



Programme of activities design document form
(Version 09.0)

BASIC INFORMATION

Title of the PoA	Distribution of ONIL Stoves—Guatemala
Version number of the PoA-DD	13
Completion date of the PoA-DD	18/09/2020
Coordinating/managing entity	HELPS International Incorporated
Host Parties	Guatemala
Applied methodologies and standardized baselines	AMS-II.G: “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass” (Version 11.1)
Sectoral scopes	Sectoral scope 3: Energy demand

PART I. Programme of activities (PoA)

SECTION A. Description of PoA

A.1. Purpose and general description of PoA

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The following information shall be included here:

1. General operating and implementing framework of PoA

The programme of activities, Distribution of ONIL Stoves — Guatemala, involves the distribution of fuel-efficient, improved cook stoves to households across the Republic of Guatemala (hereafter referred to as “Guatemala”) in households that currently use conventional open fire¹. The replacement of open fires with more efficient devices in households reduces the amount of fuel wood consumption through improved combustion efficiency, thus reducing the GHG emissions linked to non-renewable biomass and incomplete combustion of fuel wood.² Ecoeye Co., Ltd. (henceforth Ecoeye) will provide all implementation costs for the CPAs implemented under this PoA, including total operation & maintenance costs of ICS production and distribution to households.

The boundary of the SSC-CPA is determined by the sum of the locations of the individual households within which the ONIL Stoves in this SSC-PoA are installed, but are limited to the geographical boundary of Guatemala. The ONIL stove is a high efficiency rocket fuel wood improved cook stove (ICS³) with a thermal efficiency higher than 20%, a combustion chamber, a single or multi-pot cooking surface and a chimney. Different variations of ONIL Stoves fitting the above-mentioned description will be allowed under this PoA, but all models should be approved by the CME before incorporation into the Programme and all models will have over 20% thermal efficiency. Examples of model variations of ONIL Stoves eligible to participate in the PoA include modifications in material (e.g. solid insulation instead of pumice insulation), variations of the shape of the stove or variations of its components (skirt attachment to improve efficiency). This PoA is exclusive to ONIL Stoves manufactured or approved for distribution by HELPS International. ICS that do not meet the specifications outlined above (i.e., 20% efficiency, rocket stove, combustion chamber, etc.) or that do not meet the criteria defined in methodology II.G will not be eligible to participate in the PoA.



Figure 1: ONIL “Plancha” Stove made of concrete block with combustion chamber and griddle multi pot top

Each household within this PoA will be clearly identified with a unique geographical identification (using information such as GPS coordinates). This information will be maintained on a database and continuously monitored and checked by the coordinating entity; it will be made available to the DOE.

¹ Open fires in this PoA are defined as “conventional system with no improved combustion air supply or flue gas ventilation system, i.e., without a grate or chimney as defined in methodology II, G, version 11.1.

² FAO, Woodfuels and climate change mitigation. Case studies for Brazil, India and Mexico, Rome 2010, page 62. The document describes how and ICS in other parts of the world are effective reducing anthropogenic GHGs.

³ For the purpose of this PoA the term ONIL Stove and ICS are used interchangeably

HELPS International Incorporated ("HELPS International") will be the Coordinating Managing Entity ("CME") for the PoA and the CPA implementer of the first SSC CPA. C-Quest Capital LLC ("CQC") and Ecoeye Co., Ltd. will be the project participants.

2. Policy/measure or stated goal of the PoA

The goal of the PoA is to transform the fuel-efficiency of Guatemala's traditional home cooking systems by distributing efficient improved cook stoves to households, thus supporting widespread use and implementation. By doing so, the programme will abate greenhouse gas emissions through reduced fuel wood usage and save household expenditures on fuel.

3. The following are contributions of the PoA to sustainable development:

Environmental sustainability

(i) The programme reduces the use of non-renewable biomass:

In Latin America, and in particular Guatemala, the consumption of non-renewable biomass for energy generation has been growing for the past 30 years. More than a quarter of forest production in Latin America goes towards firewood production.⁴

By adopting the higher efficiency ONIL Stove, households reduce the quantity of fuel wood they must consume for daily cooking needs. Independent laboratory test (Annex 3) shows that when compared to firewood consumption of conventional open fires, the ONIL Stove on average reduces firewood consumption by 58 percent.⁵ Since a very high proportion of fuel wood comes from non-renewable sources, this translates directly into reduced emission reductions from non-renewable extraction of wood. For example, it is estimated that every stove will, on average, save 3.837 tons of carbon dioxide equivalent in each year of its operation. Thus, the PoA lowers the Greenhouse Gas (GHG) Balance for the country.

(ii) The programme also supports the objectives of national climate change policies and programs.

The *Programa Nacional de Cambio Climático* (PNCC) within the Environment Ministry of Guatemala is charged with assessing the risks of climate change and recommending policies to reduce the country's vulnerabilities. The PoA is in line with the PNCC aim of generating projects within Guatemala that promote forest management, a critical and vulnerable sector identified by the Program.⁶ By installing improved cook stoves, households reduce firewood consumption, thus helping maintain forest stocks within the country.

The PoA also supports the "Climate Change Studies in Guatemala with Emphasis on Adaptation Project" which has the specific objectives of:

- Strengthening key players (of community) and local and regional institutions.
- Supporting forestry and agroforestry projects with the potential for removing carbon.
- Incorporating the subject of climate change into the region's agenda.⁷

(iii) The programme produces real and measurable reductions in GHG emissions:

The programme will utilize the approved methodology, AMS II.G, version 11.1, "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass", to ensure that all measurements of greenhouse gas emission reductions are robust, conservative and verifiable. The programme will maintain high standards of monitoring to ensure that all emission reductions claimed are measurable and real.

Economic Sustainability

(i) The programme reduces household expenditures:

The PoA will contribute significantly to Guatemala economic sustainability through the more efficient use of firewood. Energy savings at both individual household and national levels make important contributions to their economic efficiency and sustainability. As shown in laboratory test, the use of the ONIL Stoves will

⁴ UNEP (2003): GEO Latin America and the Caribbean: Environment Outlook 2003. www.unep.org/geo/pdfs/GEO_lac2003English.pdf

⁵ The Aprovecho Test results (Annex 3 and page 2 of report) show a hot start efficiency of 26%, which signify increased efficiency of 62% and a cold start efficiency of 20%, translating to 50% improved efficiency. Taking into account cooking behaviour, which includes one cold start in the morning and two hot starts throughout the day, the weighted average stove efficiency of 24%, which translates to 58% increased efficiency for the stove.

⁶ <http://www.marn.gob.gt/Multimedios/56.pdf>

⁷ Ministry of the Environment and Natural Resources and National Climate Change Programme Guatemala (2004): "Climate Change Studies in Guatemala with emphasis on Adaptation".

reduce firewood consumption by approximately 58 percent from baseline consumption, significantly reducing household expenditures.

According to World Bank reports, in 2000 approximately 56 percent of the population or 6.4 million people in Guatemala lived in poverty. About 16 percent of the population lives in extreme poverty, and of those classified as “poor”, 79 percent are chronically poor.⁸ The majority of these households live in the countryside or rural areas. By installing improved cook stoves, these households would save significantly on household expenditures related to firewood purchases along with saving time spent gathering firewood, which would free up time for households for other income generating activities. These savings would help improve living conditions for households in Guatemala.

(ii) The programme results in creation of new jobs and development of new skill sets:

The ONIL Stove distribution program, which all CPAs will follow, relies on community organizers to facilitate demonstrations and organize training sessions. As these community organizers increase their knowledge about stoves, they often become professional installers and help maintain the stoves in their community. In addition, there are two stove-manufacturing facilities in Guatemala that employ about 20 people each. As uptake of stove technologies spreads, it will allow for expansion of manufacturing facilities to meet increased demand, thus generating more employment opportunities within the country.

Social Sustainability

The programme helps to improve health conditions:

There are very tangible and significant health benefits associated with the switch in technology from conventional open fires to improved cook stoves as well. Traditional cooking methods involve conventional open fires that result in the emissions of local pollutants such as carbon monoxide and particulate matter in often poorly ventilated rooms, which lead to respiratory problems. In addition, conventional open fires are frequent causes of burns and other injuries. Switching from conventional open fires to ONIL Stoves reduces the incidence of such injuries and health problems.

Through demonstration, training and implementation, the PoA will also generate a range of less tangible social outcomes in education and awareness. This programme will build awareness of the health problems associated with conventional open fires traditionally used for cooking and create an opportunity for collective action on climate change, enhancing a sense of community, and empowering individual households.

A.2. Physical/geographical boundary of PoA

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

All CPAs associated with this PoA will be implemented within the geographical boundary of Guatemala.

The geographic coordinates for Guatemala, the PoA boundary, are: Northernmost point N 17° 48.744894' W 89° 9.902344 (Reserva de la Biosfera Calakmul), Westernmost point: N 14° 32.202449' W 92° 13.483887; Southernmost point: N 13° 45.280865' W 90° 7.910156 (Carretera del Litoral); Easternmost point: N 15° 43.469738' W 88° 13.872070 (Carretera 13)

⁸ World Bank (2003): Poverty in Guatemala, p. 2, bit.ly/9M40Lq



Figure 1. Geographic boundary of PoA—Country of Guatemala⁹

A.3. Technologies/measures

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The program will provide ONIL Stoves to replace conventional open fires used by households. The PoA is a Type II 'Energy Efficiency Improvement Project', and methodology applied is AMS II.G.- 'Energy efficiency measures in thermal applications of non-renewable biomass'; version 11.1.

The ONIL Stove is a fuel-efficient stove that reduces the amount of firewood required by households by up to 58 percent, and results in lower emissions based on its construction and design. Since the efficiency of a traditional open fire is 10%¹⁰ and the efficiency of an ONIL Stove is 24% to 32%¹¹, and depending on the specific stove model the efficiency can be higher, the ONIL Stove is more efficient than the traditional open fire. Complete combustion and efficient energy transfer to pots and cooking surfaces ensures fast heating and fuel-efficiency. The fire is contained in the insulated combustion chamber, thus burning the oil vapor that is normally emitted as smoke. Energy is then efficiently transferred to cooking pots and surfaces. Insulation prevents the heat from being wasted heating the stove body. Hot gases that do not touch the cooking surface waste their energy but insulation lets all the hot gases come in contact with the cooking surfaces thereby transferring their energy to the pot and leaving only enough heat in the exhaust gases to provide a draft up the chimney. These technology improvements make the ONIL stove more efficient than a traditional open fire.

⁹ www.lonelyplanet.com/maps/central-america/guatemala/map_of_guatemala.jpg

¹⁰ Default value for open fires as stated in AMS II.G methodology, version 11.1, "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass"

¹¹ Note that at time of writing, no national nor international standard body (hence no certifying agent recognized by it) exists; hence the CME has opted to use the manufacturers' specification for the first CPA. Manufacturers can specify the efficiency of the ICS through WBTs conducted by independent third parties. This is an indicative project stove efficiency figure. The actual efficiency will be mentioned in specific CPA DD.

The ONIL stove can be manufactured assembled and installed locally or be imported. The implementation of the PoA or SSC-CPA does not require any technology transfer from Annex 1 countries to Guatemala.

Technical Information of ONIL stoves¹²

Weight	394.32 lbs
Type of Fuel	firewood
Thermal efficiency	31.67%
Combustion speed	30.83 g/min
Fire Power	8930 watts
Material	Concrete & reinforced steel

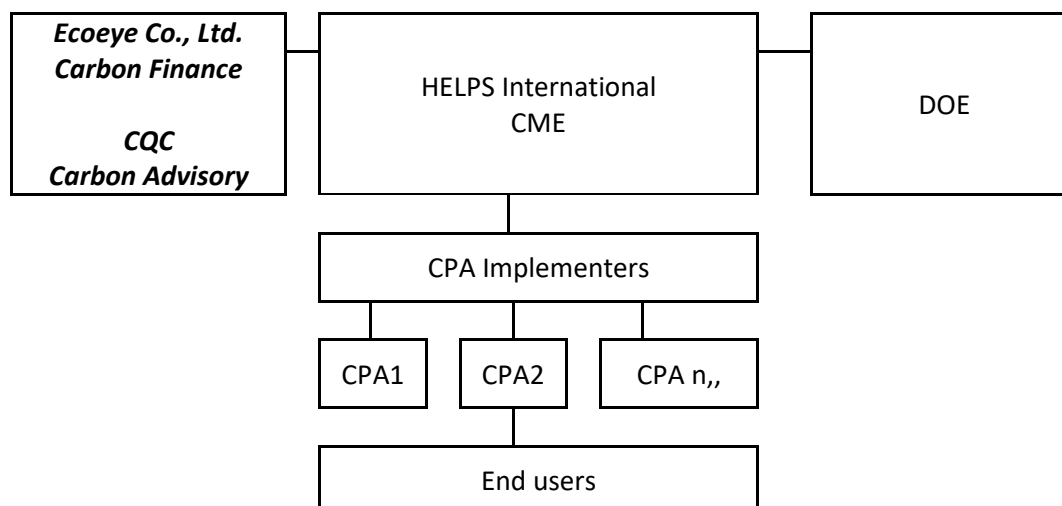
A.4. Coordinating/managing entity

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The following information shall be included here:

1. Coordinating or managing entity of the PoA as the entity that communicates with the Board is HELPS International.
2. Project participants being registered in relation to the PoA. Project participants may or may not be involved in one of the CPAs related to the PoA.

HELPS International will be Coordinating/Managing Entity (CME) of this SSC-PoA and is the entity which communicates with the CDM Executive Board. CQC will provide carbon advisory to CME and support the development of the programme. Ecoeye Co., Ltd. (Ecoeye) will be responsible for financing the implementation of the PoA. CQC and Ecoeye are currently the two project participants to the SSC-PoA (project participants may or may not be involved in one of the component project activities (CPAs) related to the SSC-PoA.



¹² These specifications are indicative and actual specification of the stove may vary from the ones mentioned.

A.5. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of Guatemala (host)	HELPS International Incorporated (Private entity)	No
Government of the Netherlands	C-Quest Capital LLC (Private Entity)	No
Republic of Korea	Ecoeye Co., Ltd.	No

A.6. Public funding of PoA

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No public funding is being used for the program. If public finance is used, confirmation that there is no diversion of ODA will be provided.

