducted whenever two LPPs are implementing the same technology in the same State or Department.

(e) Records and documentation control process for each VPA under the PoA:

Quality control and analysis are performed by MICROSOL's staff in Mexico. All data and documentation produced are centralized by MICROSOL in general comprehensive databases so as to be easily accessible and for analysis to be more accurate. MICROSOL's leadership of the process, its permanent control of data and its capacity building to LPPs act as a guarantee for data quality.

All the key documentation related to the PoA is archived electronically on a specific website called "Dropbox". To avoid unexpected deletion of files back-up are saved each month by MICROSOL's IT department. This archiving system prevents from potential loss of documents due to destruction or loss of MICROSOL's staff computers. All data and documentation related to the VPAs will be archived at least for a period of 2 years after the end of the crediting period.

(f) Measures for continuous improvements of the PoA management system:

To make the PoA management system more efficient and reliable, MICROSOL continuously works on improvements of tools and procedures. This comprises for instance the development of an Intranet that will enable each LPP to upload electronically its documentation to MICROSOL's central database in order to automate the quality control process.

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SECTION D. Duration of PoA

D.1. Start date of PoA

24.01.2013

The Design consultation report of the PoA has been submitted to the GS on 24/01/2013.

D.2. Duration of the PoA

28 years.

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SECTION E. Environmental impacts

E.1. Level at which environmental analysis is undertaken

An Environmental Impact assessment (EIA) is not required for improved cook stoves and safe water supply project activities in any of the host countries of the PoA.

However, the Sustainable Development Matrix (SDM) will be discussed at each Local Stakeholder Consultation in order to assess the potential impacts of the project activity on the Environment, Social Development, Economic and Technological Development. Environmental impacts will therefore be discussed by the stakeholders and monitoring parameters will be defined at VPA level for all non-neutral sustainable development indicators.

Furthermore, the Do No Harm Assessment (DNHA) has been realized at PoA level[33]. Among all the safeguarding principles of the UNDP that makes up the DNHA two concern potentially harmful environmental impacts. The risk that any of the PoA project activity breaches those environmental protection safeguarding principles has been assessed as low, therefore no mitigation measure will be implemented. However, any LPP willing to include its project activity into the PoA will need to sign a 'Do Not Harm Declaration' to ensure that it is committed to respect all the safeguarding principles listed in the DNHA.

E.2. Analysis of the environmental impacts

Please refer to the PoA Passport for the detailed SDM matrix defined at PoA level which will be compared, in each LSC report, to the matrix obtained during the blind exercise in order to define the consolidated SDM.

Please refer to the PoA Passport for the detailed DNH assessment that has been done at PoA level.

E.3. Environmental impact assessment

No Environmental Impact assessment (EIA) is required for improved cook stoves and safe water supply project activities in any of the host countries of the PoA.

[33] See the PoA Passport for more details.

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SECTION F. Local stakeholder comments

F.1. Solicitation of comments from local stakeholders

- **PoA Design consultation**

As the Utsil Naj Programme is a multi-country PoA that currently covers five countries, it has been decided to conduct an online Design consultation to facilitate the process (as a live meeting is not necessarily required).

The Design consultation lasted five weeks, from July 31st 2012 to September 7th 2012.

Please refer to the PoA Design Consultation Report for more information.

- **Local Stakeholder consultation**

The local stakeholder consultation will be conducted at VPA level as each project activity has its specificities that should be discussed with relevant stakeholders. Therefore, each LPP will organize a local stakeholder consultation as VPA level consultations seem more appropriate.
All information about those LSCs (how comments by local stakeholders were invited, a summary of the comments received and how due account was taken of any comments received) will be provided in the respective VPA-DDs.

F.2. Summary of comments received during the PoA design consultation

Please refer to the PoA Design Consultation Report for a full report on stakeholder comments.

Comments on the eligibility criteria to include the PoA:

The assessment of the eligibility criteria of the PoA was largely positive. Some people pointed out that the organization of the local stakeholder consultation, the documentation required and the implementation of monitoring activities represent important costs for the LPPs and that some of them may struggle to bear them.

Comments on the technologies and countries eligible for the PoA:

Generally, all the technologies eligible for the PoA seemed relevant for the participants within the host countries of the PoA. The participants highlighted some important points that helped us to understand the specific needs of each country and region and understand the complementarity of different technologies to meet the needs of end users.
Participants suggested other potential countries that would also need the diffusion of these technologies and could benefit from the Utsil Naj PoA.

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Comments on the task allocation between MICROSOL and the LPPs:

The participants were largely satisfied by the task allocation between MICROSOL and the LPPs. Some participants underlined that MICROSOL could support more - i.e. provide resources - the LPPs in the organization of the local stakeholder consultation and the implementation of the monitoring activities. The carbon revenues allocation scheme proposed received very little criticisms, and the comments raised concerned on the fact that the allocation could be defined on a case by case basis, depending on the exact role assigned to each of the parties and the characteristics of the project activities.

Comments received on the level of consultation:

Except the two participants who consider that the cost of the LSC organization is problematic, all the others agree with MICROSOL's decision to implement LSC at VPA level ant not PoA level.

Comments received on the general design of the PoA:

All the participants evaluated the design of the PoA and its organizational scheme as "good" or "very good". Comments made at this stage were mainly questions for clarifications concerning, among other subject, the specific technology model types that can be implemented, how MICROSOL's capacity building sessions for the LPPs are organized, how the LPPs can use the carbon revenues. Someone suggested that a communication component is added to the PoA design in order to communicate effectively with all the stakeholders program at each stage of the project implementation.

Comments received on the provisional name of the PoA: "Sak Taanah":

Some participants underlined the consistency of the name with the objective of the PoA and the relevance of using an indigenous language; others stresses the fact that the language chosen does not represent all Latin American countries and that the name does not sound like a Latin American name and is not very marketable. Other participants proposed new translations in Maya and Nahuatl, also suggested using a Spanish name because this language would be understood by all and finally also suggested adding "for all" at the end of the name.

F.3. Report on consideration of comments received

Given the high proportion of positive comments for each of the survey questions, we conclude there is a general acceptance of the Programme design. Indeed, to the question "What do you think of the Programme design and its organizational scheme?", 54% of the participants answered "Very good" and 46% of them said "Good".

Nevertheless, two issues resulted to be important and sensitive for the participants: the margin practiced by MICROSOL as well as the task allocation between MICROSOL and the LPPs.

Concerning the margin that MICROSOL practices, we decided to be completely transparent on this issue and therefore to include this information, usually confidential, in the PoA-DD so that any stakeholder could have access to it. Concerning the task allocation between MICROSOL and the LPPs, some participants highlighted

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the difficulty they would have to finance the implementation of the Local Stakeholder Consultation and the monitoring activities. That is why, even if the organizational scheme is fixed in theory, a degree of flexibility is considered in the PoA-DD and if needed, will be applied on a case-by-case basis. Thus a new distribution of roles could possibly be defined between MICROSOL and a LPP at the moment of signing the contractual agreement in order to reduce the work of the LPP. A new task allocation would of course result in an adjustment in the carbon revenues allocation between MICROSOL and the LPP.

Finally, following the comments received concerning the provisional name of the Programme ("Sak Taanah"), we decided to change it. The new name of the Programme is "Utsil Naj - Casa saludable para todos" ("Utsil Naj – Healthy house for all").

SECTION G. Approval and authorization

Since the PoA is developed in developing countries with no cap on GHG emissions, the CME does not need to provide the Gold Standard Foundation with an official approval from the relevant local authorities stating that an equivalent amount of allowances will be retired to back-up the GS VERs issued.

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PART II. Generic component project activity (VPA)

SECTION A. General description of a generic VPA

A.1 Purpose and general description of generic VPAs

A typical VPA will include one or more diffusion projects activities implementing one or more improved technology(ies). Each VPA will be designed for only one of the host countries and the specific locations of each project activity will be described in the VPA-DD. The project activities included in a VPA may be implemented by one or several LPPs.

The general framework of the diffusion of an improved technology can be described as follows (each LPP, in each VPA can refine this, taking into account the specific context it works in):

- The LPP defines a target population to which it will diffuse the improved technology and will then consider how.
- If a LPP has an improved technology type in mind or even already developed, it might do some modifications of the model and type according to the place it will work in and the specificities of the target population.
- The LPP defines the production and/or diffusion scheme so as to be able to provide massively the corresponding zone taking the geographical and logistical context as well as the locally available capacities into consideration.
- The diffusion team is selected and trained and future end users start receiving capacity building on the adequate use of the improved technology and related consciousness rising sessions.
- Depending on the diffusion scheme, the improved technology is donated or sold.
- Follow-up and monitoring activities will be held so as to ensure adequate long term use of the improved technology and to collect accurate knowledge of the project situation in terms of results.

MICROSOL works closely with the LPPs in order to maximize the project results in the context of a Gold Standard carbon credit accreditation process.

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SECTION B. Application of a baseline and monitoring methodology

B.1 Reference of the approved baseline and monitoring methodology(ies) selected

The following Gold Standard methodology is applied:
"Technologies and Practices to Displace Decentralized Thermal Energy Consumption" v.1, released on 11/04/2011 (hereafter referred to as the Methodology).

It is available on the Gold Standard website:
http://www.cdmgoldstandard.org/wp-content/uploads/2011/10/GS_110411_TPDDTEC_Methodology.pdf

B.2 Application of methodology(ies)

Please refer to the section I.B.3 for the applicability conditions of the Methodology.

B.3 Sources and GHGs

The greenhouse gases included in the improved cook stoves and safe water supply projects boundary are the three gases considered by the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption": CO2, CH4 and N2O. Each VPA will assess the gases to be considered depending on the specificity of its activities.

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Cooking	CO_2	Yes	Important source of emission. IPCC values are applied.
		CH_4	Yes	Important source of emission. IPCC values are applied.
		N_2O	Yes	Important source of emission. IPCC values are applied.
	Transport of fuel	CO_2	No	Excluded at PoA level.
		CH_4	No	Excluded at PoA level.
		N_2O	No	Excluded at PoA level.
	Production of fuel	CO_2	No	Excluded at PoA level.
		CH_4	No	Excluded at PoA level.
		N_2O	No	Excluded at PoA level.
Project scenario	Cooking	CO_2	Yes	Important source of emission. IPCC values are applied.
		CH_4	Yes	Important source of emission. IPCC values are applied.
		N_2O	Yes	Important source of emission. IPCC values are applied.
	Transport of fuel	CO_2	No	Excluded at PoA level.