SECTION B. Management system

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Roles and Responsibilities

HELPS International will be the CME of the proposed PoA and will also be a CPA Implementer. The responsibilities of the CME are described below:

Operational Category	Management Responsibilities & Arrangements	Responsible Party
Capacity building, record management, CPA inclusion/verification and overall PoA coordination	<ul style="list-style-type: none"> - Define the roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies - Manages records of arrangements for training and capacity development for personnel (such as field personnel (technicians), monitoring personnel, and feeding the database - Provides procedure for technical review of inclusion of CPAs - Provides procedure for avoiding double counting - Manages records and documentation controls process for each CPA under the PoA - Manages measures for continuous improvements of the PoA management system - Manages any other relevant elements - Reviews all CPAs to confirm that all eligibility requirements are met before a CPA is proposed for inclusion - Coordinates the implementation of the monitoring plan - Maintains database and all other records necessary to verify stoves installed or distributed within each CPA and the PoA overall; - Implements and oversees day-to-day operation of the POA; - Coordinates with DOEs inclusion of CPAs, verification of emissions reductions from CPAs. 	- CME
Demonstration, Household Recruitment,	- Household buy-in to implement new technology	- CPA Implementer

Operational Category	Management Responsibilities & Arrangements	Responsible Party
and Overall market development	<ul style="list-style-type: none"> - Recruit initial households for training of installation, use, and maintenance; these initial households will spread knowledge to other households within the community - Plan and implement market promotion 	
Product Supply	<ul style="list-style-type: none"> - Manage manufacturing facilities in Guatemala - Ensure timely production and supply of ONIL Stoves for each SSC-CPA 	- CPA Implementer
Transport & Storage Logistics	<ul style="list-style-type: none"> - Arrange transport of stoves from manufacturing facilities - Arrange storage prior to distribution - Delivery of stoves to distribution hubs 	- CPA Implementer
Distribution to Households	<ul style="list-style-type: none"> - Management of distribution points; stock; customer transactions and staff - Household data collection (through Registration Card) - Train main user in household on installation, use and maintenance of stove - Coordinate the efforts of all local partner organizations for ONIL stove distribution/installation - Maintain all records necessary to verify stoves installed or distributed within each CPA it is implementing; - Implement and oversee day-to-day operation of the CPA, including ensuring users of the stoves are aware of how they should be used - Household asked to dispose of the traditional open fire 	- CPA Implementer
Monitoring Emission Reductions	<ul style="list-style-type: none"> - Conduct baseline surveys of households - Collection of sample data for each monitoring period - Ensure all stoves are installed and in use (that households have not reverted back to old cooking methods) - Preparation of monitoring reports for emission reduction verification - Be responsible for tracking stoves to end users and verifying use - Spot check end user tracking system 	- CME and CPA Implementer

Table 2: Operational Categories and Management Responsibilities for ONIL Stoves—Guatemala PoA

Competencies of the CME

HELPS International

HELPS International is currently developing two improved cook stove PoAs: Distribution of ONIL Stoves-Mexico and Distribution of ONIL Stoves – Guatemala. HELPS International has been designing and installing ICS in Guatemala since 2002 and in Mexico since 2008 and has installed over 100,000 stoves in

Latin America. HELPS International actively works on finding ways to improve cook stove technology and has a laboratory in Guatemala dedicated to testing and improving ICS designs. HELPS International staff includes some of the best-known experts in biomass cook stoves in the region and the organization has a successful distribution, capacity building and follow through system which ensures end user acceptance of the ICS. As an example, the first ONIL stove installed in Guatemala in 2002 is still in operation today. HELPS International stove experts have received multiple international awards including the Ashden Award for Factory Production of ICS in 2004; the Swanson Foundation Health Award/Tech Awards for design that helps humanity, 2007, and the Partnership for Clean Indoor Air (PCIA) Global Leadership Award, 2009. HELPS International actively participates in the global and local ICS community, including Partnership for Clean Indoor Air, UN Global Alliance for clean energy and the Mexican Bioenergy Network (REMBIO), among others.

Competencies of other project participants

Ecoeye Co., Ltd. (Ecoeye)

All CPAs implemented under this PoA will be financed by Ecoeye Co., Ltd.

C-Quest Capital, LLC (CQC)

CQC has been the leader in the development of Programme of Activities under the CDM, having developed the CFL lighting scheme - "Bachat Lamp Yojana" PoA (CDM Ref 3223) and implemented more than 4 CPAs under it (at the time of validation of this SSC-PoA).

CQC is currently the CME for three SSC-PoAs:

- POA 1: Distribution of fuel-efficient improved cook stoves in Nigeria: CME
- POA 2: Distribution of improved cook stoves in Zambia: Co-CME
- POA 3: Distribution of Improved Cook Stoves in Sub-Saharan Africa: CME

CQC staff has over 20 years of experience with ICS, having been involved and leading key operations to provide funding through multiple instruments for improved cook stove distribution in different countries. These operations have proven successful and introduced consumers to the opportunity of ICS. Many did not lead to a large-scale market due to the higher costs of ICS and lack of sustainable financing mechanisms to keep costs at the level of the willingness to pay of the poor. CQC staff has established working relationship with major international stove producers and have been involved in the development of registered methodologies and PDDs and POAs for ICS.

CQC will support the CME through the development of the tasks described above. In specific, CQC expertise in other PoAs will serve to advise the CME of this PoA to ensure that the role of the CME is properly fulfilled.

Records of arrangements for training and capacity development for personnel

Key training needs:

- Monitoring: Training, including that of field personnel, is needed to ensure monitoring activities are conducted effectively. Training for monitoring will include spot checking of a random sample of households with ONIL Stoves to ensure the stoves are continuing to be used, as well as a random sample of households selected for the stove efficiency tests (efficiency tests will be carried out by a CPA Implementer, CME or a third party certified by a national standards body or an appropriate certifying agency recognized by it using the Water Boiling Test). The procedures to complete this sampling are described in chapter I.7.2 (below) and meet Standard for 'Sampling and surveys for CDM project activities and programmes of activities' version 08 confidence/precision requirements.
- Database: training of data input and quality, back-ups and other relevant database responsibilities
- ONIL stove distribution/installation: CPA implementers shall provide evidence of their ability to train technicians/instructors/field staff on ONIL stove assembly, manufacture, installation and distribution. Details on training for ONIL stove distribution/installation are found on Section H.3 of the PoA-DD.

Procedures for technical review of inclusion of CPAs

The CME will undertake the following activities to ensure proper eligibility of the CPAs before they are uploaded for official inclusion into the PoA:

- CME will review each CPA document and methodically go through each and every eligibility/applicability criterion of the PoA to ensure the CPA meets each requirement with certainty. In cases where there is doubt, the CME will not upload the CPA document until the requirements are met to the CME's satisfaction.

- CME will review database/registration procedures to ensure proper ICS data collection and management in line with the methodology and PoA eligibility criteria.
- CME will review all proposed monitoring procedures to ensure they are in line with the PoA, including stove efficiency testing and ensuring the new stoves are continuing to be used as intended.
- During implementation, and as necessary, CME personnel will visit each CPA region to ensure all procedures outlined in the PoA are being followed, particularly on stove registration and database updating.

SSC-CPA Record Keeping

Each SSC-CPA will follow the record keeping and monitoring requirements stipulated in AMS II.G, version 11.1, and detailed in Section E below. In summary, the CME will ensure that each SSC-CPA maintains appropriate records and documents the following variables in the data management system (if applicable and available):

- Name of ICS user or head of the household
- Address of ICS user or household
- Phone number of ICS user or household (if available)
- GPS location of household
- Stove model
- Date of distribution/installation
- ICS serial number
- Retailer/distributor information

The CME will be responsible for the management of records and databases associated with each SSC-CPA.

Procedure to Avoid Double -Counting

Each ONIL stove in each SSC-CPA included in this PoA will be identified by a unique combination of customer name and geographical location, as well as a unique serial number. The serial number will start with an identifier, which will allow for a clear distinction between the stoves from this PoA with those of other potential PoAs. Each stove's serial number will be entered into a database that will keep track of which stoves are in which CPAs. Each CPA will have a set of serial numbers so a project participant or verifier can easily determine that any stove identified in any household is affiliated with one – and only one – CPA. No individual serial number can be in more than one CPA, so it will not be possible for one stove to be counted in two different CPAs. In addition, prior to including a new SSC-CPA within the proposed PoA, the managing entity will check the CDM project database,¹³ as well as in any other voluntary carbon scheme (such as Gold Standard, VCS, VER+¹⁴) to establish whether a CPA or CPA of another PoA utilizing energy-efficient stove technologies has already been registered that covers any of the households in the proposed CPA. This search will cover registered project activities, project activities requesting registration, project activities under review and project activities for which either a review or corrections have been requested.

Participating households will demonstrate that they were using traditional cooking methods (e.g. conventional open fires) when a new registration card is filled out or sent via SMS or ICT. This will ensure that no end-users will be included in a new CPA if they already own an ICS

De-bundling

According to paragraph 124 (n) of CDM project standard for programmes of activities; version 02.0, if generic CPA consists solely of units that qualify as “microscale CDM units, then the CPA is exempted from performing the de-bundling check. For the present PoA each cookstove in the generic CPA is expected to result in energy saving which is less than microscale threshold thus qualifying as microscale CDM unit.

$$((NCV_{\text{biomass}} * B_{\text{y,savings}}) / 180 \text{ GWh}_{\text{th}}) * 100$$

Where:

NCV_{biomass} Net calorific value of the non-renewable biomass that is substituted
 (IPCC default for wood fuel, 0.015 TJ/tonne), calculated as

¹³ cdm.unfccc.int/Projects/projsearch.html , <http://www.vcsprojectdatabase.org>, <http://www.cdmgoldstandard.org/our-projects/project-pipeline>

¹⁴ VER+ is TÜV SÜD's standard for verified emission reductions.

$(0.015 \text{ TJ/tonne}) * (0.277777 \text{ GWh/TJ}^{15})$
 $B_{y,savings}$ Total biomass that is saved in tonnes in one year (y)

All CPAs are subscribed to the PoA

The CME is responsible for identifying, developing, registering and managing all SSC-CPAs to be included in the proposed PoA. This will mean that those operating the SSC-CPA will be aware, and will have agreed that their activity is subscribed to the proposed PoA. Legal agreements will be in place between the CME and the CPA implementers clearly stipulating that their activities are subscribed to the SSC-PoA. Households will be made aware that they are participating in the PoA through the Registration Card purchase contract which ensures that households subscribed to the relevant SSC-CPA are aware of the nature of the program, and agree to relinquish CER rights to HELPS International.

Measures for continuous improvements of the PoA management system

The CME will undertake an annual review of the overall PoA management system, including identifying any problems with stove distribution/installation, stove use once in the households, monitoring continued stove use and overall database maintenance. This review will take place during the verification stage, which will assist the CME in obtaining an outside perspective of the overall management process. The CME will prepare a written report for its internal team and the DOE outlining problems that occurred during the previous year and list specific actions that will take place to resolve any problems. This written analysis and improvements to the PoA management system will be done every year, with the written document being provided to the DOE upon verification. The DOE can thus assess the status and effectiveness of the recommended improvements.

SECTION C. Demonstration of additionality of PoA

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The following shall be demonstrated here:

- (i) The proposed PoA is a voluntary coordinated action;
- (ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;
- (iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;
- (iv) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.

The information presented here shall constitute the demonstration of additionality of the PoA as a whole

(i) The proposed PoA is a voluntary coordinated action

It is hereby confirmed that the proposed PoA is a voluntary coordinated action by HELPS International. The PoA is within all applicable national and/or sectoral policies and regulations for Guatemala. A review of energy policies¹⁶ shows the country currently does not regulate energy efficiency or stoves.

There are no mandatory requirements in Guatemala stipulating the use of such devices, and the PoA requires individual households to take voluntary action to participate in project activities. The signature of the warranty/purchase receipt indicates voluntary participation in the program.

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

The increasing use of fuel wood in Guatemala^{17, 18} shows that even though there is a history of development of improved cook stoves,¹⁹ these stoves are not being installed at a pace fast enough to slow the overall rate

¹⁵ This is the conversion factor from terajoules to kilowatt hour, ie. 1TJ = **277777.7777778** kWh or 0.277777 GWh

¹⁶ The Guatemalan Energy Policy can be found in the Ministry of Energy and Mines' Energy Policy, page 28. There are no references to stove efficiency.

¹⁷ Instituto Nacional de Estadística, Environmental Statistics Yearbook 2008 - Page 293

¹⁸ Heltberg, Rasmus, 2005, Factors determining household fuel choice in Guatemala, Environment and Development Economics 10: 337-361, Cambridge University Press.

of fuel wood use in the country. A World Bank study evaluates the effectiveness of the following stove programs in the Guatemala and describes institutional, technical, financial and commercial aspects of why these programs have not continued²⁰:

- *Tezulutan*: 4,129 stoves, from 1999 and the stove component of the program continued for three years.²¹ Program weaknesses included lack of monitoring during construction, lack of evaluation, lack of access to certain stove components, lack of standardization of components, dependence on international donations, high level of subsidies (50%) and lack of marketing structures (few stove parts available for sale).²²
- *Social Investment Fund (SIF or FIS in Spanish)*: 90,000 stoves from 1996 to 2001.²³ Weaknesses of program included lack of integration of project team, lack of feedback, no participation by users in stove design, no gender focus, lack of project self-sustainability, poor construction quality, dependence on international aid, high subsidization (90%), program dependence on project builder level and lack of marketing structures (stove parts only sold in certain towns).²⁴
- *Intervida*: 9,000 stoves from 1996 to 2000.²⁵ Weaknesses of the program include lack of user participation in stove design, no gender focus, lack of project evaluation, lack of self-sustainability, poor construction quality, dependence on international aid, subsidization of materials, components and transport (70%), program dependence on stove builders and lack of marketing structures (stove parts only sold in certain towns).²⁶

The above programs are examples of improved cook stove programs that are no longer being implemented because of the high dependence on temporary subsidies, lack of follow-through and stove use training, and lack of market development (places for users to buy parts). These programs show that improved cook stoves programs in Guatemala are not self-sustaining without some level of subsidies. Summarized in another article analyzing the same three programs, (*Tezulutan*, SIF, and *Intervida*) "One glaring weakness was the lack of systematic community feedback, monitoring and evaluation... the high subsidies provided for the stoves, as well as the lack of a direct relationship between vendors and users, distorted the market, elevated prices, and constrained development of the commercial structures necessary for the projects to be sustainable."²⁷ According to Kirk Smith, an improved cook stove expert, the reason that most stove programs have not been successful is that "Too much emphasis has gone on technology and people at the top, too little consulting with women who actually do the cooking. When subsidies run out, the schemes have faltered..."²⁸ HELPS International will use income from the sale of CDM emission reductions to help reduce the total cost of the ONIL stove to the end user, to provide follow-through and training on how to properly use the stove, provide access to spare parts and help establish self-financing mechanisms (see BanRural paragraph under Prevailing Practice Barriers below) to ensure that the ONIL program is successful.

As per paragraph 2(c) of Annex 27 of the 68th meeting of the CDM Executive Board, GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES (version 9), projects are considered additional if project activities are solely comprised of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size of each unit is no larger than 5% of the small-scale thresholds. Annex 21 of EB 61 established 60GWh per year as the SSC threshold for type II projects. The conversion from 60 GWh to 180 GWh per year was approved in a clarification by the small-scale working group (SSC_233). Footnote 1 of Annex 27 of EB 68 clarifies that the size of each unit (ICS) has to be below 3000 MWh of energy saving per year.

¹⁹ Winrock, 2004, Partnership for Clean Indoor Air, Household Energy Indoor Air Pollution and Health: Overview of Experiences and Lessons in Guatemala

²⁰ The World Bank (2005): Environmental Health and Traditional Fuel Use in Guatemala, http://www.cddep.org/publications/environmental_health_and_traditional_fuel_use_guatemala

²¹ The World Bank (2005): Environmental Health and Traditional Fuel Use in Guatemala, p 58.

²² *Ibid*, Page 75, Table 4.8

²³ *Ibid*, Page 61

²⁴ *Ibid*, Page 75 Table 4.8

²⁵ *Ibid*, Pages 59-60

²⁶ *Ibid*, Page 75, Table 4.8

²⁷ *Ibid*, Page 74.

²⁸ "Silent and deadly" The Economist, Sept 25-October 1, 2010, p 72.

Given that the CPAs will consist of isolated ONIL Stove units located in households and that CPAs have to comply with eligibility criteria (f)²⁹ as described in Section K below, the documentation of barriers is not required to demonstrate additionality as per EB 68 Annex 27.

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

This case does not apply.

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

This case does not apply.

Prior consideration timeline (until publication on UNFCCC website):

29/09/2009	Meeting of HELPS International Board of Directors of discussing the consideration of CDM to help finance stoves.
7/11/2009	CDM consultant (EnergetixClimate) engaged.
16/12/2009	Contract between CQC and DOE signed.
30/12/2009	Publication of PoA-DD on UNFCCC website.

SECTION D. Start date and duration of PoA

D.1. Start date of PoA

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11/01/2010³⁰

D.2. Duration of PoA

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28 years 00 months. Each stove is expected to have a lifetime of around ten years,³¹ depending on model of ONIL stove. All CPAs will be registered for a crediting period of 7 years twice renewable. As stoves reach the end of their useful life, they can be replaced, potentially allowing up to 21 years of creditable emission reductions. When the old stove is replaced, an ONIL Stove with at least the same efficiency will be placed in the household and the database will be updated to reflect that that particular household is now using a new stove and the replaced stove is no longer in use.

SECTION E. Environmental impacts

E.1. Level at which environmental impacts analysis is undertaken

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1. Environmental Analysis is done at PoA level ☒
2. Environmental Analysis is done at SSC-CPA level ☐

The PoA involves the distribution and installation of residential stove appliances. These appliances have been approved for use in households by the Government of Guatemala and do not entail significant negative

²⁹ The equation for calculating the SSC threshold can be found in criteria f) paragraph 2.

³⁰ The CDM Glossary of terms, version 6 (page 18), states that the start date in the context of a CDM project or PoA, earliest date at which either the implementation or construction or real action of the CDM project activity or PoA begins". EB 55, Annex 38, paragraph 7(d) "The starting date of the CPA cannot be prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-POA-DD is first published for global stakeholder consultation". The start date of this project is January 11, 2010, which is the date when real stoves were first delivered (implementation) after this POA was published online for Global Stakeholder Consultation at the UNFCCC website.

³¹ The World Bank, Household Cookstoves, Environment, Health and Climate Change, A New Look at an Old Problem, 2011, page 67.

impacts. For this reason, it is reasonable to undertake a single environmental analysis at the level of the PoA rather than individual assessments for each SSC-CPA.

E.2. Analysis of environmental impacts

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The primary environmental impacts of the PoA relate to the production of stoves manufacturing operation in Guatemala, and the disposal of stoves once newer stove technologies are adopted because of economic development. Stove manufacturing produces minimum negative environmental impacts and significant positive environmental impacts (e.g., improved health and less deforestation).

Air Pollution

The effects of Indoor Air Pollution (IAP) of conventional open fires have been demonstrated to have negative health impacts, including higher likelihood of developing Acute Respiratory Infections (ARI) and Acute Lower Respiratory Infections (ALRI), lung disease, tuberculosis, asthma and other health conditions.³² The smoke generated by burning firewood contains particulate matter (PM), carbon monoxide (CO), nitrogen dioxide, sulphur oxides, formaldehyde, and carcinogens such as benzopyrene and benzene.³³ Laboratory tests show that “because the ONIL (stove) is well sealed and has sufficient draft it removes the dangerous emissions, protecting the indoor air quality” and “the chimney on the ONIL stove removes almost all of the CO and other pollutants from the interior space.”³⁴ The ONIL stove therefore produces significant reductions in IAP.

Biodiversity:

As stated in section A.2 above, Guatemala lost 17 percent of its forest cover between 1990 and 2005.³⁵ As the ONIL Stoves use less fuel wood, the impact on biodiversity is a positive one since the implementation of the project results in end-users removing less fuel wood from forests.

Transboundary impacts

Geographical: The PoA places a boundary as the sum of the household locations within each individual CPA, all within the limit of Guatemala. The emission calculation is based on the efficiency of each stove, regardless of where the stove was manufactured. No transboundary impacts are expected.

Disposal

The ONIL Stoves, with proper maintenance, are expected to have a ten-year lifespan (depending on the stove model). Once the stoves have stopped operating, the CME will evaluate if the stove can be refurbished or if they need to be completely removed. Because HELPS International keeps an inventory of the stove locations, it will visit households who have had a stove that is approaching the end of life and will help the end user install a new stove.

E.3. Environmental impact assessment

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The Guatemalan Government's Ministerial Accord 477-2005³⁶ requires that an approved environmental impact assessment be presented for the Host Country Letter of Approval (LoA). The environmental impact study was approved on June 16, 2011. The Guatemalan Ministry of Environment and Natural Resources granted the Host Country Letter LoA to the ONIL Stove Program on August 29, 2011.

SECTION F. Local stakeholder consultation

F.1. Level at which local stakeholder consultation is undertaken

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³² Edwards John and Christian Langpap, 2008, Fuel Choice, Indoor Air Pollution, and Children's Health, econpapers.repec.org/paper/tulwpaper/0803.htm

³³ *Ibid.*

³⁴ Aprovecho Research Center, 2004, HELPS “ONIL” Griddle Stove Fuel efficiency and Emissions.

³⁵ rainforests.mongabay.com/deforestation/2000/Guatemala.htm & www.fao.org/forestry/country/32185/en/gtm

³⁶ <http://200.12.63.122/archivos/acuerdos/2005/gtamx477-2005.pdf>

1. Local stakeholder consultation is done at PoA level ☒
2. Local stakeholder consultation is done at SSC-CPA level ☐

Note: If local stakeholder comments are invited at the PoA level, include information on how comments by local stakeholders were invited, a summary of the comments received and how due account was taken of any comments received, as applicable.

The CPA boundaries are defined primarily by individual ICS/household location, and may extend across the SSC-PoA project area or may be limited to a specific region within the SSC-PoA boundaries. Therefore a PoA-level Stakeholder Consultation is deemed most appropriate, covering the whole project area. The environmental, social and economic impacts of the POA will be broadly consistent across CPAs, so the PP does not expect significantly different comments from stakeholders across CPAs.

In addition, HELPS International has chosen to perform stakeholder consultation at a PoA level because the organization constantly invites communities to provide input (see section D.2 below) on the ONIL Stoves and input at a PoA level allows to better capture the input from all users regardless of which CPA the stove belongs. The first stakeholder meeting for this POA was conducted in Agua Blanca, Quetzaltenango on 15 December 2009. A series of similar meetings followed this.

The most important stakeholders are end users and consultations with this group are performed in a meeting medium (face-to-face) for original demonstrations that take place approximately once a month. This medium is culturally appropriate for end-users because of the country's low educational level and multiple ethnic languages³⁷ and because it fits well with the stove demonstration sales model that HELPS International currently uses.

Other relevant stakeholders identified include fuel wood vendors, who were interviewed personally, the Ministry of Environment and Natural Resources (*Ministerio de Ambiente y Recursos Naturales, MARN*), and NGO's such as The Solar Foundation (*Fundacion Solar*), and Hearts and Hands and others.

Section F.3 below contains a summary of stakeholder comments.

F.2. Modalities for local stakeholder consultation

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HELPS International, as CME, has gathered stakeholder comments from four identified stakeholder groups at a national level: the national government, non-government organizations (NGOs) operating throughout Guatemala, final stove users and fuel wood vendors. These four groups are representative stakeholders for this project in Guatemala as these are the groups directly affected by the implementation of this POA. HELPS International interviewed these four groups. HELPS International invites stakeholder comments through stakeholder meetings with community organizers, during stove demonstrations, through training sessions, survey interviews and follow-up visits. HELPS coordinates the initial demonstration with the community organizer, who in turn informs the community of the meeting date. The community organizer advertises the meeting through word-of-mouth or any other way the community organizer finds appropriate. The community organizer then informs HELPS of the demonstration date. Communication between HELPS and the community organizer is frequently performed via e-mail.

The ONIL Stoves sales process involves a thorough consultation process with the end user. Protocols are in place within HELPS International to systematically collect, compile and respond to both positive and negative comments from end-users. The field technicians invite comments from the communities every time a demonstration takes place and take account of comments provided by communities. HELPS International also provides follow-up visits to the community organizers and to end users to find out if there are any questions or comments on the use of the stove. Field technicians compile comments and pass them along to the central offices where comments are reviewed by HELPS International's executive and design team.

Additionally, HELPS International directly interviews all stove users as part of the GPS data gathering exercise. The survey asks what the user likes and dislikes about the stove.

CDM projects in Guatemala require an Initial Environmental Assessment (*Evaluación Ambiental Inicial*), which does not require stakeholder consultation.³⁸

³⁷ CIA World Fact Book, Guatemala. <https://www.cia.gov/library/publications/the-world-factbook/geos/gt.html>

³⁸ "Diario de CentroAmerica" Central American Diary, No 63, Ministerial Decree 477-2005

MARN's comments were received via personal meetings and telephone conversations.

NGO's comments were received via email.

F.3. Summary of comments received

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The stakeholder comments and feedback were broken down into two categories, positive and negative. The end users provide the comments below after they have used the stove for some period of time.

Positive comments from end-users:

- Requires less firewood
- Heats rapidly
- Easy to use
- Saves money by not having to buy "*comal*" (the traditional clay hot plate)
- Reduces burn risk
- Easy to install
- Easy to move
- Lowers respiratory illnesses
- Helps the whole family save money
- Improves family's sense of worth
- Can use immediately
- Can be taken apart
- Flexibility — stove can be modified (add handles, table, etc.)
- Immediately available

Negative comments from end-users:

- Too small
- Requires firewood to be cut in smaller pieces
- Cultural resistance to change
- Does not heat the room
- Does not light the room
- Firewood pieces don't fit
- Not enough tubes (for chimney)
- Combustion chamber pieces break
- Many pieces – easy to get confused or lose them

Comments from firewood vendors:

- ONIL Stoves are good because they take the smoke out of the house. The amount of firewood I sell to ONIL Stove owners is less, but I also sell a lot of other things such as agricultural produce, handicrafts and fertilizer sales³⁹.
- The ONIL Stoves do not affect my sale of firewood; there are always other people who buy firewood.⁴⁰

The MARN asked for an Environmental Impact of the Program and ONIL Stove manufacturing facility and a pictogram that explained to end users the CDM program. *Fundacion Solar* is pleased with the ONIL Stove project overall, complementing HELPS International staff. Hearts and Hands wanted to know how they could develop their own CDM improved cook stove project or use their stoves in the ONIL Stove PoA. Innovative Communities wanted to know the lab efficiency results for the ONIL Stoves.

F.4. Consideration of comments received

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HELPS International conducts training and educational community meetings on a regular basis providing many opportunities for stakeholders, in particular the end -users, to make comments and raise concerns. These community meetings take place every time a stove is implemented in a new community or when new

³⁹ Interview with Jesus Xotoy, Nov 2010.

⁴⁰ Interview with Sandra Patricia Xep, Nov 2010.

stoves are installed in a community, so there are many opportunities for users to express their views. In addition, there are follow-up meetings 4 to 6 weeks after installation to address any technical or cultural adoption problems.

HELPS International field personnel take comments and discuss them with the organization in bi-weekly meetings. In addition, the field personnel write all comments in the activity report so there is written record of the concerns. In the personnel bi-weekly meetings, solutions for concerns are also discussed by the entire organization. In some cases, because of the sales-distribution model, the stove purchaser organization is not the end-user and this causes miscommunication. The follow-up meetings and the community leader programs are intended to resolve communication issues.

HELPS International shares negative technical comments to the ONIL Stove program director and the stove designer to discuss ways in which the stove can be improved. Examples that demonstrate how comments are taken into account are the comments on lack of light and lack of preparation space. As the ONIL Stoves remove ambient light from households, users were commenting that they had too little light in their households. As a result, HELPS International began offering solar powered lights that provide clean and pollution-free ambient light. End users also commented that they needed more space around the stove to prepare meals. As a result, HELPS International added a wood extension to the stove that gives end users additional preparation space. The technical team has a stove laboratory that constantly experiments with materials in an effort to make the stove more efficient and user friendly.

In response to the MARN requests, HELPS International developed an informational cartoon document that is distributed to all end users at the time the warranty (registration card) is signed. HELPS International also commissioned an Environmental Impact Assessment (EIA).

In response to the Hearts and Hands question, HELPS International explained the details and cost and time investment required to develop a project and that the PoA included only ONIL Stoves. Laboratory information was forwarded to Innovative Communities.

SECTION G. Approval and authorization

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Letters of Approval were issued by each of the Parties wishing to the involved in the PoA. These letters authorize the PoA and the CME and have been made available to the validating DOE and can be referred from [project webpage of PoA 8480](#). These letters are provided along with the PoA-DD.

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1. Title of generic CPA

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ONIL Stoves—Guatemala – CPA XXX

H.2. Reference number of generic CPA

>>

8480-XXXX

H.3. Purpose and general description of generic CPA

>>

Each SSC-CPA will involve the distribution and installation of ONIL Stoves in households within Guatemala. The households that make up each CPA will be identified by user name and geographic location.

Implementation and management

CPA Implementers

These are entities that will manage and coordinate the promotion, distribution and/or installation of the ICS.

CPA implementers are also responsible for monitoring activities of the SSC-CPAs. Examples of CPA implementers are: NGOs, religious, environmental, social organizations, farmers associations and private, public or governmental entities. CPA implementers will have an agreement with the CME establishing roles and responsibilities for the successful implementation of the SSC-CPA.

Each CPA implementer will define and establish its distribution channels. Two distribution channels are envisioned to achieve the SSC-POA objective:

- The first channel is through direct sales/field team - using networks to market the ONIL Stoves directly to end users in villages, communities, at local market days and other large community events.
- The second channel will utilize existing local, experienced commercial distributors. Each of the distributors will have their own established network of retailers.

Coordinating/Managing Entity

HELPS International, as CME, will manage and coordinate activities of CPA Implementers and also provide necessary inputs to stove businesses, including marketing and promotion. The CME will also coordinate the monitoring of the SSC-PoA and all communications with the UNFCCC Executive Board.

ONIL Stove distribution/installation methodology

This SSC-PoA allows for the distribution/installation of ONIL Stoves. ONIL Stoves are rocket stoves with insulated combustion chambers.⁴¹

CPA implementer installing ONIL Stoves shall demonstrate on the SSC-CPA-DD its capabilities and provide specific details on how it will distribute/install fixed stoves, including but not limited to the following:

- o Design the training material for stove technicians/instructors/field trainers as well as for stove users;
- o Indicate the type of training (field-based/practical, classroom or both) that shall be conducted;
- o Conduct performance tests in the field to test the technicians/instructors/field trainers' ability to build/install the ONIL Stove; and
- o Conduct performance tests in the field to test end-users ability to build and repair the ONIL Stove (when appropriate).

Data Collection and Transfer

Registration Card⁴²

The CPA Implementer will gather the necessary information to identify households using the ONIL stove during the course of the project. To facilitate this process, the CPA implementers will assign a serial number to each ONIL Stove or to the household.⁴³ This number will be recorded in the Registration Card together with the following information (as appropriate and as available):

- Name of ONIL stove user or head of the household
- Address of ONIL stove user or household
- Phone number of ONIL stove user or household
- GPS location of household
- Stove model
- Date of distribution/installation
- Stove serial number
- Retailer/distributor information
- Identification of cooking method prior to installation of the stove

⁴¹ Section A.4.2.1 provides additional details on the technology to be implemented under this SSC-PoA

⁴² The term Registration Card refers to a document or set of hard copy or electronic documents that contain information needed for the PoA database. It may include contracts, warranties, surveys, etc.