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		CH_4	No	Excluded at PoA level.
		N_2O	No	Excluded at PoA level.
	Production of fuel	CO_2	No	Excluded at PoA level.
		CH_4	No	Excluded at PoA level.
		N_2O	No	Excluded at PoA level.

Emissions from fuels can occur during fuel production, transport, and consumption. Those occurring in the baseline scenario during production and transport are omitted for conservativeness. Those emitted in the project scenarios must be accounted for, unless arguably negligible or not applicable to the individual project.

Concerning the improved cook stoves:

The project scenario consists in using wood fuel for cooking and others purposes. In most cases, end users collect the wood fuel from woodlands neighboring their communities. To reach the woodlands, they walk all the way, sometimes with the help of an animal, but never with a car. Therefore, no significant emissions occurring during fuel production and transport will be accounted for.

Concerning the safe water treatment devices:

The project scenario consists in using an improved technology to obtain safe water. The end user does not need any more to boil water to purify it and therefore no fuel is used in the project scenario. Thus, no emissions from fuel production and transport can occur.

For safe water treatment devices, the Methodology specifies an additional requirement, i.e. to take into account the level of GHG emissions arising from production, transport, installation and delivery of the clean water supply technology. It will be demonstrated at VPA level that the corresponding emission are negligible.

In any case, emissions must be well documented and based on publicly available and verifiable data. If such data is not available (for example in the case of production of a fuel) then care must be taken to ensure a conservative result.

B.4 Description of baseline scenario

Baseline scenario will be defined at VPA level whenever baseline surveys highlight variability in the target population (whose main fuel is wood) that would imply potentially significant differences in fuel consumption within the population.

Typical criteria that might involve the definition of a new baseline scenario are for instance:

- Type of baseline technology used;
- Type of end users depending on the use of the technology (domestic, commercial or institutional);

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Adjustment factors can be applied to fine tune the baseline scenarios and account for variability in fuel consumptions due to differences in technology type, size, usage pattern, and other pertinent variables, without requiring LPPs to independently monitor new baseline scenarios.

Baseline scenarios description

- ***Concerning the improved cook stoves:***

Throughout all Latin America, an important part of the population, often the poorest, do not have access to cleaner stoves, gas stoves or improved stoves for example, that would both improve their health and allow them to reduce the amount of wood used in the cooking process. As a proof of it, they keep using a traditional unimproved stove.

Therefore the expected baseline scenario is the current practice of the considered families: use of non-renewable biomass in a traditional cooking device. This device is:

- not insulating heat;
- not making possible a good-quality combustion (no efficient air flows);
- generating toxic smokes.

More specifically, a so-called 'traditional stove' is an open fire that can have two forms in the PoA host countries:

- a typical three-stone fire, that is to say three stones placed on the ground or on a base on which a cooking pot is balanced over the fire, or
- an open fire with U-shaped surrounds made by the end user in order to place more easily the cooking pot over the fire.

The open fire is by far the most common stove used in baseline scenario. However some other stoves constructed by the end users themselves and slightly improved in comparison to an open fire can be found. They will be classified as 'non-traditional' and described at VPA level whenever necessary.

- ***Concerning the safe water supply devices:***

Throughout all Latin America, an important part of the population, often the poorest, do not have access to safe water supply that would improve their health and allow them to reduce the amount of wood used in the water purification process. Some people boil water before consuming it, others due to a lack of resources or sensitization, consume unsafe water without boiling it. A small proportion of households have access to a water treatment method such as chlorination but they do not represent the project activities' target population.

Therefore the expected baseline scenario is the current practice of the considered families: water boiling or consumption of unsafe water.

Project scenarios description

As project surveys have not been conducted yet, these are the indicative project scenarios (they will be defined in details at VPA level, as each project has its specificities):

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- Project scenario "Improved cook stove": which consists of households using project improved cook stove technologies that allow for the efficient use of biomass for cooking.
- Project scenario "Safe water supply device": which consists of households using project water treatment technologies that displace the use of biomass for water purification.

In the case where the two project scenarios defined above would be implemented simultaneously within one same project activity, the implications of such a combination in terms of monitoring requirements and emission reductions calculations would be detailed in the corresponding VPA-DD.

B.5 Demonstration of eligibility for a generic VPA

The demonstration of eligibility of a project activity will be done with basis on its compliance with all the eligibility criteria defined in section I.B.2. Each LPP willing to be included in the PoA will need to sign the corresponding 'LPP Eligibility form' (Appendices 3 and 4).

B.6 Estimation of emission reductions of a generic VPA

B.6.1. Explanation of methodological choices

The methodological choices are directly derived from the requirements of the Methodology.

1) Project Boundary

a) The Project Boundary (physical, geographical sites of the project technologies and potentially of the baseline and project fuel collection and production; e.g. specific state/department of one of the host countries or entire host country) will be defined at VPA level.
b) The Target Area (regions or towns within a single country, or across multiple adjacent countries, where the considered baseline scenario(s) is(are) assessed to be uniform across political borders; e.g. Mexico) will be defined at VPA level.
c) The Fuel production and collection Area (in cases where woody biomass is the baseline fuel area within which this woody biomass can reasonably be expected to be produced, collected and supplied) will be defined at VPA level.

2) Selection of baseline scenarios and project scenarios

Baseline and project scenarios will be defined in the VPA-DD following the guidelines presented in section I.B.4.
It is allowed for a baseline scenario to be assessed in terms of suppressed demand.

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All expected baseline and project scenarios shall be defined in the project documentation on time for validation and registration review. Additional baseline and project scenarios can still be added to a project activity at any time during the project crediting period upon approval of a request for design change.

Alternatively, conservative approaches or adjustment factors when available can be applied to existing baseline and project scenarios to account for less significant variability in fuel consumption or technology, without monitoring an additional new baseline or project scenario.

As specified in the Methodology (p.6), in project activities targeting non-industrial applications the baseline is considered by-default fixed in time during the considered crediting period. It is very likely that a fixed baseline will be preferred to an evolving baseline. Nevertheless, the definition of an evolving baseline is allowed and the pertinence of this choice will be assessed at VPA level.

3) NRB assessment

Project activities employing non-renewable biomass (NRB) must identify the fractional non-renewability of biomass. As appropriate, multiple scenarios may use the same NRB assessment.
The approach to calculate the NRB of each host country is presented in Appendix 5, and these are the results:

Host country	f_{NRB}
El Salvador	93.15%
Guatemala	61.17%
Honduras	69.27%
Mexico	87.67%
Peru	73.75%

For the Project NRB assessment, the same values as the ones calculated in the Baseline NRB assessment will be used.

4) SWSD monitoring

According to the GS TAC June 2012 update, a revision was made to the Safe water supply project scenarios Annex of the methodology 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption'. It was decided to allow project developers to choose between two options with respect to the consideration of raw water boiled in the project situation. The CME has chosen the option b) that states:
"Do NOT monitor the raw water boiled in the project situation and apply a cap of 6 l/p/d is applied on the amount of water treated by the water treatment technology for drinking water, hand washing and food washing. The 6 l/p/d cap is set so as to account for the crediting of water used for hand and food washing, in the absence of figures from WHO on minimum service level for hand and food washing (basic hygiene). In such a case, the definitions of Lbl,i,y and Lpj,i,y are therefore revised. Lbl,i,y is defined as the total amount of raw water treated with the water treatment technology. Lpj,i,y is defined as the total amount of treated water that is still boiled."
The CME will therefore not monitor the parameter $Q_{p,rawboil,y}$ and will apply a cap of 6 l/p/d on the parameter $Q_{p,y}$ (called Lbl,i,y in the previous version of the methodology).

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5) Leakage

As specified in the Methodology, the following potential sources of leakage should be investigated:

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.

→ *Concerning improved cook stoves:*

The traditional unimproved stoves are fixed and thus cannot usually be moved from a house to another. As a consequence, reuse is very unlikely.

⇨ $L1_{ICS} = 0$

→ *Concerning safe water supply devices:*

In the baseline scenario, end users are either boiling their water or consuming unsafe water. In the case of boiling water, the end users boil their water as a purification technique using their current stove, which corresponds to the baseline technology. The use of the stove is not limited to water boiling, it is above all used for cooking. Therefore, with the implementation of a safe water supply device, the baseline practice that is boiling water is displaced but the baseline technology, the baseline stove, is still used. Therefore there is no possible reuse of the baseline technology outside the project boundary.

⇨ $L1_{SWSD=} 0$

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

→ *Concerning improved cook stoves:*

The only case in which non-renewable biomass saved under the project activity would be used by non-project users who previously used lower emitting energy sources would correspond to people cooking with gas that decide to cook with wood. A fuel switch is usually motivated by a significant variation of the other fuel price. A fall in wood fuel prices is very unlikely as the end users most of the time collect the wood fuel instead of buying it. In any case, it has been demonstrated that LPG stoves represent an important investment and therefore few end users can afford them. When they can cook with gas they choose to do it in order to gain comfort. Therefore, even if a fall in wood prices would occur, it seems very unlikely that some end users substitute their LPG stoves by improved cook stoves as switching back from gas to wood can be considered as very uncomfortable. This source of leakage is therefore considered as null.

⇨ $L2_{ICS} = 0$

→ *Concerning safe water supply devices:*

The same logic applies for safe water supply devices but the potential source of leakage is even more unlikely as the abandonment of water boiling as a purification technique enabled by the implementation of a safe water supply device will only decrease a fraction of the household fuel

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consumption as the stove will still be used for cooking. This source of leakage is therefore considered as null.

⇨ $L2_{SWSD} = 0$

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.

→ *Concerning improved cook stoves:*

Based on the experience of the Qori Q'oncha PoA[34], a biomass improved cook stove enables to save approximately 1,09[35] ton of wood per year. This figure is by far insignificant when compared to the total domestic wood fuel demand of a country. Even in the case of 100,000 improved cook stoves being implemented within the PoA in each host country, the wood savings involved by the project activities will be completely negligible in comparison to the total annual biomass removals, having no impact or an insignificant impact on the NRB fraction (the variation in the NRB fraction does not exceed 0.42%)[36]. This source of leakage is therefore considered as null.

⇨ $L3_{ICS} = 0$

→ *Concerning safe water supply devices:*

In the case of safe water supply devices, the same logic applies as for improved cook stoves even if the wood savings resulting from the implementation of a safe water supply device is higher. Indeed, based on existing water filter projects[37], a water filter enables to save approximately 1,78 tons of wood per year. Even in the case of 100,000 water filters being implemented within the PoA in each host country, the wood savings involved by the project activities will be negligible in comparison to the total annual biomass removals, having no impact or an insignificant impact on the NRB fraction (the variation in the NRB fraction does not exceed 0.72%)[38]. This source of leakage is therefore considered as null.