⁴³ In cases where the stove is fixed and a serial number plate is difficult to be assembled to the ICS (eg. mud stoves which are constantly being repaired by users with a new layer of mud), a serial number will be attached to the household (eg. a name plate fixed on the kitchen's wall, or just an identification card kept by the household), instead of to the stove. For instances where the serial number plate can be attached to the ICS itself, it will be.

Means of collecting end-users' information

CPA Implementers shall ensure that the information contained in the Registration Card is collected and transferred to the CME. Collection of end-users' information will be achieved through different means, such as the following options (as appropriate and available):

- Direct contact: CPA implementer instructs their field team to fill the Registration Card with users' information when distributing/installing the stove. The CPA implementer can initially perform this manually with ink over a printed Registration Card, but new Information and Communication Technologies (ICT) to increase the efficiency of data collection and data transfer may be applied. One example of these technologies is the personal digital assistant (PDA) - a handheld device that transfers data over the Internet.
- Indirect: the users' data (same information as per Registration Card) may be directly transferred to the CPA implementer via Short Message Service (SMS) also known as text messaging service. In this instance, the CPA implementer will provide the user with instruction on how to submit the SMS to the CPA implementer.

Users' participation on the SSC-POA, transfer of Carbon Rights to the CME and use of three-stone open fire

During the distribution/installation of the ONIL Stoves, the user shall confirm the ONIL Stove is replacing a traditional three-stone fire or pot support and the CPA implementer shall inform the end user of the household's participation on the SSC-PoA and that CDM finance is being used to fund the ONIL Stove. Users shall agree, as per the Registration Card, that it previously did not own an ONIL Stove and to transfer the rights of any emission reduction generated by the ONIL Stove to the CME.

In case of direct contact, the collection of users' information can be achieved by instructing the CPA implementer's sales/field or retailer team members to read out the required information to users (ie. that user previously did not own an ONIL Stove and transfer of carbon rights) and if possible have users sign the Registration Card or the sales/field or retailer team members can sign the paper ascertaining that they have read out the clauses. In this instance, CPA implementers shall tick a box next this clause once end-user acknowledges it.

When SMS is used, this clause can be written on the instruction for the user on how to submit the information to the CPA implementer. By sending the SMS, users are acknowledging that they are voluntarily participating in the SSC-PoA, that the ONIL Stove is replacing a three-stone fire or traditional pot support and that the user agrees to transfer the carbon rights to the HELPS International.

Project Data-Base

The information collected by the CPA implementer is stored in the CME's database.

CPA implementer will have the hardcopy of data to input into the electronic database. For information transferred via ICT or SMS, there will be no hardcopy. The electronic data is transferred from the ICT device to the database managed by the HELPS International. Similarly, SMS data is transferred directly to the electronic database. The database will be backed up to HELPS International's server throughout the lifetime of the project. The hardcopy of the Registration Card (if applicable) shall be archived.

The CME will maintain copies of the database from all of the CPAs. Personnel entering the data from each ONIL Stove will be trained in the basic functions of Excel (or other appropriate software used to build the database) to reduce the chance for errors. HELPS International staff will sample and cross-check the data at minimum once every three months by randomly selecting at least 20 database (across all its CPAs) entries and comparing the information in the cells with the information from Registration Cards. The database will be sortable by the information collected as per Registration Card and will be made available to the DOE at verification.

The CPA implementer will verify accuracy and completeness and confirm that there is no double entry of serial numbers in the database. The CPA implementer will identify any discrepancy and the correct information will be entered into the database.

In case a replacement stove is being issued / sold to a customer already registered on the project database, a new registration will not be required. The replacement stove will be recorded in the project database in such a way that it is clear that the replaced stove ceases to be included in the CPA; and the replacement stove is associated with the customer's details as a new stove, and is included in the CPA as a new stove.

Responsibilities of Operational and Management Entities and CPA Implementer

HELPS International is the CME for this SSC-POA. HELPS International or other third parties may act as CPA Implementers. HELPS International is the CPA Implementer for the first CPA. The responsibilities of each party are summarized in Section A.4.4.1 below. Local partners will be required to conform to systems designed by CME under services agreements signed with CME.

Location and scale

CPAs will be defined as the sum of identified locations of in-use ONIL Stoves installed or distributed to consumers previously using three stone fires or traditional pot supports, based on the detailed sales or registration record described above (including ICT/SMS data as applicable). The sum of the location of these ONIL Stoves will define the spatial boundary of the SSC-CPA, which in turn will fall entirely within the geographical boundary of the SSC-PoA..

According to paragraph 124 (m) of CDM standard for programmes of activities; version 02.0, small-scale threshold is not applicable if generic CPA consists solely of microscale CDM units. For the present PoA, generic CPA consists of cookstoves that result in saving less than the microscale threshold per unit ($21.25\text{MWh}_{\text{th}}/\text{yr}^{44}$), hence they qualify as microscale CDM units and requirements to meet the small-scale or microscale thresholds and remain within those thresholds throughout the crediting period is not applicable for CPAs implemented under the PoA if they demonstrate that they consist of microscale CDM units⁴⁵.

H.4. Technologies/measures

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The program will provide ONIL Stoves to replace conventional open fires used by households. The PoA is a Type II 'Energy Efficiency Improvement Project', applying methodology AMS II.G., 'Energy efficiency measures in thermal applications of non-renewable biomass'. Version 11.1.

The ONIL Stove is a fuel-efficient stove that reduces the amount of firewood required by households by up to 58 percent, and results in lower emissions based on its construction and design. Since the efficiency of a traditional open fire is 10%⁴⁶ and the efficiency of an ONIL Stove is 24%-32%⁴⁷, and depending on the specific stove model the efficiency can be higher, the ONIL Stove is more efficient than the traditional open fire. Complete combustion and efficient energy transfer to pots and cooking surfaces ensures fast heating and fuel-efficiency. The fire is contained in the insulated combustion chamber, thus burning the oil vapor that is normally emitted as smoke. Energy is then efficiently transferred to cooking pots and surfaces. Insulation prevents the heat from being wasted heating the stove body. Hot gases that do not touch the cooking surface waste their energy but insulation lets all the hot gases come in contact with the cooking surfaces thereby transferring their energy to the pot and leaving only enough heat in the exhaust gases to provide a draft up the chimney. These technology improvements make the ONIL stove more efficient than a traditional open fire.

The ONIL stove can be manufactured assembled and installed locally or be imported. The implementation of the PoA or SSC-CPA does not require any technology transfer from Annex 1 countries to Guatemala.

⁴⁴ This is an indicative figure calculated assuming Bold -8.05T/yr and efficiency of 30%. The actual energy saving by individual stoves implemented under specific case CPAs shall be included in the respective CPA DDs.

⁴⁵ For CPAs which are included in second PoA period & which do not consist exclusively of microscale CDM units, the small-scale limit shall apply

⁴⁶ Default value for open fires as stated in AMS II.G methodology, version 11.1, "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass"

⁴⁷ Note that at time of writing, no national nor international standard body (hence no certifying agent recognized by it) exists; hence the CME has opted to use the manufacturers' specification for the first CPA. Manufacturers can specify the efficiency of the ICS through WBTs conducted by independent third parties. Also, these figures are representative. Actual efficiency of the implemented stoves will be included in specific CPA DDs.

SECTION I. Application of methodologies and standardized baselines

I.1. References to methodologies and standardized baselines

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The approved small-scale baseline and monitoring methodology used is AMS II.G, version 11.1, *Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass*.

I.2. Applicability of methodologies and standardized baselines

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AMS II.G, version 11.1, states that:

“This methodology comprises efficiency improvements in the thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired project devices (cook stoves or ovens or dryers) to replace the existing devices and/or energy efficiency improvement in existing biomass fired cook stoves or ovens or dryers.”

This methodology is applicable to SSC-CPAs because these projects concern the distribution, installation and use of fuel-efficient improved cook stoves in households, creating demand-side energy savings and reductions in greenhouse gas emissions. The technology to be deployed by SSC-CPAs is listed in the methodology. The programme will result in savings in non-renewable biomass, which would have been consumed by less efficient cooking methods.

Demonstration of Applicability of the applied Methodology

AMS II. G. (version 11.1) Requirement	SSC-CPA Compliance Justification
The methodology is applicable to the introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 20 per cent.	Cookstoves distributed under the PoA shall have minimum efficiency of 20% as determined in accordance with ‘Data/parameter Table 12’ of the applied methodology.
The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.	As the generic CPA consists solely of microscale CDM units (21.25 MWh _{th} /yr ⁴⁸) as defined by Tool 19, each ICS under the PoA shall not exceed the microscale threshold (60 GWh _{th} /yr) for energy saving per year. For CPAs which do not qualify as consisting of microscale CDM units, small scale threshold of 180 GWh _{th} shall be applicable.
Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	As demonstrated below, non-renewal biomass has been used in the project region since 31 st December 1989.
For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology.	This criterion is not applicable.
If the project device requires a specific fuel for this device (e.g. briquettes, pellets, woodchips), the consumption of the fuel should be monitored during the crediting period.	This criterion is not applicable.
The CDM-PoA-DD/CPA-DD shall explain the proposed method for distribution of project devices including the method to avoid double counting of	Each ICS under the PoA shall be identified through an alpha numeric nomenclature to be fixed to the ICS or in form of registration card to be given to the

⁴⁸ This is an indicative figure calculated assuming Bold -8.05T/yr and efficiency of 30%. The actual energy saving by individual stoves implemented under specific case CPAs shall be included in the respective CPA DDs.

emission reductions such as unique identifications of product and end-user locations (e.g. programme logo).	beneficiary. Specific CPA DDs to include explanation on proposed method of distribution of project devices including method to avoid double counting.
The CDM-PoA-DD/CPA-DD shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices.	The stove manufacturers, wholesale providers, end users shall sign an undertaking stating clearly that the CME or an entity authorized by it shall be the sole owner of the CERs arising from the project.

Use of non-renewable biomass in Guatemala since 31st December 1989

1. Depleting carbon stocks

According to the FAO 2015 report as shown in the table below, carbon stocks in living forest biomass are found to be depleting in the country.⁴⁹

	1990	2015
Biomass Carbon Stocks (millions of metric tons of carbon)	365	271

2. Increasing trends in fuel wood price indicating scarcity of fuel wood;

An analysis comparing the *Encuesta Nacional de Condiciones* ENCOVI (Living Standards Measurement Survey) from national surveys taken in 2000 to 2006 show that the price of rural fuel wood consumption went up by 21.6% from 2000 to 2006.⁵⁰ Thus, it is reasonable to assume that the increasing trend in price also holds true for the time period since December 31, 1989, thus meeting the NRB indicator requirements.

From the two indicators presented above, it can be safely said that non-renewable biomass has been in use since 31 December 1989, in Guatemala.

Leakage

According to paragraph 48(c) of AMS II.G. version 11.1, leakage estimation under a programme of activities uses a net to gross adjustment factor as an option to account for any leakages. The methodology states the following: As an alternative to subparagraphs (a) and (b), $B_{old,i,j}$ can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case the surveys are not required. If equipment currently being utilized is transferred from outside the boundary to the project activity leakage is to be considered. Since it is very unlikely that the installed ONIL Stove will be moved outside the project boundary of Guatemala, leakage due to this reason does not apply.

Limit of the Small-Scale Activity CPA

With the application of paragraph 124 (m) of the CDM Project standard for programme of activities, version 02.0; if the generic CPA consists solely of microscale CDM units, then specific case CPAs developed under the generic CPA are not required to demonstrate adherence to the small-scale threshold. As the generic CPA of the present PoA consists of microscale CDM units, hence the CPAs developed under the PoA are exempted from this requirement⁵¹.

⁴⁹ <http://www.fao.org/3/a-i4808e.pdf>

⁵⁰ Heltberg, Rasmus, September 7, 2010, Trends In Fuelwood Use And Scarcity In Guatemala, 2000-2006. <https://www.cambridge.org/core/journals/environment-and-development-economics/article/factors-determining-household-fuel-choice-in-guatemala/32F814454F4926729337453ED250F73E>

⁵¹ For CPAs which do not qualify as consisting of microscale CDM units, small scale threshold of 180 GWh_{th} shall be applicable

I.3. Application of multiple methodologies

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Not applicable. Only one small scale methodology is applied under this PoA

I.4. Project boundary, sources and greenhouse gases (GHGs)

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Only CO₂ is considered in this PoA program. Other greenhouse gasses eligible under the Kyoto Protocol are either not applicable to the project (SF₆, HFC and PFCs), or are not considered as sources of emissions (CH₄ and N₂O) for simplification and therefore excluded from the PoA.⁵² This approach is conservative, since in reality the emissions of these gasses would be reduced.

Summary of gases and sources included in the project boundary and justification/explanation where gases and sources are not included:

	Source	GHG	Included?	Justification/Explanation
Baseline	Firewood for conventional open fire	CO ₂	Yes	Important source of emissions
		CH ₄	No	Gas is excluded for simplification. This is a conservative assumption.
		N ₂ O	No	Gas is excluded for simplification. This is a conservative assumption
Project activity	Firewood for ONIL Stove	CO ₂	Yes	Important source of emissions
		CH ₄	No	Gas is excluded for simplification. This is a conservative assumption.
		N ₂ O	No	Gas is excluded for simplification. This is a conservative assumption

I.5. Establishment and description of baseline scenario

>>

The baseline scenario would be the use of traditional cooking methods (i.e. open fires) using fuel wood in Guatemalan households prior to the replacement by improved cook stoves supplied by the PoA.

As per paragraph 23 of the methodology, "It is assumed that in the absence of the project activity, the baseline scenario would be the projected use of fossil fuels to meet similar thermal energy needs as those provided by the project devices."

Application of Tool 11, for 'Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period' version 3.0.1

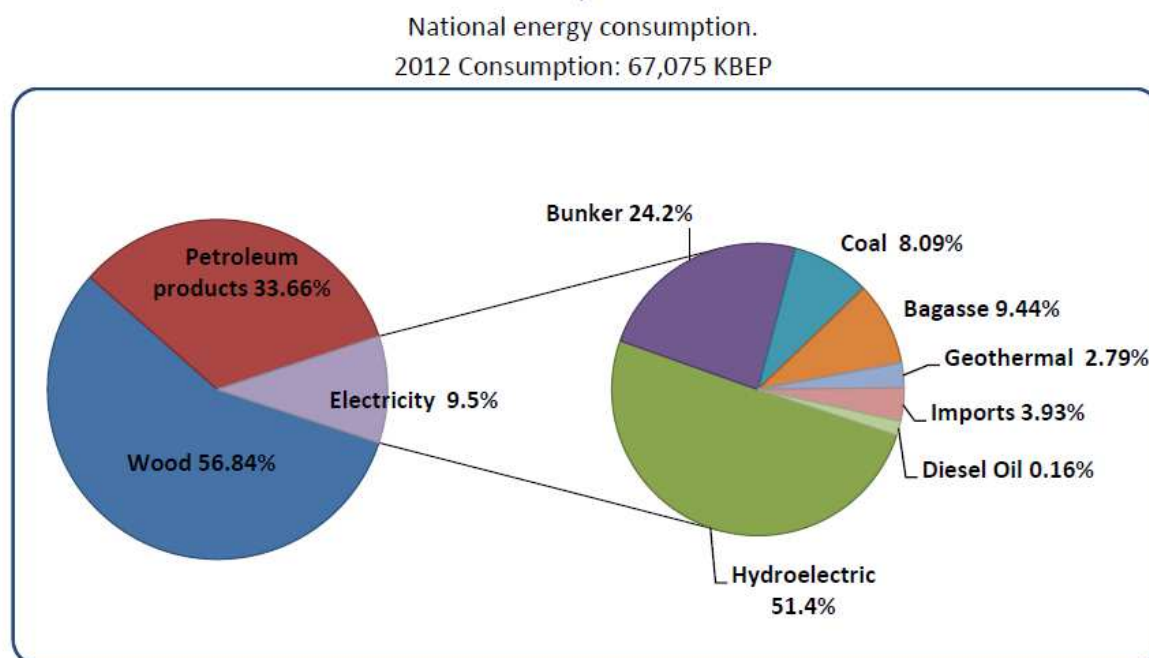
Step 1

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

⁵² GIRA, 2003, Use of biomass as energy source for homes, environmental and health effects. Final Report to Interdisciplinary Appropriate Rural Technology Group. *El uso de biomasa como fuente de energía en los hogares, efectos en el ambiente y la salud, y posibles soluciones. Informe final del Grupo Interdisciplinario de Tecnología Rural Apropiaada* (GIRA), A.C., p. 9.

The current baseline “projected use of fossil fuels to meet similar thermal energy needs as those provided by the project devices” is in compliance with the relevant national and sectoral policies

The Ministry of Energy and Mines (MEM), as the ruling institution of the energy sector in Guatemala, updated the Energy Policy 2013-2027⁵³ with the aim to establish important guidelines to prioritize actions for sustainable development. The plan aims to promote the use of clean and environmentally friendly energy for domestic consumption without losing sight of energy security and the need for supplying electricity at competitive prices.



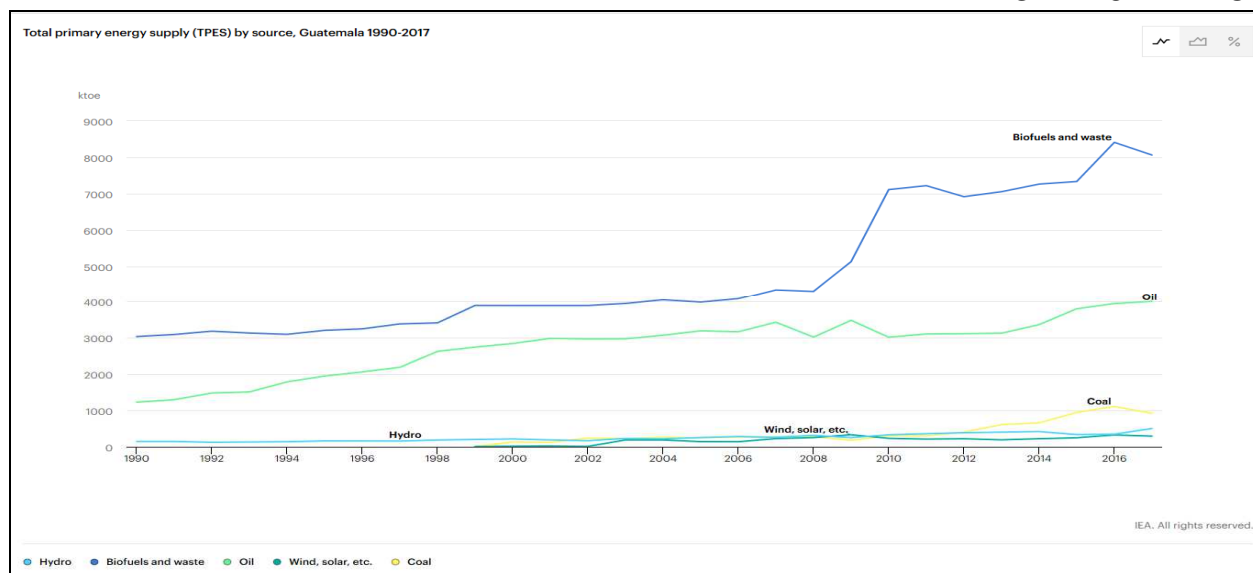
Source: General Direction of Energy. Ministry of Energy and Mines. Energy Statistics 2012.

According to the 2012 consumption figures as included in this policy, wood fuel dominated the energy demand scenario accounting for 57% of total energy consumption.

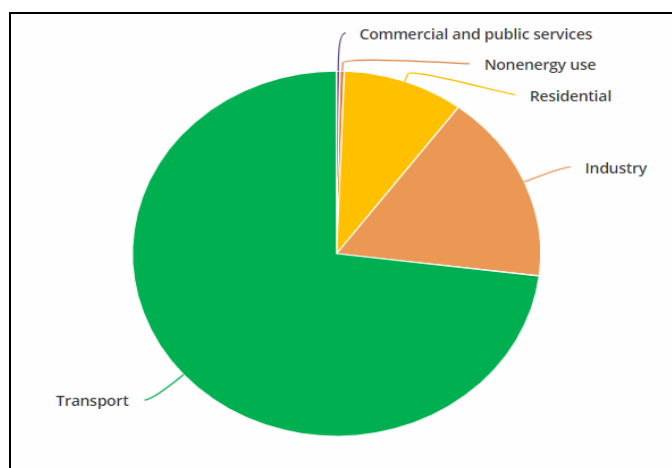
Step 1.2: Assess the impact of circumstances

Guatemala shows high dependency on firewood, especially for residential demand. Along with being the main source of energy for household/residential across the country, biomass has also started to gain significant importance in meeting the continuously increasing energy demand.

⁵³ Energy Policy 2013-2017; Presidency of the Republic of Guatemala Ministry of Energy and Mines

Current Energy Mix⁵⁴

Oil happens to be the second most important energy source in Guatemala

Guatemala's Different Sectorial Shares of the Final Consumption of Oil Products (IEA, 2018)⁵⁵

Thus, Biofuel and oil continue to dominate the energy supply scenario in Guatemala over the past several years.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

Guatemala has a dedicated Firewood Commission to implement the National Firewood Strategy with the proposed action plan (i) to enhance access to efficient technologies, (ii) to increase demand, and (iii) to promote an enabling environment for sustainable and efficient firewood use; however more than 70% of the population in Guatemala continue to depend on wood fuel for their cooking needs with an average fuel collection time of 0.5 to 1.0 hour per day⁵⁶.

It is estimated that 16 million cubic meters of wood are annually consumed in Guatemala. Households cooking with wood (60 to 70%) lack of a suitable fireplace for smoke extraction. On the other hand, between 5% and 20% of families in extreme poverty cooked in the same room where they slept. Moreover, according

⁵⁴ <https://www.iea.org/countries/Guatemala>

⁵⁵ https://energypedia.info/wiki/Guatemala_Energy_Situation

⁵⁶ <https://openknowledge.worldbank.org/bitstream/handle/10986/21878/96499.pdf>

to ECLAC (Economic Commission for Latin America and Caribbean), 72% of Guatemalan households used wood as an energy source for cooking, which represents a concern for the damage to health caused by smoke burning⁵⁷.

Thus, the current baseline of use of traditional stoves is still applicable.

Step 1.4: Assessment of the validity of the data and parameters

Data and parameters used for determining the original baseline, that were determined ex ante and not monitored during the PoA period and which are no longer valid have been updated according to paragraph 291, CDM project standard for programmes of activities; version 02.0.

Step 2

Step 2.1: Update the current baseline

The baseline emissions for the subsequent crediting period, have been updated based on the latest approved version of the methodology.

- Default IPCC values – Default IPCC values, other than ones defined in the methodology, have not been used and the ones specified in the latest version of the methodology are updated values.
- Emission factors, values and benchmarks- These have been updated in line with the latest version of methodology.
- The current baseline emissions have been updated for the subsequent crediting period Please refer to Section I.6. for details.
- Data and parameters that were fixed ex-ante and which were not monitored have been updated in accordance with the requirements of the applied methodology AMS II.G, version 11.1. Please refer to Section I.6.2 for details.

Step 2.2: Update the data and parameters

Ex-ante Parameter	1 st PoA Period	2 nd PoA Period
B _{old, i, j} (tons/year)	6.64	8.05
f _{NRB} (fraction)	0.913	0.80
NCV _{biomass} (TJ/ton)	0.015	0.0156
EF _{projected_fossilfuel} (t CO ₂ /TJ)	81.6	68.6

Determination of the average annual biomass consumption per household (B_{old}) (from Household Baseline Survey).

A household survey was conducted to determine the average annual use of fuel wood in households that are currently not using the ONIL Stoves.

As demonstrated by the survey, conventional open fires represent the majority of cooking methods used by households covered by the PoA

Baseline Survey Design

The target reliability levels were 90% confidence and 10% precision. The sampling effort took guidance from

⁵⁷ Energy policy 2013-2027

Standard for Sampling and Surveys of CDM Project Activities and Programme of Activities.

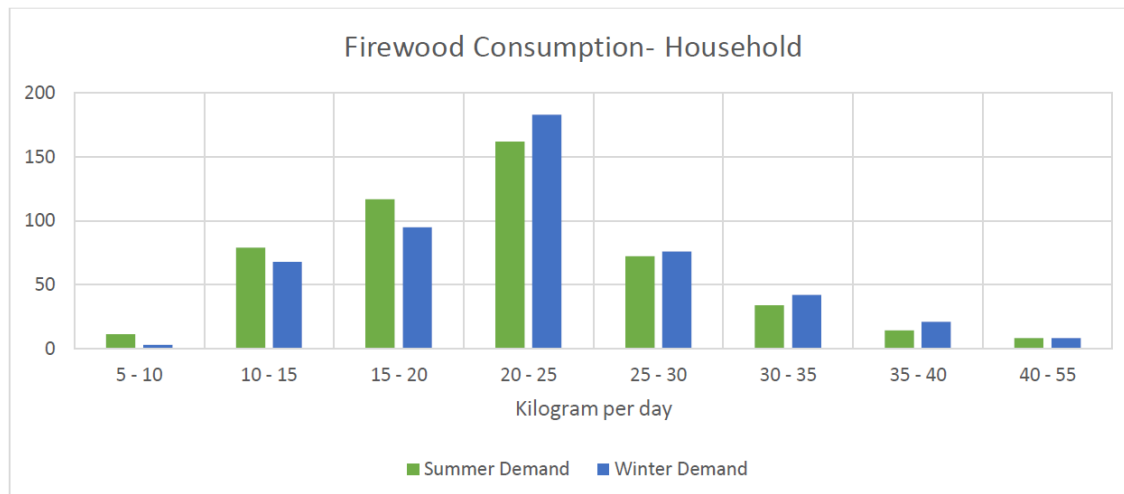
The local field partner first identified areas, where households selected through random sampling were located and it was ensured that the survey was not carried out in that locality during any festival or community celebration. Care was also taken to exclude any household that did commercial cooking in addition to domestic cooking.

Sampling Method

The sampling method used for this study is multi-stage sampling. This method is effective when travel times and costs between one locality and another can be substantial. It is also usually the most appropriate and commonly used design for household surveys of national coverage. In line with the Standard for sampling and surveys according to which, multi-stage sampling “combines cluster and simple random sampling approaches in a two-stage sampling scheme”; the departments were randomly selected applying cluster sampling and then sample units which in this case are households were selected using simple random sampling approach within those departments. As the population is homogenous, the households finally selected for sampling are representative of entire population.

Departments were considered as the Primary Sampling Units (PSU), largely because they cover the target population completely and have a clearly identifiable boundary which is stable over time. Guatemala consists of 22 Departments in all. Applying cluster sampling, the number of departments that were required to be sampled was calculated as 12. Together these 12 departments constitute almost 80% of the population of Guatemala. Further, the number of households that were required to be sampled from these Departments was derived as 500. These 500 households were then randomly selected from the above-mentioned departments.

The result of the survey showed that average consumption of firewood in the surveyed households was 22.06 kg/day. Average consumption in summer season (21.49 Kg/day) varied a little from average consumption in winter season (22.63 Kg/day). During both seasons, maximum households consumed between 20 to 25 kilograms of firewood per day.



The baseline survey report is being submitted with this PoA DD.

Determination of the share of non-renewable biomass (f_{NRB})

The determination of the share of non-renewable biomass (f_{NRB}) in the project area is based on report by C4 EcoSolutions (Pvt.) Ltd which has been calculated in accordance with Tool 30.

Parameters used for calculation of f_{NRB}

Procedure to estimate consumption of woody biomass

$$H = HW_{region} \times N_{region} + TI_{region} \text{-----Equation 4}$$

HW_{region} - Average household wood fuel consumption, including fuelwood and charcoal in the country/region. The household fuelwood and charcoal consumption values have been extrapolated to 2018 using a second-order polynomial (quadratic) regression in R. Household wood fuel and charcoal consumption values over a period of 17/18 years that is from 2000 to 2016 (charcoal) and 2000-2017 (wood fuel) was used to calculate the 2018 consumption value. In line with the requirement of Data/Parameter Table 1, Tool 30; the data has been sourced from Energy statistics database – United Nations Statistics Division⁵⁸

TI_{region} - Non-domestic woody biomass including fuelwood and charcoal consumption for energy applications in the country/region

Non-domestic fuelwood and charcoal consumption values have been extrapolated to 2018 using a second-order polynomial (quadratic) regression in R. Commercial wood fuel and charcoal consumption values over a period of 10/11 years that is from 2007 to 2016 (charcoal) and 2007-2017 (wood fuel) was used to calculate the 2018 consumption value. In line with the requirement of Data/Parameter Table 2, Tool 30; the data has been sourced from Energy statistics database – United Nations Statistics Division⁵⁹.

Procedure to Estimate RB

$$RB = \sum (MAI_{forest} \times (F_{forest} - P_{forest})) + \sum (MAI_{other} \times (F_{other} - P_{other})) \text{-----Equation 6}$$

MAI_{forest}, & MAI_{other} - Mean Annual Increment of woody biomass growth per hectare of forest and other wooded land areas.

As required by Data/Parameter Table 4, Tool 30; this value has been sourced using option (b)- 2006 IPCC Guidelines for National Greenhouse Gas Inventories for “Above-ground biomass growth rates (t/ha-yr) for different ecological zones” (Chapter 4, Table 4.9). Use a weighted average based on the forest area of two different age categories (i.e. above and below 20 years)

F_{forest}, & F_{other} -Extent of forest as well as other wooded land

In the study done by C4 EcoSolutions (Pvt.) Ltd, the forest and other wooded land cover for Year 2000 and 2018 was estimated using [Hansen/UMD/Google/USGS/NASA spatial data](#), and disaggregated according to the FAO global ecological zones. The tree cover was estimated as the fractional area of each grid cell that is covered by the tree canopy (as the size of the grid cells are considerably larger than any individual tree). The total area of all the grid cells that contain some tree cover is roughly equivalent to the total area of the ecological zone. While FAO definitions consider all areas with >10% cover forests, areas with 5-10% cover other wooded lands, and <5% cover as other lands, in the present report in order to capture the forest dynamics and how they may be changing (due to loss or gain in tree cover), the calculations have given some consideration to the forest cover thereby accounting for any deforestation or degradation that results in a transition across the relevant thresholds (5% or 10%). In line with the requirements of Data/Parameter Table 5, Tool 30, option (b) official data has been used for determining this parameter.

P_{forest}, & P_{other} -Extent of non-accessible area within forest and other wooded land areas.