⇨ $L3_{SWSD} = 0$

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[39].

→ *Concerning improved cook stoves and safe water supply devices:*

If the project population retains some use of inefficient technology to compensate for a potential loss of the space heating, the corresponding wood fuel consumption will be accounted for as part of

[34] Gold Standard PoA of biomass improved cook stoves (GS1005) that MICROSOL developed in Peru.
[35] See "Appendix 10 – Leakage supporting information " sheet n°1.
[36] See "Appendix 10 – Leakage supporting information" sheet n°2.
[37] Based on data from the only 3 currently registered and verified Gold Standard projects implementing water filters: GS886, GS966 and GS1020. See "Appendix 10 – Leakage supporting information" sheet n°3.
[38] See "Appendix 10 – Leakage supporting information " sheet n°4.
[39] Baseline and project performance field tests would subsume this potential for leakage, but the later would not be addressed in case of a single sample performance test and efficiency ratio multiplier.

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the project emissions since Field tests are performed on the total wood fuel consumption of the household.

Besides, no single sample tests and efficiency ratio multiplier will be used.

If the project population compensates for a potential loss of the space heating by adopting some other form of heating using other fuel than wood, a leakage would possibly appear. That is why this potential source of leakage will be monitored in the Monitoring surveys by asking the end users if they use a new heating device since their improved cook stove or SWSD has been implemented. If it turns out that some end users use a new heating device, the corresponding proportion of end users will be suppressed from the ER calculations as a conservative measure.

⇨ $L4_{ICS}$: to be monitored

⇨ $L4_{SWSD}$: to be monitored

By virtue of promotion and marketing of a 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.

→ *Concerning improved cook stoves:*

Only end users that in the baseline scenario were using wood as their main combustible are eligible to the PoA, therefore those using LPG stoves are not eligible so this source of leakage is not applicable.

⇨ $L5_{ICS} = 0$

→ *Concerning safe water supply devices:*

Only end users that in the baseline scenario were boiling water with wood are eligible to the PoA, therefore no households who were using a technology with relatively lower emissions than the SWSD will be eligible to the Po A; so this source of leakage is not applicable.

⇨ $L5_{SWSD} = 0$

6) Performance Field Tests and Calculation of Emission Reductions

Findings of the performance field tests can be submitted post-registration, on time for the verification and prior to the request for issuance. In such case, the project documentation submitted for validation and registration review must however provide a Project Estimation of expected project emission, supported by appropriate and credible sources of information.

Section II.B.6.3 presents the calculation of the emission reductions in which conservative assumptions will always be favored. All data will be provided at VPA level.

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B.6.2. Data and parameters that are to be reported ex-ante

Data and parameters not monitored over the crediting period and applicable to all the technologies eligible to the PoA:

Data / Parameter:	**$EF_{wood,CO2}$**
Data unit:	tCO2/TJ
Description:	CO2 emission factor for wood
Source of data used:	IPCC default value, 2006 Guidelines for National greenhouse Gas Inventories, Vol. 2, Ch. 2, Table 2.5 http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value applied:	112
Choice of data or Measurement methods and procedures:	The IPCC value for wood is applied: the IPCC net CO2 emission factor for wood is 112 tCO2/TJ. The same value will be applied for both project and baseline scenarios.
Purpose of data:	Calculation of emission reductions.

Data / Parameter:	**$EF_{wood,nonCO2}$**
Data unit:	tCO2/TJ
Description:	Non-CO2 emission factor for wood
Source of data used:	For default emission factors: 2006 Guidelines for National greenhouse Gas Inventories, Vol. 2, Ch. 2, Table 2.5 http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf For global warming potentials: IPCC Fourth Assessment Report: Climate Change 2007, Table 2.14: http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14
Value applied:	(0.3 x 25 + 0.004 x 298) = 8.692
Choice of data or Measurement methods and	The IPCC values for wood are applied: The IPCC net CH4 emission factor for wood is 0.3 tCH4/TJ. The Global Warming Potential (GWP) for CH4 is 25.

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procedures:	The IPCC net N2O emission factor for wood is 0.004 tN2O/TJ. The Global Warming Potential (GWP) for N2O is 298. The same value will be applied for both project and baseline scenarios.
Purpose of data:	Calculation of emission reductions.

Data / Parameter:	**NCV_{wood}**
Data unit:	TJ/ton wood
Description:	Net calorific value of wood
Source of data used:	IPCC default value, 2006 Guidelines for National greenhouse Gas Inventories, Vol. 1, Introduction, Table 1.2 http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
Value applied:	0.0156
Choice of data or Measurement methods and procedures:	The IPCC Net Calorific Value (NCV) for wood is 0.0156 TJ/t. The same value will be applied for both project and baseline scenarios.
Purpose of data:	Calculation of emission reductions.

Data and parameters not monitored over the crediting period that are specific to safe water supply technologies:

Data / Parameter:	**C_j**
Data unit:	%
Description:	Portion of users of the project technology j who in the baseline were already using a non-boiling safe water supply.
Source of data used:	Baseline surveys. Credible literature, studies, surveys, reports relevant to the project target area.
Value(s) applied:	Determined at VPA level.
Choice of data or Measurement methods and	The measurement of this parameter is based on qualitative information collected in the Baseline surveys. Specific questions concerning water supply and water treatment techniques are asked to each end user of the sample. If any end user buys water or

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procedures:	treats water from other sources thanks to chlorine or another safe water supply device, it will be accounted for in the C_j parameter. Households with "improved"[40] sources of drinking-water will be excluded from the C_j parameter when it can be demonstrated that it is not a safe water source. The water quality of the "improved" sources of water should be established as unsafe through testing or relevant third party studies. The corresponding information will be presented for first verification of the project activity. The C_j parameter is applied in the fuel consumption calculations as only end users that boil water or are currently using unsafe water are eligible for crediting. The parameter will be monitored only once prior to first verification.
Purpose of data:	Calculation of emission reductions.

Data / Parameter:	**W_b**
Data unit:	tons/litre
Description:	Average quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of the baseline scenario b.
Source of data used:	Baseline water boiling test (BWBT); either conducted freshly or as reported/published in reliable literature relevant to the project target population.
Value(s) applied:	Determined at VPA level.
Choice of data or Measurement methods and procedures:	Whenever Baseline water boiling tests are conducted freshly, they will be conducted with a representative sample of end users accounting for variability in the types of prevalent baseline technologies to boil water. The W_b parameter is by-default fixed for the crediting period. It should be updated if ongoing monitoring surveys show that baseline water boiling technologies change over time. The parameter will be monitored only once prior to first verification.
Purpose of data:	Calculation of emission reductions.

Data / Parameter:	**W_p**

[40] As defined by the WHO and UNICEF Joint Monitoring Programme for Water supply and Sanitation: http://www.wssinfo.org/definitions-methods/watsan-categories/

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Data unit:	tons/litre
Description:	Average quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of project scenario p.
Source of data used:	Project water boiling test (PWBT); either conducted freshly or as reported/published in reliable literature relevant to the project target population.
Value(s) applied:	Determined at VPA level.
Choice of data or Measurement methods and procedures:	Whenever Baseline water boiling tests are conducted freshly, they will be conducted with a representative sample of end users accounting for variability in the types of prevalent project technologies to boil water. The $\mathbf{W_p}$ parameter is by-default fixed for the crediting period. It should be updated if ongoing monitoring surveys show that new water boiling technologies are introduced over time. If the Monitoring surveys reveal that the same water boiling technologies are prevalent in the baseline and project scenarios, $\mathbf{W_b}$ and $\mathbf{W_p}$ are equal. Therefore, there is no need to conduct Project water boiling tests. The parameter will be monitored only once prior to first verification.
Purpose of data:	Calculation of emission reductions.

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B.6.3. Ex-ante calculations of emission reductions

1) Calculation formulas

The equations presented in this section are derived from the Gold Standard "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" methodology and are applicable to all technologies eligible to the Methodology unless specific equations have been defined.

When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission are considered the same, the overall GHG reductions achieved by the project activity in year y are calculated as follows:

$$ER_y = \sum_{b,p}\left\{N_{p,y} * P_{p,b,y} * U_{p,y} * NCV_{fuel} * \left(f_{NRB} * EF_{fuel,CO2} + EF_{fuel,nonCO2}\right)\right\} - \sum LE_p$$

Where:

$\sum_{b,p}$	Sum over all relevant (baseline b/ project p) couples
$N_{p,y}$	Cumulative number of ICS-days included in the project database for project scenario p in year y
$P_{p,b,y}$	Wood savings for an individual ICS of project scenario p against an individual stove of baseline scenario b in year y
$U_{p,y}$	Cumulative usage rate for ICS in project scenario p in year y, based on cumulative adoption rate and drop-off rate revealed by usage surveys
NCV_{fuel}	Net calorific value of the fuel that is substituted or reduced
f_{NRB}	Fraction of biomass that can be established as non-renewable
$EF_{fuel,CO2}$	CO_2 emission factor of the fuel that is substituted or reduced
$EF_{fuel,nonCO2}$	Non-CO_2 emission factor of the fuel that is substituted or reduced
LE_p	Leakage for project scenario p

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When the baseline fuel and the project fuel are different and/or the emission factors are different, the overall GHG reductions achieved by the project activity in year y are calculated as follows:

$$ER_y = \sum_{b,p} \{N_{p,y} * U_{p,y} * (f_{NRB} * ER_{b,p,y,CO2} + ER_{b,p,y,nonCO2})\} - \sum LE_p$$

Where:

$\sum_{b,p}$	Sum over all relevant (baseline b/ project p) couples
$N_{p,y}$	Cumulative number of ICS-days included in the project database for project scenario p in year y
$U_{p,y}$	Cumulative usage rate for ICS in project scenario p in year y, based on cumulative adoption rate and drop-off rate revealed by usage surveys
f_{NRB}	Fraction of biomass that can be established as non-renewable
$ER_{b,p,y,CO2}$	Specific CO2 emission savings for an individual technology of project p against an individual technology of baseline b, as derived from the statistical analysis of data collected from the field tests
$ER_{b,p,y,nonCO2}$	Specific non-CO2 emission savings for an individual technology of project p against an individual technology of baseline b, as derived from the statistical analysis of data collected from the field tests
LE_p	Leakage for project scenario p

As per the methodology, no more detailed ER calculation equations need to be presented in the documentation. Nevertheless the way some parameters are calculated will be specified at VPA level for more clarity.