According to tool 30, P_{forest} and P_{other} includes “Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest/other wooded land areas. To define “geographically remote area”, the Tool clarifies that DNAs/PPs may consider proximity to roads or rivers. For example, forests/other wooded lands that are beyond the average distance travelled to collect firewood can be considered non-accessible. The information of the average travel distance may be sourced from national studies or peer-reviewed literature, or surveys in the project area.

Woody biomass density increases significantly as a function of distance from the edge of a settled area. The Global Alliance for Clean Cookstoves found that in urban areas women spend an average of 1.4 hours and men an average of 2.2 hours collecting fuelwood. This average was higher for women in rural areas, 1.8

⁵⁸ <http://data.un.org/Data.aspx?d=EDATA&f=cmID%3aFW>

⁵⁹ <http://data.un.org/Data.aspx?d=EDATA&f=cmID%3aCH>

hours, and lower for men, 2.1 hours⁶⁰. Assuming that the harvesting of fuelwood takes at least half of the time spent, and an average walking speed of 4 km/hr over uneven terrain, the average one-way walk distance to fuelwood source can be conservatively estimated to be less than 2.5 km. Forested areas beyond the harvestable distance of 2.5 km were therefore determined to be geographically remote. The total available woody cover was estimated by subtracting the woody cover of the protected areas and the woody cover of geographically remote areas from the total woody cover⁶¹.

To calculate this accessible woody cover, all the areas that are within 2.5 km of a road, leaving protected area was masked out. The protected cover has similarly been determined by masking out all areas that don't fall within a protected area. In line with Option (b) of Data/Parameter Table 6; Tool 30; the extent of protected area has been sourced from National study that is [Hansen/UMD/Google/USGS/NASA spatial data](#). Determination of 2.5 km as the average travelling distance for wood collection has been derived from literature review.

All estimations/ extrapolations/projections have been included in the f_{NRB} calculation spreadsheet, which is submitted along with this PoA-DD.

Determination of Net Calorific Value of Biomass

The NCV value of biomass has been revised to 0.0156 TJ/ton from the value of 0.015 TJ/Ton considered in previous crediting period. This is in accordance with the latest version of the applied methodology

Determination of the fossil fuel most likely to be used by similar consumers ($EF_{\text{projected_fossilfuel}}$)

In the absence of the project activity, for the purposes of emissions reductions, the baseline is assumed to be the use of fossil fuels to meet similar thermal needs. In this case, as per AMS II.G Version 11.1, the Emission Factor default emission factor of 68.6 tCO₂/TJ for Latin America and Caribbean under which Guatemala is included⁶² is applied. In addition, Version 11.1 allows a default leakage adjustment factor of 0.95 to be applied to $B_{old,i,j}$ to account for leakages (paragraph 48c). This PoA will also use this default.

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

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Methodological choices for the typical SSC-CPA include the following

According to the methodology AMS II.G.; version 11.1, $B_{y,savings}$ may be calculated in a number of ways and this PoA will allow the use of Option 3 that is Water Boiling Test for estimation of $B_{y,savings}$.

According to paragraph 48(c) of AMS II.G. version 11.1, leakage estimation under a programme of activities uses a net to gross adjustment factor as an option to account for any leakages.

Under option 3; the CPAs can use either equation 7 or equation 8⁶³ for estimating $B_{y,savings}$. The choice of option shall be stated clearly in the CPA-DD as per paragraph 50 of applied methodology.

The ex-ante calculation of emission reductions is described in section I.6.3. below.

⁶⁰ Global Alliance for Clean Cookstoves. Guatemala Cookstoves and Fuel Market Assessment. 1–102 (2013).

⁶¹ More details have been included in the f_{NRB} report being submitted along with this PoA DD

⁶² AMS II.G. version 11.1; Appendix 1

⁶³ This option shall not be available for CPAs included in the first PoA period.

I.6.2. Data and parameters fixed ex ante

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

Data/Parameter	$B_{old,HH}$
Data unit	Tonnes / household / year
Description	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices
Source of data	Based on sample survey conducted as per the latest version of "sampling and surveys for CDM project activities and programme of activities".
Value(s) applied	8.05
Choice of data or Measurement methods and procedures	Calculated from baseline survey data
Purpose of data	Calculation of baseline emissions
Additional comment	Details of the survey can be found in baseline survey report being submitted along with PoA DD.

Data/Parameter	$B_{old,i,j}$
Data unit	Tonnes/year
Description	Annual Quantity of woody biomass used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j.
Source of data	$B_{old,HH} \div N_{d,HH}$
Value(s) applied	8.05
Choice of data or Measurement methods and procedures	It is envisaged that only a single project stove will be distributed/installed per household hence the value of $B_{old,i,j}$ is equal to the value of $B_{old,HH}$.
Purpose of data	Calculation of baseline emissions
Additional comment	none

Data/Parameter	L
Data unit	Fraction
Description	Net to gross adjustment factor to account for leakage
Source of data	Methodology II,G, version 11.1 leakage adjustment factor, ex-ante
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	A net to gross adjustment factor (0.95 default) is applied in order to adjust Bold to account for leakages as per paragraph 48(c) of the AMS II.G, version 11.1
Purpose of data	Calculation of baseline emissions
Additional comment	none

Data/Parameter	f_{NRB}
Data unit	fraction
Description	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
Source of data	independent report by C4 EcoSolutions Pvt. Ltd
Value(s) applied	0.80

Choice of data or Measurement methods and procedures	Calculated as per "Tool 30: calculation of the fraction of non-renewal biomass"; version 2.0
Purpose of data	Calculation of baseline emissions
Additional comment	The details can be found in fNRB calculation sheet and report being submitted along with PoA DD

Data/Parameter	NCV_{biomass}
Data unit	TJ/t
Description	Net calorific value of non-renewable biomass that is substituted
Source of data	IPCC default value for fuel wood, ex-ante
Value(s) applied	0.0156 TJ/tonne
Choice of data or Measurement methods and procedures	Default value that is provided in AMS II.G, version 11.1.
Purpose of data	Calculation of baseline emissions
Additional comment	none

Data/Parameter	EF_{projected_fossilfuel}
Data unit	tCO ₂ /TJ
Description	Emission factor of the fossil fuel projected to be used for substitution of non-renewable biomass
Source of data	Default value for Latin America and Caribbean as given in AMS II.G.; version 11.1.
Value(s) applied	68.6
Choice of data or Measurement methods and procedures	Regional default value of fossil fuel emission factor given in AMS II.G; version 11.1.
Purpose of data	Calculation of baseline emissions
Additional comment	none

1.6.3. Modalities for ex ante calculation of emission reductions

>>

Emission reductions for each SSC-CPA will be calculated according to the following formula:

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$$

where

- i - Indices for the situation where more than one type of project device is introduced to replace the pre-project devices.
- j - Indices for the situation where there is more than one batch of project device
- ER_y - Emission reductions during year y in t CO₂e
- $ER_{y,i,j}$ - Emission reductions by project device of type i and batch j during year y in t CO₂e
- LE_y - Leakage emissions in the year y

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel} \times L$$

where

$B_{y,savings,i,j}$	- Quantity of woody biomass that is saved in tonnes per cookstove device of type i and batch j during year y
$N_{y,i,j}$	- Number of project devices of type i and batch j operating during year y
μ_y	- Adjustment to account for any continued use of pre-project devices during the year y
$f_{NRB,y}$	- Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})
$NCV_{biomass}$	- Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried')
$EF_{projected\ fossil\ fuel}$	- Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers.
L	- Net to gross adjustment factor of 0.95 to account for Leakages

For emission factor of fossil fuel displaced by the project stoves, default value of 68.6 t CO₂/TJ which is the emission factor for Sub-Saharan Africa has been used.

The value of f_{NRB} has been calculated using option 1 that is ex ante and shall be fixed for entire crediting period.

Calculating $B_{y,savings}$

According to the AMS II.G (version 11.1) methodology, $B_{y,savings}$ may be calculated in a number of ways and this PoA will allow the use of Option 3.

Option 3

Under Option 3, either of these two equations may be used by the SSC-CPA, however the choice of option shall be stated clearly in the CPA-DD and shall remain fixed for entire crediting period.

$$B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}} \right)$$

$$B_{y,savings,i,j} = B_{y=1,new,i,j,survey} \times \left(\frac{\eta_{new,i,j}}{\eta_{old,i,j}} - 1 \right)$$

where

$B_{old,i,j}$	-	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j .
$\eta_{new,i,j}$	-	Efficiency of the project device i and batch j
$\eta_{old,i,j}$	-	Efficiency of the old devices being replaced by project devices of type i and batch j
$B_{y=1,new,i,j,survey}$	-	Quantity of woody biomass used by project devices in tonnes per device of type i and batch j

$$B_{old,i,j} = B_{old,HH} \div N_{d,HH}$$

where

$B_{old,HH}$	-	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices (tonnes/household/year)
$N_{d,HH}$	-	Number of project devices per household (number)

For each SSC-CPA, certain parameters indicated in the methodology for the calculation of emissions are fixed. Default values have been selected for the following parameters:

1. $NCV_{biomass}$ The IPCC default value is selected, as indicated in the methodology (0.0156TJ/ton)
2. $EF_{projected_fossilfuel}$ Default value as per applied methodology (68.6 TCO₂/TJ)
3. The 0.95 leakage adjustment factor is applied in line with AMS II.G version 11.1.

The following parameters have been assessed by independent experts, using appropriate assessment techniques

1. $f_{NRB,y}$ The fraction of woody biomass saved by the project activity that can be established as non-renewable biomass. This has been established through a detailed study conducted by the independent experts C4 EcoSolutions
2. B_{old} The average quantity of woody biomass used per stove in the absence of the project in three stove fires or traditional pot supports. This is derived from baseline survey conducted by Helps International.

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

(Copy this table for each piece of data or parameter.)

Data/Parameter	Z
Data unit	Number of stoves sold/distributed
Description	Total number of stoves sold and registered in the Project Database Records
Source of data	Project Database records
Value(s) applied	To be mentioned in individual SSC-CPA DDs.
Measurement methods and procedures	<p>Detailed sales information will be collected for each customer, either using electronic or paper-based means. On electronic means, the data will be collected by SMS (i.e. mobile phone 'short message service' text) or Information and Communication Technologies ('ICT' – such as PDAs). Information that is entered into the database includes the name of the customer, address/ description of location, contact telephone number(s), unique serial number of the stove, retailer ID, and date of purchase. Sales information submitted via SMS/ ICT will automatically enter the database. Written registration cards will be entered manually into the same database.</p> <p>The unique serial number of each stove sold will correspond to a CPA. The date that the stove is registered in the database shall be used for determining vintage of the stove.</p>
Monitoring frequency	continuously until the database is frozen for a CPA
QA/QC procedures	Project distribution staff will spot-check end-users to verify that information submitted was factual.
Purpose of data	cross checking
Additional comment	none

Data/Parameter	$N_{y,i,j}$
Data unit	Quantity
Description	Number of project devices of type i and batch j operating in a year.
Source of data	sample survey
Value(s) applied	to be monitored at CPA level
Measurement methods and procedures	<p>The proportion of sampled ONIL stoves found to be in operation during each monitoring period will be applied to the total number of stoves for each CPA when calculating emission reductions. Sampling standard shall be used for determining the sample size to achieve 95/10 confidence precision. A discount shall be applied based on the percentage of devices operational as determined by the sample survey, e.g. if survey shows that 10% of the devices is non-operating, an adjustment factor of 0.9 shall be applied to number of project devices commissioned in a batch. Separate samples shall be taken for each batch.</p>
Monitoring frequency	Annually/biennially
QA/QC procedures	<p>The value will be determined through monitoring field surveys. The unique identification number of each stove is logged into the monitoring database. Data from the monitoring survey will be collected each monitoring period by trained staff and applied to the emission reduction calculations. Internal crosschecks by the CME or CPA implementer will be undertaken as QC.</p>
Purpose of data	Calculation of baseline emissions
Additional comment	See section I.7.2 of the PoA-DD for more detail on monitoring procedures

Data/Parameter	$\eta_{new,j}$
Data unit	Fraction

Description	Efficiency of the device type i and batch j being deployed as part of the project activity
Source of data	Efficiency tests in each monitoring period t
Value(s) applied	CPA specific.
Measurement methods and procedures	<p>Efficiency may be determined using any of the following</p> <ol style="list-style-type: none"> 1. The efficiency of the project devices shall be based on certification by a national standards body or an appropriate certifying agent recognized by that body; 2. Alternatively, manufacturer specifications on efficiency based on water boiling test (WBT) may be used as per directives given in methodology. 3. If the efficient cookstoves are produced by a manufacturer with a recognized management system in place (e.g. ISO certification) to ensure that the individual equipment produced do not vary beyond the range of acceptance limits (e.g. characteristics such as materials, critical dimensions). Directives given in the methodology with respect to simplified approach may be used.
Monitoring frequency	<ul style="list-style-type: none"> • Recorded at the time of stove installation/distribution. • In the subsequent years after stove installation, the efficiency of project stoves to be estimated annually in accordance with options (b), (c) or (d) under paragraph 37 of the applied methodology. Choice of option to be mentioned in the CPA DD
QA/QC procedures	Efficiency tests to be carried out in accordance with national or international standards / guidelines by an authorized agency.
Purpose of data	Calculation of baseline emissions
Additional comment	<p>Loss in efficiency of project devices due to ageing shall be assessed in accordance with paragraph 37 of the applied methodology. The CPAs developed under the PoA can use either of the options stated below for determining drop in efficiency of the project devices.</p> <p>(b) Manufacturer of project devices shall confirm with technical justification based on certification by a national standards body or an appropriate certifying agent recognized by that body that no decrease in efficiency of project device is envisaged during the crediting period; or</p> <p>(c) Determine the rate of efficiency drop for a representative sample of the first batch of project device i in year y and assume that same rate of loss in efficiency applies to all other batches. In other words, it may be assumed that the degradation of efficiency measured in a representative sample of the first batch of project devices i apply to all subsequent batches. The efficiency of the project devices in the first batch has to be monitored annually through representative samples and this rate of loss in efficiency may be applied correspondingly to all batches;</p> <p>(d) Determine the loss in efficiency annually from a representative sample of each batch and use the actual loss rate that is measured.</p> <p>CPA DD to clearly mention the option selected.</p>

Data / Parameter:	μ_y
Data unit:	fraction
Description:	Adjustment to account for any continued use of pre-project devices during the year y for CPAs using $B_{old,i,j}$ for calculation of $B_{y,savings}$
Source of data:	Survey of a representative sample to determine the ongoing baseline stove use will be undertaken using the sampling approach outlined in Part II section I.7.2 of the SSC-PoA-DD

Value(s) applied	To be monitored at CPA level
Measurement methods and procedures:	The CPAs can use either of the options provided in the applied methodology, AMS II.G, version 11.1 (Data/Parameter Table 10) for determining the value of μ_y .
Monitoring frequency:	Annual/biennial
QA/QC procedures:	Data for this parameter will be collected using the same survey for the parameter $N_{y,i}$ (in-use appliances) conducted by trained project staff members. Internal cross-checks by the CME or CPA Implementer will be undertaken as QC.
Purpose of data	Calculation of baseline and project emissions
Additional comment:	<p>If equation 8 under option 3 (WBT) is used combined with direct measurement of Biomass new, then $\mu_{y,i,j}$ (parameter 2) may be assumed as 1.0.</p> <p>When the data loggers are used, the days when only project devices or only pre-project devices are used will be attributed accordingly. The days where both devices have been used, if the data loggers are able to detect and record the time each device has been used (e.g. in hours), the share in the total duration of utilization will be used to attribute a fraction of this day to one or to the other device. Alternatively, if the data loggers are not able to determine the duration of the utilization, but only the situation of the device being on or off (i.e. used or not used during that day), the share of 50:50 may be used</p>

Data / Parameter:	B_{y=1,new,i,j,survey}
Data unit:	tonnes
Description:	Quantity of woody biomass used by project devices in tonnes per device of type <i>i</i> .
Source of data:	Sample survey of end user or direct measurement at each end user locations.
Value(s) applied	To be monitored at CPA level.
Measurement methods and procedures:	<p>Determined in the first year of the introduction of the devices (e.g. during the first year of the crediting period, $y=1$) through measurement campaigns at representative households and/or sample survey. Sample surveys to estimate this parameter, that are solely based on questionnaires or interviews (i.e. that do not implement measurement campaigns) may only be used if the following conditions are satisfied:</p> <ul style="list-style-type: none"> • Pre-project devices have been completely decommissioned and only efficient project device(s) are exclusively used in the project households; • If multiple devices are used in the project, it is possible from the results of the survey questions to clearly differentiate the quantity of woody biomass being used by each device. In other words, if more than one device, or another device that consumes woody biomass, are in use in project households, then the sample survey needs to distinguish the quantity of biomass used by the project device and the other devices that use biomass
Monitoring frequency:	Once within first year of project installation
QA/QC procedures:	Survey to be conducted in accordance with "Standard for sampling and surveys for CDM project activities and programme of activities, version 08.
Purpose of data	Calculation of baseline and project emissions
Additional comment:	This option shall not be available for CPAs included in the first PoA period.

Data / Parameter:	$N_{d,HH}$
Data unit:	number
Description:	Number of project devices distributed per household
Source of data:	CPA database
Value(s) applied	To be monitored at CPA level
Measurement methods and procedures:	Recorded at the time of stove installation/distribution
Monitoring frequency:	Once at the time of CPA implementation
QA/QC procedures:	The unique reference number of each stove shall be logged in the monitoring database showing the total number of stoves per household. Internal cross-checks by the CME or CPA implementer will be undertaken as QC.
Purpose of data	Calculation of baseline and project emissions
Additional comment:	Results of ex post monitoring/survey not to be used for determining this parameter.

Data / Parameter:	η_{old}
Data unit:	Fraction
Description:	Efficiency of pre-project device
Source of data:	default
Value(s) applied	0.10/0.20
Measurement methods and procedures:	Recorded at the time of registration of project stove
Monitoring frequency:	Once at the time of CPA implementation
QA/QC procedures:	At the time of project stove distribution/installation, the nature of baseline stove with respect to it being a <ul style="list-style-type: none"> i. three-stone fire using firewood (not charcoal), ii. conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney iii. other types of devices, not included in categories above shall be recorded. For categories (i) & (ii) default value of 0.10 shall be used, & for baseline stoves belonging to category (iii) default value of 0.20 shall be used.
Purpose of data	Calculation of baseline and project emissions
Additional comment:	Fixed for each individual household included in the CPA

Data / Parameter:	Life Span
Data unit:	years
Description:	The operating life- time of the project device.
Source of data:	Manufacturer (certified by a national/international standards body or an appropriate certifying agent)
Value(s) applied	To be declared in individual SSC CPA DD
Measurement methods and procedures:	none
Monitoring frequency:	Recorded once at the time of CPA implementation
QA/QC procedures:	none
Purpose of data	Methodology requirement

Additional comment:	none
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Data / Parameter:	Date of commissioning of batch j
Data unit:	date
Description:	Stoves can be grouped in batches and latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch.
Source of data:	CPA database
Value(s) applied	To be reported for each batch in monitoring report
Measurement methods and procedures:	none
Monitoring frequency:	Recorded at the time of commissioning of last stove in a batch
QA/QC procedures:	none
Purpose of data	Methodology requirement
Additional comment:	none

Data / Parameter:	Date of commissioning of project device i
Data unit:	date
Description:	Date of commissioning of individual stove
Source of data:	CPA database
Value(s) applied	Reported in emission reduction calculation sheet for a monitoring period
Measurement methods and procedures:	none
Monitoring frequency:	Recorded at the time of installation or distribution or completion of registration process of an individual stove.
QA/QC procedures:	none
Purpose of data	Methodology requirement
Additional comment:	none

1.7.2. Sampling plan

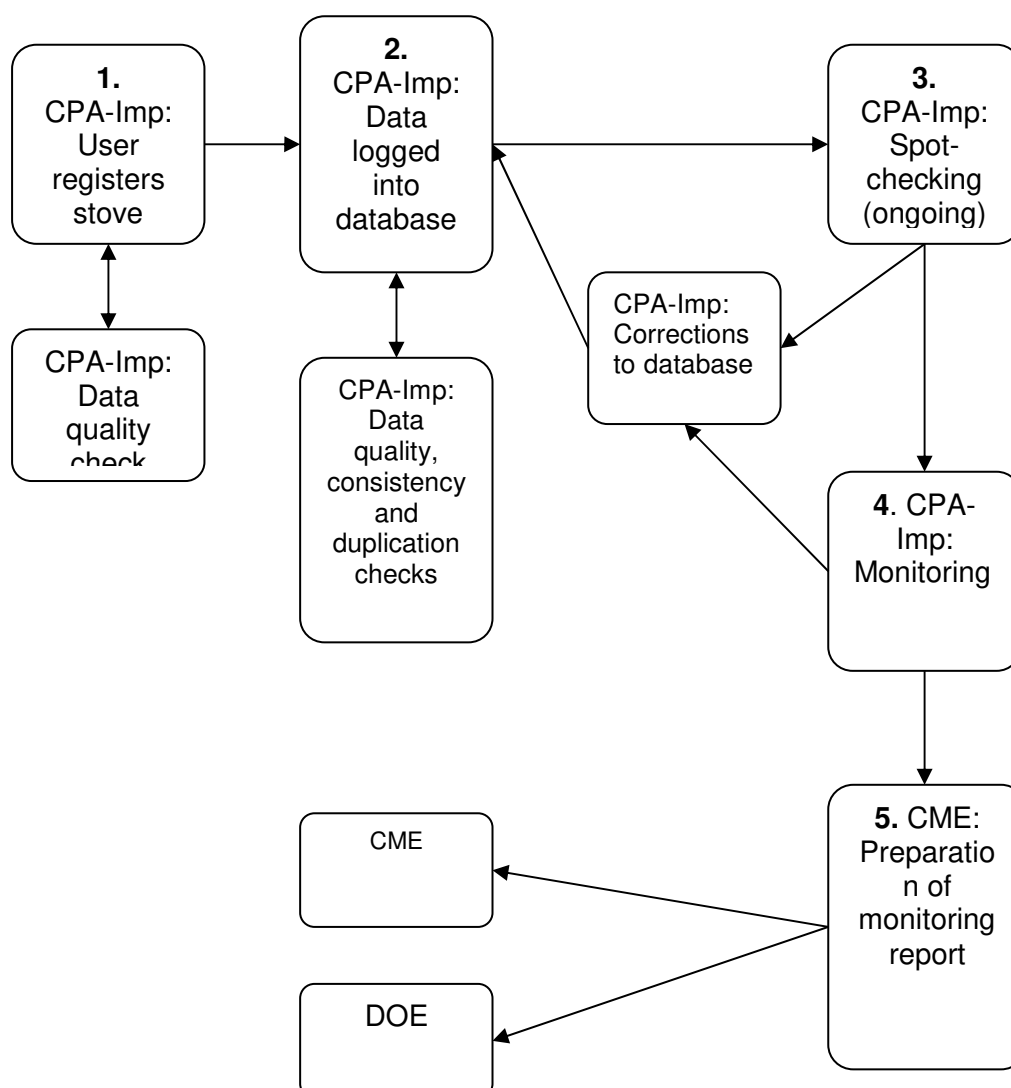
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MONITORING PLAN

The Monitoring Plan applied in this PoA involves a number of key elements that ensure that the CME and CPA-Implementer have high-quality, unbiased and reliable information regarding the performance of the project in terms of implementation and outcomes, and for the purposes of calculating Certified Emission Reductions (CERs) following AMS II.G version 11.1 on the basis of the amount of non-renewable biomass saved by the ONIL Stove in the project activity. The key elements are the following:

- Data collection procedures
- Distribution and Monitoring Database
- Spot Checking of ONIL Stoves (ongoing)
- Sample Plan for the Monitoring Survey
- Data Quality, Consistency and Duplication Checks
- Monitoring Reporting

The below flow-chart illustrates the roles and responsibilities of the parties during the implementation of the monitoring plan for the SSC-CPA. In the schematic, the CPA implementer is abbreviated to “CPA-Imp”, and can be the CME or another party authorized by the CME.



Below is the description of the above steps on the flow-chart.

- 1. CPA-Imp: User registers stove:** CPA implementer will collect/receive the necessary information requested on the Registration Card from the user. Means of collecting this information may be through a physical Registration Card filled by CPA-Imp staff, retailers, end-users or partner organization's staff, or through the use of ICTs or SMS. CPA Implementers' staff shall double check the accuracy of information provided, and request for field staff additional clarifications if needed;
- 2. CPA-Imp: Data logged into database:** CPA implementer trained staff will input the data in the database either manually (if data collected from physical Registration Card) or this will be automatically input if data was collected using ICTs or SMS. CPA implementer staff shall double check the information included on the database and check for duplications. Any duplicate information shall be investigated and errors corrected or excluded from the database if it is a true duplicate entry.
- 3. CPA-Imp: Spot- checking (ongoing):** CPA implementer field staff will continually randomly select households included in the database and visit them to cross-check the information on the database with the factual evidence in the field. Any inconsistencies found (e.g. change in the address of a

user) will be updated on the database, and in the case ONIL Stoves are found to be no longer in use, they will be clearly marked as such and excluded from emission reductions calculations.

4. **CPA-Imp: Monitoring:** CPA implementer will follow the requirements as per POA-DD to collect the necessary information for a monitoring report.
5. **CME: Preparation of monitoring report:** the CPA implementers or the CME will prepare the final monitoring report to be provided to the verifier DOE for verification of emission reductions. A copy of the monitoring report will remain with the CME

The CME will coordinate and manage each CPA Implementer and assist them in implementing each element of the monitoring plan. The monitoring plan shall be elaborated per CPA and in accordance with the Sampling Plan below.

Sampling Plan

As per the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 08.0, the sampling plan is the following:

(a) Sampling Design

Due to the large number of ONIL Stoves envisioned to be distributed as part of the CPAs to be included in the PoA, it is not economically feasible to monitor each individual ONIL stove unit distributed. Therefore, representative sampling will be undertaken as part of a PoA-wide Sampling Plan (by grouping and sampling across CPAs) that is designed in line with the requirements of the “Standard for sampling and surveys for CDM project activities and programme of activities” from version 08.0

(i) Objective and Reliability Requirements:

The objective is to obtain an unbiased and reliable estimate of the proportion or mean value of the following key variables over the course of the crediting period, and with 95/10 confidence/precision (as per paragraph 23 of Standard for sampling and surveys for CDM project activities and programme of activities”, version 08.0) since each CPA implemented under the PoA shall consist of microscale CDM units.

Monitored Parameters:

Sr. no	Parameter	Description of Parameter	Frequency
1	$N_{y,i,j}$	Number of ICS still in operation	Annual/biennial
2	μ_y	Adjustment to account for any continued use of pre-project devices. (in case equation 7 of methodology is used)	Annual/biennial
3	$\eta_{new,i,j}$	Efficiency of device type ‘i’; batch ‘j’	Annual
4	$B_{y=1,new,i,survey}$	Quantity of woody biomass used by project devices in tonnes per device. (in case equation 8 of applied methodology is used)	Once, within 1st year of project start date

(ii) Target Populations:

The target population for parameters 1,2 and 4 are all households in the PoA database which are using fuel wood in similar model of ICS distributed under the PoA for cooking.

The target population for parameter 3 is the set of stoves that are operational and belong to same vintage and model.

(iii) Sampling Frame

To ensure the homogeneity of the CPAs included for a single sampling plan, two sampling frames shall be defined. In overall, all CPAs will have the same group of end users which is from rural area. The CPAs are to be implemented in Guatemala (specifically in rural area), thus it is expected that the geographical locations do not have influence on the parameter of interest. Therefore, all these 4 parameters can be assumed to be highly homogeneous for each ICS model regardless of how the end user group and distribution/installation location is defined.

The sample frame refers to all the information sources on the Database. There are two primary mechanisms for data collection: the Registration Card for newly distributed/installed ONIL stove and the Monitoring Survey (which includes a household questionnaire and visual inspection of ONIL Stoves) that will be used throughout the lifetime of the PoA. The Registration Card is used to populate the stoves Database and the Monitoring Survey follows the “Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities”; version 08.0.

The POA is open to different CPA Implementers and different models of ONIL approved Stoves. As explained below (on section “sampling method”), to take the different characteristics of different CPA Implementer and ONIL Stove models into consideration, CPAs shall be grouped together to create a Primary Sampling Unit which is homogenous. Paragraph 22 of the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities”; version 08, allows the use of a single sampling plan covering a group of CPAs, provided the homogeneity of population can be demonstrated, or differences are taken into account in the sample size calculation. Paragraph 23 of the same standard requires a 95/10 confidence/precision for sampling surveys in all cases, whether the CPAs are grouped together or when sampling is conducted at the CPA level for CPAs that are solely composed of “microscale CDM units” as defined in the Methodological tool “Demonstration of additionality of microscale project activities”.

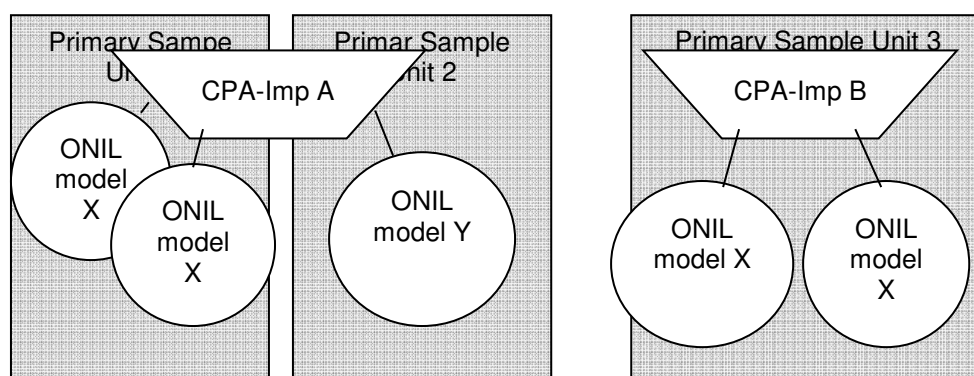
A. Sampling frame for proportion of ICS still in operation ($N_{v,i}$)

The first step is to identify the Primary Sampling Units. Primary sampling units are CPAs that have:

1. The same CPA Implementer
2. The same ONIL stove model

I.e. CPAs with the same CPA Implementer and same ONIL stove model can therefore be grouped together and form a Primary Sampling Unit. In the event the POA has CPAs with two different CPA Implementers using the same ONIL stove model, these form two different Primary Sampling Units. The same is true if the same CPA Implementer has two different ONIL stove models being implemented – this will form two Primary Sampling Units.