For safe water supply devices, specific calculation formulas are defined in the Annex 3 of the Methodology (p.36). First, baseline and project scenarios fuel consumptions are calculated and then Emission reductions are assessed.

- Baseline scenario Fuel consumption calculation

$$B_{b,y} = (1 - C_j) * N_{p,y} * h_p * W_b * Q_p$$

Where:

$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year y
C_j	Portion of users of the project technology j who in the baseline were already using a non-boiling safe water supply

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$N_{p,y}$ Cumulative number of project technology-days included in the project database for project scenario p in year y[41]

h_p Average number of members per household in project scenario p

W_b Average quantity of fuel required to boil 1 litre of water using technologies representative of the baseline scenario b (tons/litre)

Q_p Average quantity of safe water consumed in project scenario p and supplied by the project technology per person per day (litres/person/day)

➢ Project scenario Fuel consumption calculation

$$B_{p,y} = (1 - C_j) * N_{p,y} * h_p * W_p * Q_{p,cleanboil}$$

Where:

$B_{p,y}$ Quantity of fuel consumed in project scenario p during the year y

C_j Portion of users of the project technology j who in the baseline were already using a non-boiling safe water supply

$N_{p,y}$ Cumulative number of project technology-days included in the project database for project scenario p in year y[42]

h_p Average number of members per household in project scenario p

W_p Average quantity of wood required to boil 1 litre of water using technologies representative of the project scenario p (tons/litre)

$Q_{p,cleanboil}$ Average quantity of safe (treated or from safe supply) water boiled in the project scenario p per person per day after installation of the project technology (litres/person/day)

➢ Emission reductions

$$BE_{b,y} = B_{b,y} * (f_{NRB} * EF_{fuel,CO2} + EF_{fuel,nonCO2}) * NCV_{fuel}$$
$$PE_{p,y} = B_{p,y} * (f_{NRB} * EF_{fuel,CO2} + EF_{fuel,nonCO2}) * NCV_{fuel}$$

Where:

$B_{b,y}$ Quantity of fuel consumed in baseline scenario b during the year y

$B_{p,y}$ Quantity of fuel consumed in project scenario p during the year y

[41] We multiply the cumulative number of project technology-days by the average number of members per household in project scenario p (parameter h_p) to obtain the cumulative number of person.days.

[42] We multiply the cumulative number of project technology-days by the average number of members per household in project scenario p (parameter h_p) to obtain the cumulative number of person.days.

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f_{NRB}	Fraction of biomass that can be established as non-renewable
$EF_{fuel,CO2}$	CO_2 emission factor of the fuel that is substituted or reduced
$EF_{fuel,nonCO2}$	Non-CO_2 emission factor of the fuel that is substituted or reduced
NCV_{fuel}	Net calorific value of the fuel that is substituted or reduced

The overall GHG reductions are calculated as follows:

$$ER_y = \{\sum BE_{b,y} - \sum PE_{p,y}\} * U_{p,y} * T_{p,y} - \sum LE_p$$

Where:

$U_{p,y}$	Cumulative usage rate for SWSD in project scenario p in year y, based on cumulative adoption rate and drop-off rate revealed by usage surveys
$T_{p,y}$	Water quality performance rate of project scenario p in year y
LE_p	Leakage for project scenario p

When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission are considered the same, the overall GHG reductions achieved by the project activity in year y can be calculated as follows:

$$ER_y = \sum_{b,p} \left\{N_{p,y} * h_p * (1 - C_j) * \left[\left(W_b * Q_p\right) - \left(W_p * Q_{p,cleanboil}\right)\right] * NCV_{fuel} * \left(f_{NRB} * EF_{fuel,CO2} + EF_{fuel,nonCO2}\right) * U_{p,y} * T_{p,y}\right\} - \sum LE_p$$

Where:

$\sum_{b,p}$	Sum over all relevant (baseline b/ project p) couples
$N_{p,y}$	Cumulative number of project technology-days included in the project database for project scenario p in year y[43]
h_p	Average number of members per household in project scenario p
C_j	Portion of users of the project technology j who in the baseline were already using a non-boiling safe water supply
W_b	Average quantity of fuel required to boil 1 litre of water using technologies representative of the baseline scenario b (tons/litre)

[43] We multiply the cumulative number of project technology-days by the average number of members per household in project scenario p (parameter h_p) to obtain the cumulative number of person.days.

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Q_p	Average quantity of safe water consumed in project scenario p and supplied by the project technology per person per day (litres/person/day)
W_p	Average quantity of wood required to boil 1 litre of water using technologies representative of the project scenario p during project year y (tons/litre)
$Q_{p,cleanboil}$	Average quantity of safe (treated or from safe supply) water boiled in the project scenario p per person per day after installation of the project technology (litres/person/day)
NCV_{fuel}	Net calorific value of the fuel that is substituted or reduced
f_{NRB}	Fraction of biomass that can be established as non-renewable
$EF_{fuel,CO2}$	CO_2 emission factor of the fuel that is substituted or reduced
$EF_{fuel,nonCO2}$	Non-CO_2 emission factor of the fuel that is substituted or reduced
$U_{p,y}$	Cumulative usage rate for SWSD in project scenario p in year y, based on cumulative adoption rate and drop-off rate revealed by usage surveys
$T_{p,y}$	Water quality performance rate of project scenario p in year y
LE_p	Leakage for project scenario p

As per the methodology, no more detailed ER calculation equations need to be presented in the documentation. Nevertheless the way some parameters are calculated will be specified at VPA level for more clarity.

2) Statistical Estimate of the Fuel or Emission Savings:

The baseline and project Field Test data must be analyzed in combination to estimate the average annual emission reductions or average fuel savings per unit. Whenever the baseline fuel and project fuel are the same, the statistical analysis can be conducted on fuel savings per unit. In cases where baseline fuel and project fuel are different (different emission factors), the statistical analysis must be conducted with respect to emission savings per unit.

As described in the Methodology (page 13), there are two valid options for the statistical analysis. In all cases, sample sizes 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 of the estimated MEAN annual emission reduction per unit or MEAN fuel annual savings per unit.

b) 90% confidence rule: When the sample sizes are such that the "90/30 rule" is not complied with, the emission or fuel saving result is not the mean (or average) test result, but a lower value, i.e. the LOWER BOUND of the one-sided 90% confidence interval.

3) Adjustment factors:

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As specified in the Methodology (p.16), adjustment factors can be applied during emission reduction crediting to allow for realistic comparisons of project technologies to the baseline scenarios. Adjustment factors fine tune the baseline and project scenarios to account for variability in fuel savings due to differences in project technology type, size, usage pattern, and other pertinent variables, without requiring project proponents to independently monitor new baseline and project scenarios.
No adjustment factors have been defined at PoA level but the CME is entitled to propose adjustment factor(s) at VPA level on a case-by-case basis.

4) Emission reductions estimated for the PDD:

As the Performance Field Tests are required prior to verification and not validation, the project proponent must estimate emission reductions in the project documentation prior to validation using conservative assumptions for baseline and project scenario variables. They can be estimated from pertinent literature, lab testing and appropriate discounting factors, manufacturer specifications, or other viable sources of information.
In the case of a new activity to be integrated in a new VPA that implements the same technology model in the same country as an activity already included in the PoA, it is allowed to use this previous activity's baseline and project scenarios data to estimate ex-ante the emission reductions of the new activity at the time of its inclusion.
If no activity concerning the same technology model and the same country has been already included in the PoA, it is allowed to estimate for ex-ante ER calculations baseline and project scenarios variables from other Gold Standard projects or PoAs that have been already registered and verified at least once. In any case, Project surveys and Project field tests will be conducted on this new activity prior to first verification.

B.7 Application of the monitoring methodology and description of the monitoring plan

B.7.1. Data and parameters to be monitored by each generic VPA

Data and parameters to be monitored over the crediting period and applicable to all the technologies eligible to the PoA:

Data / Parameter:	$N_{p,y}$
Data unit:	Technology.days
Description:	Cumulative number of project technology.days included in the project database for project scenario p in year y.
Source of data to be used:	End users list and delivery records provided by LPPs.

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Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	This parameter will be monitored continuously from a list of end users provided by each LPP showing at least the following information: name, surname, location, date of installation of the technology.
Monitoring frequency:	Continuously.
QA/QC procedures to be applied:	The data will be analysed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.
Additional comment:	In case of SWSD project activities, the cumulative number of project technology-days ($\mathbf{N_{p,y}}$) will be multiplied by the average number of members per household in project scenario p (parameter $\mathbf{h_p}$) in order to obtain the cumulative number of person.days.

Data / Parameter:	$\mathbf{U_{p,y}}$
Data unit:	%
Description:	Usage rate for technologies from project scenario p in year y.
Source of data to be used:	Annual usage surveys (possibly performed with the Project and Monitoring surveys among the same end users).
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	The measurement of the usage rate is based on qualitative information collected in the Usage surveys. A question concerning the current use of the technology is asked to each end user of the sample and is validated by the observation of the interviewer in order to determine the drop off rate of each technology age category. See more details on usage surveys in section II.B.7.2.
Monitoring frequency:	Annually and on time for any request of issuance.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.
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.

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Data / Parameter:	**f_{NRB}**
Data unit:	%
Description:	Non-renewability fraction of woody biomass fuel.
Source of data to be used:	See Appendix 5
Value(s) applied:	El Salvador: 93.15% Guatemala: 61.17% Honduras: 69.27% Mexico: 87.67% Peru: 73.75%
Measurement methods and procedures:	See the details of measurement methods in Appendix 5. The same value will be applied for both project and baseline scenarios located in the same geographical boundary. The non-renewable biomass fraction is by-default fixed for a given crediting period based on the results of the NRB assessment. Over the course of a project activity the project proponent may at any time choose to reexamine renewability by conducting a new NRB assessment. In case of a renewal of the crediting period, the NRB fraction will be reassessed and updated in line with most recent data available.
Monitoring frequency:	For any renewal of the crediting period.
Purpose of data:	Calculation of emission reductions.
Data / Parameter:	**LE_p**
Data unit:	t_CO2e per year
Description:	Leakage in project scenario p.
Source of data to be used:	See Section II.B.6.1. for Leakages L1, L2, L3 and L5. Monitoring surveys for L4.
Value(s) applied:	$L1_{ICS} = L2_{ICS} = L3_{ICS} = L5_{ICS} = 0$ $L1_{SWSD} = L2_{SWSD} = L3_{SWSD} = L5_{SWSD} = 0$ $L4_{ICS}$ and $L4_{SWSD}$ will be monitored and the value will be presented at VPA level.
Measurement methods and	Concerning L4 ('The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating '): this

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procedures:	potential source of leakage will be monitored in the Monitoring surveys by asking the end users if they use a new heating device since their ICS or SWSD has been implemented.
Monitoring frequency:	Every two years.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.
Additional comment:	Aggregate leakage can be assessed for multiple project scenarios if appropriate.

Data / Parameter:	$\mathbf{O_p}$[44]
Data unit:	%
Description:	Removal rate of the baseline technology in project scenario p.
Source of data to be used:	Project surveys and Monitoring surveys.
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	The measurement of the removal rate of the baseline technology is based on qualitative information collected in the Project and Monitoring surveys by asking the end user whether it still uses it, has destroyed it and if not, what it did with it. The removal rate of the baseline technology is monitored as required in the applicability conditions of the Methodology (p.4).
Monitoring frequency:	Annually.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Compliance with an applicability condition of the Methodology.

[44] Not applicable to safe water supply technologies.

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Data and parameters to be monitored over the crediting period that are specific to improved cook stoves:

Data / Parameter:	**P_b**
Data unit:	tons/day/stove[45]
Description:	Average daily fuel consumption of a stove in baseline scenario b.
Source of data to be used:	Baseline FT and any applicable adjustment factor.
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	The calculation of the parameter **P_b** is based on real, observed technology performance in the field, measured in the Baseline field tests. The fuel consumption is measured with a representative sample of end users under each defined baseline scenario, following the procedure described in section II.B.7.2. As improved cook stoves project activities target non-industrial applications, the baseline is considered by-default fixed in time during the considered crediting period[46]. Therefore the quantity of fuel that is consumed in baseline scenario is fixed for a given crediting period based on the results of the Baseline field tests. In case of a renewal of the crediting period, the baseline will need to be reassessed so new Baseline field tests will need to be performed.
Monitoring frequency:	N/A. The parameter will be monitored only once prior to first verification.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.

Data / Parameter:	**P_p**

[45] Tons/day/person is allowed as an option and should be defined so at VPA level.
[46] Evolving baseline is allowed as an option and should be defined so at VPA level. Whenever an evolving baseline is defined in the VPA-DD, Baseline field test updates should be performed.

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Data unit:	tons/day/stove[47]
Description:	Average daily wood consumption of an ICS in project scenario p.
Source of data to be used:	Project FT, project FT updates, and any applicable adjustment factors.
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	The calculation of the parameter $\mathbf{P_p}$ is based on real, observed technology performance in the field, measured in the Project field tests. The fuel consumption is measured with a representative sample of end users under each defined project scenario and taking into account the age distribution of the project technologies, following the procedure described in section II.B.7.2. At the time of PoA validation or VPA inclusion, the quantity of fuel that is consumed in project scenario p during year y can be estimated from any available credible sources. Prior to verification, Project field tests will need to be conducted to measure in field the accurate quantity of fuel that is consumed taking into consideration, whenever necessary, the age distribution of the project technology and the seasonality variations in the technology and fuel use patterns (as described in section II.B.7.2.).
Monitoring frequency:	Every two years.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.

Data / Parameter:	$\mathbf{P_{p,b,y}}$
Data unit:	tons/day/stove[48]
Description:	Daily fuel savings of an ICS of project scenario p against a stove from baseline scenario b.
Source of data to be used:	Project FT, project FT updates, and any applicable adjustment factors.
Value(s) applied:	Determined at VPA level.
Measurement	The parameter $\mathbf{P_{p,b,y}}$ is derived from a statistical analysis which is conducted in

[47] Tons/day/person is allowed as an option and should be defined so at VPA level.
[48] Tons/day/person is allowed as an option and should be defined so at VPA level.

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methods and procedures:	combination on baseline and project scenarios wood consumption data (P_b and P_p) following the guidelines described in the Methodology (Annex 4). See more details on the statistical analysis in section II.B.6.3. A single parameter is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario. Wood consumption results are analysed separately for each season. Whenever wood savings data are available for both seasons, seasonally weighted wood savings are calculated taking into consideration the lengths of the seasons and applied in the emission reductions calculation.
Monitoring frequency:	Every two years.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.

Data and parameters to be monitored over the crediting period that are specific to safe water supply technologies:

Data / Parameter:	**Q_p**
Data unit:	Litres/person/day[49]
Description:	Average quantity of safe water consumed per person per day in project scenario p and supplied by the project technology.
Source of data to be used:	Water consumption field test (WCFT).
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	The calculation of the parameter **Q_p** is based on real, observed field tests (WCFT) with a representative sample of end users under each defined project scenario, following the procedure described in section II.B.7.2.
Monitoring frequency:	Every two years.
QA/QC procedures to	The data will be analyzed in the monitoring report and raw data will be available on

[49] Litres/unit/day is allowed as an option and should be defined so at VPA level.

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be applied:	request of the DOE.
Purpose of data:	Calculation of emission reductions.
Additional comment:	It is immaterial how much of the clean water is used for drinking and how much for food washing, cooking, or hand washing. The parameter $Q_{p,y}$ cannot exceed the cap of 6 L/p/d (as per the June 2012 GS TAC update – see section II.B.6.1 for more details).

Data / Parameter:	$Q_{p,cleanboil}$
Data unit:	Litres/person/day[50]
Description:	Average quantity of safe (treated or from safe supply) water boiled per person per day in the project scenario p, after installation of project technology.
Source of data to be used:	Water consumption field test (WCFT).
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	See description of the measurements methods in the Q_p, parameter table.
Monitoring frequency:	Every two years.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.
Additional comment:	Before each WCFT, a Project survey is conducted in which the household is asked to assess the quantities of treated water and safe water boiled it daily consumes. Concerning the treated water, if the household says it never boils it before consuming it, it will not be necessary to measure it in the WCFT. The parameter $Q_{p,cleanboil}$ for this specific household will be considered to be equal to zero.

Data / Parameter:	$T_{p,y}$

[50] Idem

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Data unit:	%
Description:	Proportion of SWSD that are in compliance with WHO water quality standard
Source of data to be used:	Water quality tests (WQT).
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	As specified in the Methodology (p.40), water quality testing may be conducted either in the field or by transportation to laboratories. Every two years, the performance of the treatment technology will be assessed through field or laboratory analysis including credible third party endorsement. The parameter that will be analyzed is the bacteria E.coli as the absence of microbial contamination is one important indicator that water is safe to drink and that the recommended microbial indicator by the WHO[51] is E. coli. The WHO guidelines recognize that the majority of rural water supplies in developing countries are contaminated and therefore recommend that medium-term targets for the progressive improvement of water supplies should be set. That is why a water quality risk classification (based on detection of E. coli or thermotolerant coliform bacteria) has been defined in which range A corresponds to less than 1 colony-forming unit (CFU) per 100 ml and range B called "Low risk" corresponds to 1–10 CFU per 100 ml. To be conservative MICROSOL set the acceptable threshold for water quality testing at 1 CFU/100 ml[52].
Monitoring frequency:	Every two years
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Verification of the safe water supply technology performance and Calculation of emission reductions.
Additional comment:	Any safe water supply project technology included into the PoA will need to comply with the water quality standard defined above. If it turns out in the WQT that some SWSD do not comply with this criterion, the corresponding proportion (calculated through a linear statistical extrapolation) of SWSD will be removed from the ER calculations as presented in the corresponding formula (see section II.B.6.3). This is a voluntary choice of MICROSOL that is going further the Gold Standard requirements in order to give incentive to the LPPs to implement maintenance and

[51] 'A toolkit for monitoring and evaluating household water treatment and safe storage programmes', WHO, 2012. http://apps.who.int/iris/bitstream/10665/76568/1/9789241504621_eng.pdf

[52] Taking into account the available water quality testing techniques in the PoA host countries the results of the WQT will be presented either in Most Probable Number (MPN) or in Colony-Forming Units (CFU).

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	sustainability activities to SWSD.

Data / Parameter:	$\mathbf{h_p}$
Data unit:	Household members
Description:	Average number of members per household in project scenario p.
Source of data used:	Project surveys and Monitoring surveys.
Value(s) applied:	Determined at VPA level.
Measurement methods and procedures:	The parameter $\mathbf{h_p}$ will be extrapolated from the information collected in the Project and Monitoring surveys where specific questions are asked about the number of household members.
Monitoring frequency:	Annually.
QA/QC procedures to be applied:	The data will be analyzed in the monitoring report and raw data will be available on request of the DOE.
Purpose of data:	Calculation of emission reductions.

B.7.2. Description of the monitoring plan for a generic VPA

The following monitoring plan is applicable to all the technologies eligible for the Methodology:

Monitoring schedule[53]	Prior to validation	Prior to 1st verification	Annual: after 1st verification	Every 2 years: after 1st verification
Baseline studies				
NRB assessment	X			
Baseline survey	X			
Baseline FT (except where default values applied)		X		
Project studies				

[53] A specific monitoring schedule for each technology is presented in Appendix 6.

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Project survey		X		
Project FT		X		
Ongoing monitoring tasks				
Maintenance of 'End users list'	Continuous			
Usage survey		X	X	
Monitoring survey			X	
FT updates				X
Leakage assessment				X

Specific tables for each technology (with the names of the applicable surveys and tests) are presented in Appendix 6.

I. Monitoring activities description

A. Baseline surveys

The Baseline survey provides critical information on target population characteristics, baseline technology use, fuel/water consumption and sustainability indicators. Baseline surveys are conducted among end users without project technologies that are representative of end users targeted in the project activity.
Baseline surveys will be carried out for each foreseen baseline scenario[54].

B. Project surveys

The Project surveys are conducted with end users of each project scenario to collect critical information on project technology use, fuel/water consumption and sustainable development indicators.
Project surveys will be carried out for each foreseen project scenario[55].

C. Baseline field tests

Field tests measure real, observed technology performance in the field. Consumption is measured with a representative sample of users under each defined scenario.

For the Baseline field tests, two cases need to be distinguished:

- In the case of a non-retroactive project activity, the Baseline field tests are conducted among future end users of the project activity concurrently with the Baseline surveys.
- In the case of a retroactive project activity, the Baseline field tests are conducted among households outside the project but with a similar profile as the target population. These are, alternatively:

[54] As specified in the Methodology (p.8), if no significant variations are identified among the end users, adjustment factors can be applied to existing baseline and project scenarios to account for these variations without the need to create a new baseline or project scenario.
[55] Idem

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a) Households from the same community who were not selected for the project activity and who have a similar energetic profile and baseline technology model with the end users;
b) Households from a neighbor community who have a similar energetic profile with the end users.

This procedure should be followed when performing any field tests:

- The quantity of fuel/water that is consumed is measured on, at least, a 3-day basis excluding Sunday that is usually a day with unusual consumptions (people are not working and their activities are different). The proportional extrapolation of results to the whole year will therefore be conservative as it will not consider Sunday's higher consumptions.
- The scale used for the fuel weighting must have a precision of no less than 100g and its accuracy should be verified by the LPP before each field tests campaign with calibration weights.
- The measuring tape used for water measurement must have a precision of 1 millimeter.

D. Project field tests

Field tests measure real, observed technology performance in the field. Consumption is measured with a representative sample of end users under each defined scenario.

As required by the Methodology (p.26), the ageing of the technology should be considered in the emission reductions calculations. Therefore, a sample of each technology age category needs to be defined for each project scenario when selecting the households to be visited for the Project field tests.

In situations where the baseline technology still operates as backups or complementary units in parallel with project technologies, the corresponding fuel consumption will be accounted for as part of the project emissions since Field tests are performed on the total fuel consumption of the household.

E. End users list

A final list of each technology end users will be compiled by each LPP and centralized by MICROSOL. This list of end users will contain at least the following information: name, surname, location and date of installation of the technology. LPPs are due to frequently update this list and communicate changes to MICROSOL. This list will help in identifying technology owners for applying Monitoring surveys and will serve as a basis for total population emission reductions calculation.

Information concerning the name, location of the end users and the date of sale will be presented except in cases where this is justified as not feasible[56]. In such cases the number of end users information collected must be as many as commensurate with representative sampling, i.e. the number of end user names and addresses within the list 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

[56] As specified p.22 of the Methodology.

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sample sizes (including usage surveys for each age of product), in order to ensure an adequate end user pool to which random sampling can be applied.

For calculation purposes, the date of start of use of the improved technology will be considered as a conservative measure as the first day of the next month following the installation date for being sure that the technology is being used.

F. Usage surveys

The usage survey provides a single usage parameter that is weighted based on the rate of technology drop off by the end users, this rate being calculated on a sample representative of the age distribution for project technologies in the total sales record.

Questions concerning the current use of the technology will be asked to each end user of the sample and observation will be conducted by the interviewer within the kitchen in question, allowing to determine the drop off rate of each technology age category.

G. Monitoring surveys

The monitoring survey investigates changes over time in a project scenario[57] by surveying end users with project technologies on an annual basis. It provides information on year-to-year trends in end user characteristics such as technology use, fuel/water consumption and seasonal variations.

As the technologies project activities considered in this PoA target non-industrial applications, the baseline is considered by-default fixed in time during the considered crediting period[58]. It therefore does not require continuous monitoring, that is why only Project scenario Monitoring surveys will be conducted annually, beginning one year after the project inclusion.

H. Field test updates

As the baseline is considered by-default fixed in time during the considered crediting period[59], it therefore does not require continuous monitoring, that is why only Project scenario field test updates will be conducted every two years, beginning one year after the project inclusion.

The Project field test update is an extension of the project field test and provides a fuel/water consumption assessment representative of project technologies currently in use. As required by the Methodology (p.26), the ageing of the technology should be considered in the estimations of emission reductions. Therefore, a sample of each technology age category needs to be defined when selecting the households to be visited for the Field test updates.

[57] And in a baseline scenario in case of an evolving baseline.
[58] Evolving baseline is allowed as an option and should be defined so at VPA level. Whenever an evolving baseline is defined in the VPA-DD, Baseline monitoring surveys should be performed.
[59] Evolving baseline is allowed as an option and should be defined so at VPA level. Whenever an evolving baseline is defined in the VPA-DD, Baseline field test updates should be performed.

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II. Sampling sizes calculations

The following rules apply for the calculation of each minimum sample size:

Monitoring activities	Minimum sample size
Baseline studies	
Baseline survey	- Group size <300: n = 30 - Group size 300 to 1000: n = 10% of the group size - Group size > 1000: n = 100
Baseline FT	n = 100[60]
Project studies	
Project survey	n = 100, with at least 30 samples for project technologies of each age being credited
Usage survey	
Project FT	n = 100[50] with at least 30 samples for project technologies of each age being credited
Ongoing monitoring tasks	
Monitoring survey[61]	n = 100, with at least 30 samples for project technologies of each age being credited
Usage survey	
FT updates	n = 100[50] with at least 30 samples for project technologies of each age being credited

Surveys and field tests can be conducted concurrently with the same subjects. Whenever it is applied, the same sample will be used for both monitoring activities and additional surveys or field tests will be conducted if needed to comply with the respective minimum sample sizes.

[60] The sample size was defined in reference to the expected COV of the wood savings following the guidelines of the Annex 4 (p.44) of the Methodology. This number will be applied for the first verification and will be updated, if necessary, taking into account the results obtained during first verification and following the guidelines of the Methodology Annex 4.

[61] The presented minimum sample size only concerns Project scenario monitoring surveys. Whenever an evolving baseline is defined in the VPA-DD, Baseline monitoring surveys should be performed following the sample size rules of the Baseline surveys.

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III. Randomness and Representativeness guidelines

A multistage random sampling[62] for all monitoring surveys and field tests has been designed by a statistician in order to cover all the geographical areas of the project activities and to ensure a random selection of the subjects.

Different stages corresponding to the territorial organization of the host country[63] are taken into consideration while defining the sample. These are the department, the municipality and the community.

These are the main guidelines to be followed at each stage while defining the sample:

- Department level:

In order to cover all geographical parts of the project activity, all the departments of implementation of the project activity are selected and the sample size is split among all of them[64], according to their weights in terms of technology volumes (number of units sold or installed).

- Municipality level:

In order to avoid situations where the LPP needs to visit few households in different remote municipalities, between 1 and 8 municipalities (depending on the sample size of each department) are randomly selected among the municipalities with the largest volumes of the technology in each selected department. The sample size is split among all of them, according to their weights in terms of technology volumes.

- Community level:

Once the sample size corresponding to each municipality is defined, between 1 and 8 communities (depending on the sample size of each municipality) are selected randomly in each selected municipality among communities with more than sixteen end users. Eight surveys will be conducted per community, but in order to anticipate the possible absence of some end users, two sample lists will be randomly defined per community, one as the priority list of end users to be surveyed and the other one as a back-up list[65].

When defining the sample of Project field tests and Field test updates, it is necessary to take into consideration technology age categories, that is why a second step is required in the sampling procedure to verify that they are all appropriately represented, and if not the sample is adequately adapted.

---

[62] As defined in the 'Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities' (EB69, Annex 5): http://cdm.unfccc.int/Reference/Guidclarif/meth/meth_guid48.pdf

[63] As the PoA aims at including many countries from Latin America, it is not possible to present here the specific territorial organization of each country. Nevertheless, in many Latin American countries, the territorial organization corresponds to 3 levels: Departments/ Municipalities/ Communities. Therefore, these three territorial divisions will be used in the following guidelines in order to simplify the matters but they will be adapted to each country's specificity.

[64] If the sample obtained in one department is smaller than eight, this department is removed from the sample and the sample size is reweighted again among the remaining departments.

[65] If the complete list of end users is not available at the moment of the Baseline surveys sample definition (in any case, the volumes of technologies per community will be available), the multi-stage random sampling rules described above will be followed except the last step when defining the list of end users to be visited. In this case, MICROSOL will provide the LPP with a list of communities to be monitored and the LPP, once in the field, will be in charge of selecting randomly the end users to be surveyed.

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IV. Seasonality

Whenever seasonal variations in technology and fuel use patterns exist it must be taken into account. For this purpose, the following guidelines will be applied:

- Surveys must collect information on seasonal variations in technology and fuel use patterns.
- Whenever surveys demonstrate that seasonal variations exist, Field tests will be designed so that they capture a fuel consumption pattern representative of a whole year. For example, this may involve carrying out field tests in each season of the year or performing all field tests in the season when the fuel consumption is lower in order to be conservative when extrapolating the data to the whole year.

V. QA/QC procedures

The CME is responsible for accurate and transparent record keeping, monitoring and evaluation. All supporting documentation and records for the project will be accessible for spot checking and cross referencing by a third party. All data will be archived for a period of 2 years after the end of the crediting period.

VI. Sampling design for DOE site-visit

Validation process:

The DOE will perform a site visit in each VPA presented at the time of PoA validation. In any case, the sampling design will be freely discussed with the CME.

Inclusion process:

Site visit by the DOE is required every time a new technology/methodology is introduced in the PoA (if not completed at the time of registering the PoA). In any other case, a desk review can be sufficient. However, if the DOE considers a site visit is necessary, it can be added voluntarily in the scope of its review. In such case, the sampling design will be freely discussed with the CME.

Verification process - VPA(s) and project scenarios random selection process:

MICROSOL will define VPAs for which issuance of credits is requested so that not necessarily all VPAs at a given time shall go for request of issuance of credits.

The DOE will randomly select the VPA(s) to be verified following the rules below for the selection of VPA(s):

- For 1 to 10 VPAs for which issuance of credits is requested, all the scenarios of 1 VPA selected randomly by the DOE will be verified;
- For 11 to 20 VPAs for which issuance of credits is requested, all the scenarios of 2 VPAs selected randomly by the DOE will be verified;

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- For every next batch of up to 10 VPAs for which issuance of credits is requested, all the scenarios of 1 VPA selected randomly by the DOE will be verified.

Once the VPA(s) to be verified are randomly selected, the DOE randomly selects for a site visit 1 project scenario out of each batch of 3 scenarios.

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Appendix 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE POA

Organization:	MICROSOL S.A.R.L.
Street:	quai de Jemmapes
Building:	84
City:	París
Postfix/ZIP:	75010
Country:	FRANCE
Telephone:	(0033) 972313868
E-Mail:	info@microsol-int.com
URL:	www.microsol-int.com
Represented by:	Aurélien Cartal
Title:	Head of Carbon certification
Salutation:	Sr.
Last Name:	CARTAL
First Name:	AURELIEN
Mobile:	(0051) 945144500
Direct tel:	(00511) 241 5560
Personal E-Mail:	acartal@microsol-int.com

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Appendix 2

AFFIRMATION REGARDING PUBLIC FUNDING

The Gold Standard®
Premium quality carbon credits

OFFICIAL DEVELOPMENT ASSISTANCE DECLARATION

Date: 25/02/2013

The Gold Standard Foundation
79 Avenue Louis Casai
Geneva Cointrin, CH-1216
Switzerland

RE: Declaration of Non-Use of Official Development Assistance by Project Owner of **GS1377**

MICROSOL

As Project Owner of the above-referenced project, and acting on behalf of all Project Participants, I now make the following representations:

Aurelien Cartal

I hereby declare that I am duly and fully authorized by the Project Owner of the above-referenced project to act on behalf of all Project Participants and make the following representations:

I. The Gold Standard Documentation

I am familiar with the provisions of The Gold Standard Documentation relevant to Official Development Assistance (ODA). I understand that the above-referenced project is not eligible for Gold Standard registration if the project receives or benefits from Official Development Assistance with the condition that some, or all, of the carbon credits [CERs, ERUs, or VERs] coming out of the project are transferred to the ODA donor country. I hereby expressly declare that no financing provided in connection with the above-referenced project has come from or will come from ODA that has been or will be provided under the condition, whether express of implied, that any or all of the carbon credits issued as a result of the project's operation will be transferred directly or indirectly to the country of origin of the ODA.

II. Duty to Notify Upon Discovery

If I learn or if I am given any reason to believe at any stage of project design or implementation that ODA has been used to support the development or implementation of the project, or that an entity providing ODA to the host country may at some point in the future benefit directly or indirectly from the carbon credits generated from the project as a condition of investment, I will notify The Gold Standard immediately using the Amended ODA Declaration Form provided below.

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The Gold Standard®
Premium quality carbon credits

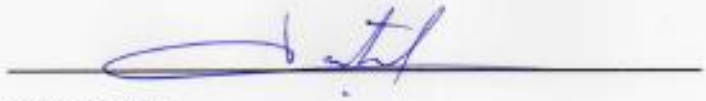
III. Investigation

The Gold Standard reserves the right to conduct an investigation into any project it reasonably believes may be receiving ODA with the condition that some or all of the carbon credits from the project will be transferred to the ODA donor country.

IV. Sanctions

I am fully aware that the sanctions identified in The Gold Standard Terms and Conditions may be applied to me or the above-referenced project in the event that any of the information provided above is false or I fail to notify The Gold Standard of any changes to ODA in a timely manner.

I swear that all of the statements contained herein are true to the best of my knowledge.

Signed: 

Name: **Aurelien CARTAL**

Title: **Head of carbon certification**

On behalf of: MICROSOL

Place: Lima, Peru

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APPENDIX 3

UTSIL NAJ – LPP ELIGIBILITY FORM – IMPROVED COOK STOVES

This form is used to demonstrate the eligibility of a given project activity of distribution of improved cook stoves by a given LPP (Local Program Participant) to the PoA 'Utsil Naj – Casa saludable para todos'. It has to be filled and signed by each LPP applying for inclusion of a project activity in the PoA, and then validated and signed by the CME 'MICROSOL'.

The institution below attests that all activities included in a VPA of the PoA 'Utsil Naj – Casa saludable para todos' do respect, during all the entire crediting period (7 years), all the following criteria. By marking each criterion by an X, the institution confirms its conformity with the criterion.

Name of the institution (LPP): _____

Country of implementation: _____

Department(s) / State(s) of implementation: _____

Year(s) of implementation: _____

1. Methodological criteria

The project activity presented for inclusion:

1.1 Is a voluntary action decided and implemented by the LPP; ☐

1.2 Is not registered as an individual project activity nor is part of another registered PoA and has not been already presented in any VPA of this PoA (the technology units listed in the 'List of end users' provided by the LPP have never been presented to any carbon certification process); ☐

The LPP:

1.3 Will encourage the end users to remove their old technology;

1.4 Has clarified carbon credits property with all end users. ☐

2. Additionality criteria

2.1 There is evidence that carbon funding was considered before the implementation of the project activity; ☐

2.2 The project activity end users are using wood as main fuel for cooking; ☐

2.3 The project activity includes a long-term monitoring process that follows all rules and guidelines provided by MICROSOL. ☐

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3. Sustainability criteria

3.1 The project activity includes a local stakeholder consultation; ☐

3.2 The project activity includes a sustainability monitoring plan that follows all rules and guidelines provided by MICROSOL; ☐

3.3 The LPP has signed the "Do Not Harm Declaration"; ☐

3.4 The LPP commits to use carbon revenues in priority for the sustainability of the project itself with sensitization, capacity building, monitoring, follow-up and maintenance activities; ☐

3.5 The LPP commits to provide transparent information on the use of its carbon revenues; ☐

4. Other criteria

4.1 The LPP has signed the "Official Development Assistance Declaration; ☐

4.2 The LPP declares operating in full conformity with local laws applicable to its entity. ☐

Comments:

_____

_____

I declare all the information provided above is sincere and reflects the reality of the project submitted.

LPP: (date + name of the institution + name of the signatory + signature)

_____

I declare all criteria listed above were explained to the LPP, and all answers made are consistent with our knowledge of the LPP activity and the evidences collected from the LPP.

MICROSOL: (date + name of the signatory + signature)

_____

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APPENDIX 4

UTSIL NAJ – LPP ELIGIBILITY FORM – SAFE WATER SUPPLY DEVICES

Here is presented the English version of the Eligibility empty form. A Spanish version is signed by the LPP.

This form is used to demonstrate the eligibility of a given project activity of distribution of Safe Water Supply Devices (SWSD) by a given LPP (Local Program Participant) to the PoA 'Utsil Naj – Casa saludable para todos'. It has to be filled and signed by each LPP applying for inclusion of a project activity in the PoA, and then validated and signed by the CME 'MICROSOL'.

The institution below attests that all activities included in a VPA of the PoA 'Utsil Naj – Casa saludable para todos' do respect, during all the entire crediting period (7 years), all the following criteria. By marking each criterion by an X, the institution confirms its conformity with the criterion.

Name of the institution (LPP): _____

Country of implementation: _____

Department(s) / State(s) of implementation: _____

Year(s) of implementation: _____

1. Methodological criteria

The project activity presented for inclusion:

1.1 Is a voluntary action decided and implemented by the LPP; ☐

1.2 Is not registered as an individual project activity nor is part of another registered PoA and has not been already presented in any VPA of this PoA (the technology units listed in the 'List of end users' provided by the LPP have never been presented to any carbon certification process). ☐

1.3 The LPP has clarified carbon credits property with all end users; ☐

1.4 Before the project activity, the end users did not have access to safe water supply: they were drinking unsafe water or were boiling it. ☐

2. Technological criteria

The technology implemented must follow the following principles: ☐

2.1 It provides safe water following MICROSOL's quality standard based on detection of the E.coli bacteria, that cannot exceed 1 NMP/100 ml of treated water. ☐

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3. Additionality criteria

3.1 There is evidence that carbon funding was considered before the implementation of the project activity; ☐

3.2 The project activity end users are using wood as main fuel for cooking; ☐

3.3 The project activity includes a long-term monitoring process that follows all rules and guidelines provided by MICROSOL. ☐

4. Sustainability criteria

4.1 The project activity includes a local stakeholder consultation; ☐

4.2 The project activity includes a sustainability monitoring plan that follows all rules and guidelines provided by MICROSOL; ☐

4.3 The LPP has signed the "Do Not Harm Declaration"; ☐

4.4 The LPP commits to use carbon revenues in priority for the sustainability of the project itself with sensitization, capacity building, monitoring, follow-up and maintenance activities; ☐

4.5 The LPP commits to provide transparent information on the use of its carbon revenues. ☐

5. Other criteria

5.1 The LPP has signed the "Official Development Assistance Declaration; ☐

5.2 The LPP declares operating in full conformity with local laws applicable to its entity. ☐

Comments:

_____

_____

I declare all the information provided above is sincere and reflects the reality of the project submitted.

LPP: (date + name of the institution + name of the signatory + signature)

_____

I declare all criteria listed above were explained to the LPP, and all answers made are consistent with our knowledge of the LPP activity and the evidences collected from the LPP.

MICROSOL: (date + name of the signatory + signature)

_____

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Appendix 5

NON-RENEWABLE BIOMASS ASSESSMENT

As stated in Annex 1 of the Methodology, two options exist to estimate the fractional non-renewability of woody biomass fuels (fNRB). The CME has chosen option b), i.e. the approach similar to CDM-approved methodology AMS II.G v02.

Using UNFCCC Executive Board information note "EB67 Report – Annex 22 – DEFAULT VALUES OF FRACTION OF NON-RENEWABLE BIOMASS FOR LEAST DEVELOPED COUNTRIES"[66], the CME proposes a similar approach to calculate the fractional non-renewability of woody biomass fuels at country level. This approach is directly based on AMS II.G v02 methodology and the concept of DRB (Demonstrable Renewable Biomass).

The fraction of woody biomass saved by the project activity in year y that can be established as non-renewable is given by the following equation:

$$fNRB = \frac{NRB}{NRB + DRB} \quad (1)$$

Where:

fNRB	Fraction of non-renewable biomass (fraction or %)
NRB	Non-renewable biomass (t/yr)
DRB	Demonstrably renewable biomass (t/yr)

The CME decided to calculate the fNRB at national level, which represents the level where available data on forests and wood consumption are the most accessible, complete and accurate. Using the concept of DRB national-level, the value of NRB can be derived from:

- The Total Annual Biomass Removals (R), approximated by the quantity of woody biomass used annually in the country in the absence of the project activity;
- The proportion of R that is demonstrably renewable (DRB) and non-renewable (NRB).

$$NRB = R - DRB \quad (2)$$

Where:

R	Total annual biomass removals (t/yr)

[66] http://cdm.unfccc.int/filestorage/H/2/9/H29X6EKQMJU7RY85DIT4ZPFAL3O1GW/eb67_repan22.pdf?t=QUV8bXM0Z3F3fDAaeY-hmicND2UXHE-gpRLy

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The Total Annual Biomass Removals for a country is inferred by calculating the sum of the Mean Annual Increment in biomass growth (MAI) and the Annual Change in Living Forest Biomass stocks (ΔF). Given biomass growth (MAI) and change in stock (ΔF) are both known, the balancing removals (R) can be calculated as the sum of the two:

$$R = MAI + \Delta F \quad (3)$$

Where:

R	Total annual biomass removals (t/yr)
MAI	Mean Annual Increment of biomass growth (t/yr)
ΔF	Annual change in living forest biomass1 (t/yr)

The Mean Annual Increment of biomass growth (MAI) is calculated in equation 4 as the product of the Extent of Forest (F) in hectares and the country-specific Growth Rate (GR) of the Mean Annual Increment:

$$MAI = F \times GR \quad (3)$$

Where:

MAI	Mean Annual Increment of biomass growth (t/yr)
F	Extent of forest (ha)
GR	Annual Growth rate of biomass (t/ha-yr)

The Demonstrably renewable biomass (DRB) is calculated in equation 5 as the product of Protected Area Extent of Forest (PA) in hectares and the country-specific Growth Rate (GR) of the Mean Annual Increment:

$$DRB = PA \times GR \quad (4)$$

Where:

PA	Protected Area Extent of Forest (ha)

In the end, to calculate the fNRB of a given country, the four following input parameters are necessary:

- GR : Annual Growth rate of biomass (t/ha-yr)
- F : Extent of forest (ha)
- PA : Protected Area Extent of Forest (ha)
- *ΔF* : Annual change in living forest biomass1 (t/yr)

The CME used third party databases and studies to get access to these data, mostly coming from recognized international institutions:

- **GR**: Country-specific growth rate calculated as a weighted average based on FAO reporting on distribution of total forest area by ecological zone (FAO FRA 2000, Table 14. Distribution of total

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forest area by ecological zone[67]) and IPCC above-ground biomass growth rates for different ecological zones (2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 4, Table 4.9[68]);

- **F** : FAO FRA 2010, Global table xls, Table 2. Extent of forest and other wooded land, column "B"[69];
- **PA** : FAO FRA 2010, Global table xls, Table 6. Forest management and legal status, column "D"[72]. If no figures on protected areas are available a default value of 15% of extent of forest will be used.
- **ΔF**: Calculated by converting Annual Change in Carbon Stock in Living Forest Biomass 2005-2010 (tcarbon/yr)(FAO FRA 2010, Global table xls, Table 11. Trends in carbon stock in living forest biomass, column "I") to Annual Change in Living Forest Biomass 2005-2010 (t/yr) thanks to Carbon stock/Biomass Conversion rate (2003 IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry[70]): 0.5 is used as a default for the carbon fraction of dry matter.

These are the detailed results of CME calculations for the fraction of non-renewable biomass of the PoA host countries:

Country	*F (ha)*	*GR (t/ha-yr)*	*MAI (t/yr)*	*ΔF (t/yr)*	*R (t/yr)*	*PA (ha)*	*DRB (t/yr)*	*NRB (t/yr)*	*fNRB (%)*
El Salvador	287,000	4.30	1,233,957	-773,333	2,007,290	32,000	137,584	1,869,706	**93.15%**
Guatemala	3,657,000	6.09	22,271,130	-8,000,000	30,271,130	1,930,000	11,753,700	18,517,430	**61.17%**
Honduras	5,192,000	6.65	34,511,224	-16,000,000	50,511,224	2,335,000	15,520,745	34,990,479	**69.27%**
Mexico	64,802,000	3.48	225,672,965	-14,000,000	239,672,965	8,488,000	29,559,460	210,113,505	**87.67%**
Peru	67,992,000	6.36	432,701,088	-38,000,000	470,701,088	19,415,127	123,557,868	347,143,220	**73.75%**

Please refer to "Appendix 11 - fnrb calculations" for more detailed information.

[67] http://www.fao.org/docrep/004/Y1997E/y1997e21.htm#bm73
[68] http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf
[69] http://www.fao.org/forestry/fra/fra2010/en/
[70] http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_contents.html

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Appendix 6

MONITORING SCHEDULE

For improved cook stoves:

Monitoring schedule	Prior to validation	Prior to 1st verification	Annual: after 1st verification	Every 2 years: after 1st verification
Baseline studies				
NRB assessment	X			
Baseline survey (BLKS)	X			
Baseline FT (BLKT) except when default values are applied		X		
Project studies				
Project survey (PSKS)		X		
Project FT (PSKT)		X		
Ongoing monitoring tasks				
Maintenance of 'End users list'	Continuous			
Usage survey (PSKS)		X	X	
Monitoring survey (PSKS)			X	
FT updates (PSKT)				X
Leakage assessment				X

For safe water supply devices:

Monitoring schedule	Prior to validation	Prior to 1st verification	Annual: after 1st verification	Every 2 years: after 1st verification
Baseline studies				
NRB assessment	X			
Baseline survey	X			
Baseline FT (BWBT)		X		
Project studies				
Project survey		X		
Project FT (PWBT[71] + WCFT)		X		
Ongoing monitoring tasks				
Maintenance of 'End users list'	Continuous			
Usage survey		X	X	
Monitoring survey			X	
FT updates: WCFT				X
FT updates: PWBT + BWBT	Whenever monitoring surveys show changes in scenarios			
Water quality assessment		X		X

[71] If the 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. Therefore, there is no need to conduct Project water boiling tests.

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Leakage assessment				X

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Appendix 7

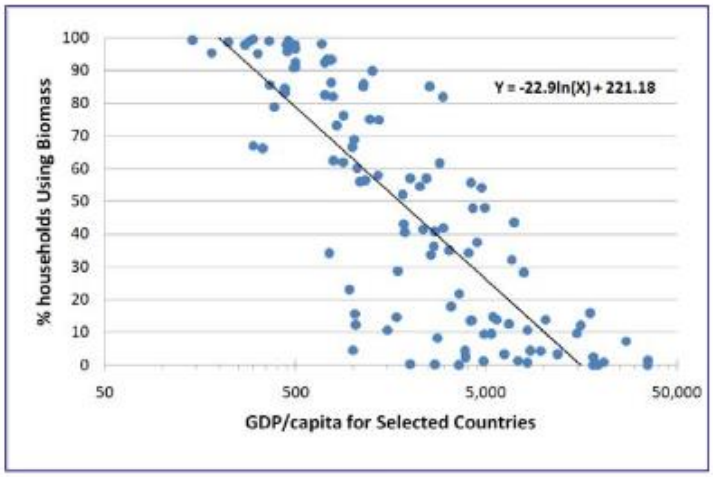
CORRELATION BETWEEN POVERTY AND COOKING PRACTICE

The[72] great reliance on solid fuels for cooking is a strong indicator of poverty. It is recognized that access to modern energy services - including electricity and clean fuels - is important to the achievement of the Millennium Development Goals. For example, access to modern energy services is essential for increasing productivity in agriculture and for increasing the potential of microenterprises to generate employment opportunities that are likely to help eradicate extreme poverty and hunger (MDG1). Access to modern energy services can reduce women's domestic burden of collecting fuel wood and allow them to pursue educational, economic, and other employment opportunities that can empower them and promote gender equality (MDG3). Similarly, the use of clean cooking and heating fuels in efficient appliances can contribute to reducing child mortality (MDG4). Without access to modern energy services, the likelihood of escaping poverty is very low.

Using wood for cooking has many negative impacts for the user: loss of time and risks related to the collect of wood, cooking is longer and less practical, health problems because of the smoke, etc.
For that reason it cannot be considered as a voluntary choice of people, but it is a direct consequence of their low revenues. Energy ladder models show that as income levels increase, people switches from the use of solid fuels (mainly wood in Latin America) to cleaner fuels such as gas and electricity.

The following graphs clearly illustrate the correlation between poverty and the utilization of wood for cooking:

Figure 2. Household Biomass Energy Use and GDP in Developing Countries, 2007



Source: WHO and UNDP (2009).

Source: "The Energy Access Situation in Developing countries", WHO & PNUD, 2009

[72] The text comes from the World Bank latest publication "Household Energy Access for Cooking and Heating: Lessons Learned and the Way Forward" (2011), Chapter 2. A Multidimensional Challenge.
http://siteresources.worldbank.org/EXTENERGY2/Resources/HouseHold_Energy_Access_DP_23.pdf

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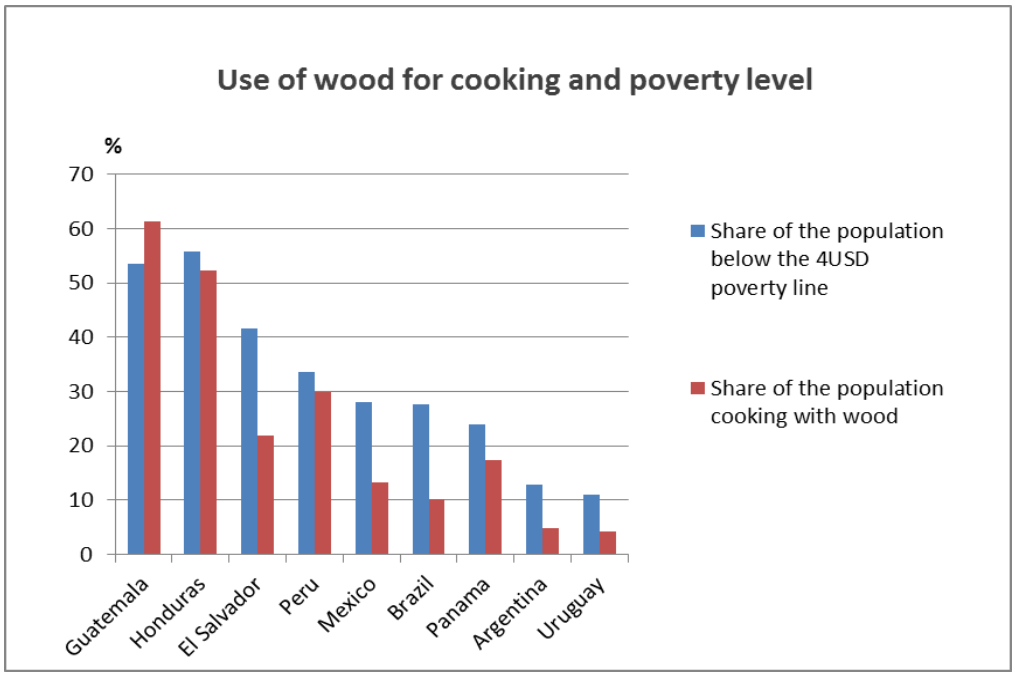

Source: Own figures[73]

[73] Based on 'The Energy Access Situation in Developing countries' (WHO and PNUD, 2009) and data from the Socio-Economic Database for Latin America and the Caribbean (CEDLAS and The World Bank).

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