The below schematics illustrate the example used above. This is justified by the fact that CPA Implementer might vary in terms of performance and it is important for the CME to collect and monitor accurate data for each CPA Implementer distributing each stove model.



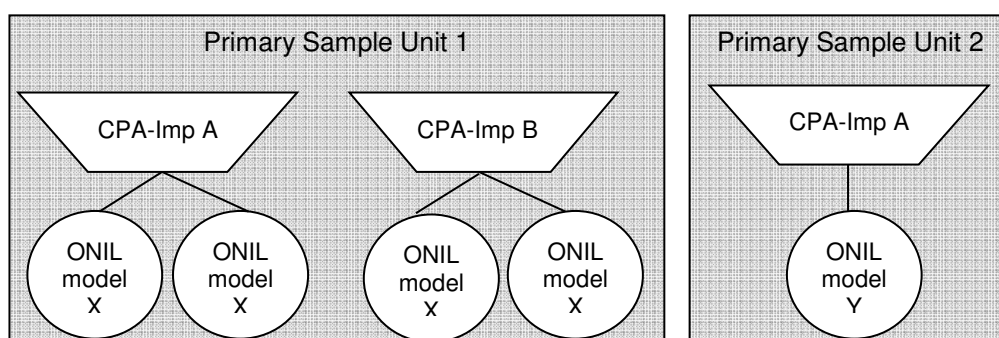
B. Adjustment to account for any continued use of pre-project devices (μ_v)

CPAs with the same CPA Implementer and same ONIL stove model can be grouped together and form a Primary Sampling Unit. In the event the POA has CPAs with two different CPA Implementers using the same ONIL stove model, these form two different Primary Sampling Units. The same is true if the same CPA Implementer has two different ONIL stove models being implemented – this will form two Primary Sampling Units.

C. Thermal Efficiency of operational ONIL Stoves ($\eta_{new,i,j}$)

The thermal efficiency of operational ONIL Stoves shall vary in accordance with its model, but not within different CPA Implementers. The thermal efficiency of the ONIL Stove is expected to change over the time. Hence for parameter $\eta_{new,i,j}$ the Primary Sampling Unit shall be defined as the group of ONIL Stoves of the same model and same vintage. . If the same CPA Implementer has two different ONIL Stove models being

implemented in the same vintage – this will form two Primary Sampling Units. Finally, two primary sampling units will be formed by ONIL Stove from two different vintages and all other factors (Stove model and CPA Implementer) remaining equal. The below schematics illustrate the example used above assuming all stoves in the schematic are in one vintage.



For example different CPA Implementers are implementing CPAs using an ONIL Stove model “Y” for the past 3 years. In order to evaluate the thermal efficiency of the different vintages of the same stove “Y”, implemented in different CPAs, the primary group shall consist of all ONIL Stoves implemented in different CPAs under the POA (regardless of CPA Implementer) which are of the same vintage and same model – in this example there are three primary sampling units which are: 1) ONIL Stoves of vintage 1 (less than one year in operation); 2) ONIL Stoves of vintage 2 (over one year and under two years in operation); and ONIL Stoves of vintage 3 (over two years and under 3 years in operation).

D. Quantity of woody biomass used by project devices in tonnes per device ($B_{y=1,new,i,survey}$)

Similar to thermal efficiency $B_{y=1,new,i,survey}$ shall vary in accordance with its model, but not within different CPA Implementers. For this parameter, CPAs with the same ICS model can be grouped together and form a Primary Sampling Unit. In the event the SSC-CPA has two different CPA Implementers using the same ICS model, these will form a single Primary Sampling Unit. However, if the same CPA Implementer has two different ICS models being implemented – this will form two Primary Sampling Units.

(iv) Sampling Method

Simple Random Sampling will be used and samples will be randomly selected from the primary sampling units as illustrated above.

To ensure a random selection of ONIL Stoves, random number generators shall be applied. Each ONIL stove in the target population is uniquely identifiable by its unique ID number. Each ONIL stove can thus be allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of ONIL Stoves in the Database for that pre-defined sampling frame. Applying the random number generators, the ONIL stove can then be randomly chosen from the defined population up to the required sample size as calculated by the CME.

To determine the parameters, sampling will involve the following approaches:

$N_{y,i,j}$:	Visual inspection of the premises to see if ONIL stove is operational and in use. Interview with end user if required to verify that ONIL stove is still in use
μ_y :	Interview with end user and visual inspection to determine if a baseline (replaced) stove is still being used in addition to ONIL stove
$B_{y=1,new,i,survey}$	Interview with end user for determining/measuring average quantity of fire wood used in the project stove per day.
$\eta_{new,i,j}$	ONIL Stoves will be tested using WBTs (ONIL stove thermal efficiency)

The efficiency of ONIL Stoves ($\eta_{new,i,j}$) as determined by the water boiling test evaluated during the monitoring period. The efficiency of ONIL Stoves will be determined across CPAs using the same stove model and same vintage (Primary Sample Unit). Using the formulas from the “Sample Size” section below, the CME will randomly sample the required number of ONIL Stoves from the primary sampling units. It is

important to note that $\eta_{new, i}$ and hence the thermal efficiency test must take into consideration --and be conducted for-- each ICS vintage. As an illustrative example, consider a PoA that distributed a ONIL Stoves of same manufacturer/model but had two vintages: 75% of the total ONIL Stoves distributed have been in use for less than 365 days (i.e. vintage 1) and 25% have been in operation for over 365 days but less than 730 days (i.e. vintage 2). In this case, 2 Primary Sampling Units shall be formed where each sampling unit represents one vintage. For each vintage, the number of ONIL Stoves are to be randomly selected and sampled and the sample sizes are to be determined using the below equations. The mean thermal efficiency of each vintage shall be used for calculating emission reductions for all stoves of vintage i . that is if $\eta_{new, i}$ for stoves of vintage 1 is 26% and for vintage 2 is 24%, then all ONIL Stoves which have been in use for less than a year will use a thermal efficiency of 26% in its calculations, while stoves vintage 2 will use 24%. In the event of monitoring period being over one year (let's use the example of 2 years) and if the ONIL Stove began its operation on the first day of the monitoring period, the stove shall apply the equivalent number of days in operation under vintage 1 and the equivalent number of days of operation under vintage 2. For avoidance of doubt, in every monitoring period, all ONIL Stove vintages will be sampled and the thermal efficiency for each vintage shall be established and used for the calculation of emission reductions for that monitoring period.

(v) Sample Size

For the estimation of the proportion or mean value of the parameters investigated, the minimum sample size for each sample frame has to achieve the 95/10 confidence/precision for annual as well as biennial sampling.

The procedure to determine the sample of households will ensure that they adequately represent the broader project population, minimizing sampling error. Using, a 95 per cent confidence level, and a 10 per cent margin of error, the samples will be randomly selected from each Primary Sampling Unit.. There are three parameters that will be estimated through sampling: the number of stoves still in operation during the monitoring period as determined by the monitoring survey ($N_{y, j}$), the fraction of baseline stoves in use within the population of operational ONIL Stoves during a monitoring period (μ_{yy}), and the average ONIL stove efficiency, ($\eta_{new, i}$).. Quantity of woody biomass used by project devices in tonnes per device $B_{y=1, new, i, survey}$ shall also be estimated through sampling within the first year of project installation. It can be coupled with $N_{y, j}$ and μ_y for the first year. Of the three parameters to be monitored annually, two are proportions/percentages (μ_y and $N_{y, j}$) and one is a mean value $\eta_{new, i}$.

In order to calculate the required sample size estimates, values for the proportions, mean values, and standard deviations are required. As per Guideline for Sampling and surveys for CDM project activities and programmes of activities, version 04.0, there are different ways available to obtain the estimates of the parameter of interest:

- Refer to the result of previous studies and use these results;
- In a situation where information from previous studies is not available, a preliminary sample as a pilot could be conducted and use that sample is used to provide the estimates;
- Use best guesses based on the researcher's own experiences.

For the registration/inclusion purpose of CPA-DD, option (c) as stated above shall be applied. For the first monitoring period, values from a pilot shall be applied. For the following monitoring periods, the estimates shall be adjusted taken into account the results of the previous monitoring period(s) or the result from recent pilot study which is conducted after the previous monitoring periods.

To estimate the number of sample size for parameters $N_{y, j}$ and μ_y the following equation⁶⁴ is used:

$$n \geq \frac{1.96^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.96^2 \times p(1-p)}$$

Where:

- n = Sample size
 N = Population size (Total number of households/ICS)
 p = Expected proportion

⁶⁴ Equation 1 of Appendix 2, *Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities, Version 04.0*)

- 1.96 = Represents the 95% confidence required (In the case of 90% confidence, 1.645 shall be used)
 0.1 = Represents the 10% relative precision

If the resulting sample size based on the above equation is smaller than 30, a minimum sample size of 30 shall be chosen when the parameter of interest is a proportion.

Parameter $\eta_{new,i}$:

For the purposes of determining sample size in the first monitoring period, the performance of ONIL Stoves can be categorized into two groups, which are characterized by the range of likely mean efficiency and the likely values of SD relative to the mean, according to the type of ONIL Stoves. The ONIL Stoves models that are manufactured in modern factories tend to be very highly efficient and have been designed to meet stringent efficiency specifications, so the standard deviation is expected to be relatively low. Where key components of ONIL Stoves (e.g. the combustion chamber and flue) are not manufactured but instead are installed on-site or handmade, then the mean efficiency is expected to be in the range of 20-30% with relatively higher variability.

To estimate the sample size for parameter $\eta_{new,i}$ the following equation⁶⁵ is used:

$$n \geq \frac{1.96^2 NV}{(N-1) \times 0.1^2 + 1.96^2 \times V}$$

Where:

$$V = \left(\frac{SD}{mean} \right)^2$$

- n = Sample size
 N = Population size (Total number of households/ICS)
 $mean$ = Expected mean of ICS thermal efficiency
 SD = Expected standard deviation
 1.96 = Represents the 95% confidence required (In the case of 90% confidence, 1.645 shall be used)
 0.1 = Represents the 10% relative precision

If the resulting sample size based on the above equation is smaller than 30, since $\eta_{new,i}$ is a numeric mean value (i.e. not a proportion or percentage) the Student's t-distribution shall be used as per paragraph 14 of "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 08.0

The sampling for parameter $\eta_{new,i}$ shall comprise of ONIL Stove installed/distributed during the current vintage and oldest vintage. The annual efficiency loss of ONIL Stove established from these two vintages may be used to correct the initial efficiency of the ONIL Stove installed/distributed later on.

Sample size estimation of 'Quantity of woody biomass used by project devices in tonnes per device' ($B_{y=1,new,i, survey}$) shall be included in the CPA DD depending on choice of option for estimation of B_y , savings.

The CME may choose to use the same sample to monitor more than one parameter. According to the Standard for sampling and surveys for CDM project activities and programme of activities, version 08.0, if there is more than one parameter to be estimated, then a sample size calculation should be done for each of them. Then either the largest number for the sample size is chosen as sampling effort with one common survey, or separate sampling efforts and surveys are undertaken for each parameter. For instance, the CME can sample separately μ_y , $N_{y,j}$, $B_{y=1,new,i, survey}$ and $\eta_{new,i}$ –or a combination of these parameters- in the same sample. Since parameters μ_y , $N_{y,j}$ and $B_{y=1,new,i, survey}$ share the same sampling units, CME may choose to have one common survey for these three parameters with largest number of sample size between these three parameters being chosen, then a separate sampling effort may be arranged for parameter $\eta_{new,i,j}, \dots$

⁶⁵ Equation 4 of Appendix 2, *Guidelines for Sampling and Surveys in CDM Project Activities and Programme of Activities, Version 04.0*)

Sampling more than one parameter in the same sample helps reduce travel needs for monitoring and the associated costs. At the same time this approach ensures the random selection of samples for every parameter.

Oversampling is strongly encouraged, not only to compensate for any attrition, outliers or non-response associated with the sample, but also to prevent a situation at the analysis stage where the required reliability is not achieved, and additional sampling efforts would be required. The sample size shown above will be adjusted upwards to account for non-responses, CME shall determine the appropriate non-responses rate based on previous experience.

(b) Data:

(i) Field Measurements:

To monitor the number of stoves that continue to be in use ($N_{y,i}$) and the percentage of continued baseline stove use among ONIL Stove households in the database (μ_y), the data collected will be a representative number of stoves in the database for the monitoring period. The scope is a representative sample of stoves across all CPAs with the same CPA Implementer and same ONIL Stove model in this PoA. The method of collecting data will be field surveys of required sample size of ONIL stove users in the database. Frequency of data collection is one survey per monitoring period. Data will be collected from the field surveys, entered in the database and included in the monitoring report.

For monitoring $B_{y=1,new,i, survey}$, the data collected will be representative number of stoves in the database that were distributed within one year of start date of CPA implementation. The method of collecting data will be field survey and frequency will be once during the entire crediting period.

To monitor the efficiency of the stove annually (as required by the AMS II.G version 11.1) a new test will be conducted to determine the rate at which a sample of stoves from a given vintage year deteriorate in efficiency. The method to collect the efficiency data will be the Water Boiling Test.

The table below summarizes field measurement data requirements

Parameter	Timing (indicative)	Frequency (required by AMS II.G –Version 11.1)	Methods to be applied	Comments on seasonal fluctuation
$N_{y,i}$	Monitoring will likely occur every 12 months	annually/biennially	Visits to the premises, visual inspection and interview with ONIL stove end-user	Unlikely .
μ_y	Monitoring will likely occur every 12 months	annually/biennially	Visits to the premises, visual inspection and interview with ONIL Stove end-user.	Unlikely.
$\eta_{new,j}$	Monitoring will likely occur every 12 months, and will include ONIL Stove from all vintages for which emissions reductions are to be claimed in that monitoring period.	annually	Water Boiling Test (WBT) Protocol Version 3.0 (or more recent at the discretion of the CME).	Unlikely.
$B_{y=1,new,i, survey}$	Within 1 st year from the starting date of CPA implementation for CPAs applying equation 8 of applied methodology.	Once. The value will be fixed for entire crediting period	Visits to the premises, visual inspection, measurement and interview with ICS end-user.	unlikely

(ii) Quality Assurance/Quality Control

The CME will apply measures to ensure the required confidence/precision for each sampled parameter is met, allowing for non-response and the possible removal of outliers from the sample, as part of a Quality Control/Quality Assurance system. The choice of measure applied to each parameter will depend on the cost of each data collection approach and logistics required. The CME will determine the most effective measure for each parameter from the following list (illustrated using a required sample size of 20 and an effect of non-response of 2 to 4 ONIL Stoves⁶⁶):

- Oversampling: Randomly draw a sample of at minimum 24 ONIL Stoves and collect data from each
- Buffer Group: Randomly draw a sample of at minimum 24 ONIL Stoves and collect data from only 22 ONIL Stoves. If this would not result in the required sample size data would be collected from the additional 2 ONIL Stoves that were selected in the sample.
- Draw an additional sample: Randomly draw a sample of 22 ONIL Stoves and collect data from these. If the required sample size is not achieved, an additional sample of 2 elements will be drawn and included in the sample.
- Use lower confidence bound (of $N_{y,j}$, $\mathbf{B}_{y=1,new,i, survey}$ or η_{new}) or, with a conservative approach according to the parameter definitions, the upper confidence bound of μ_y

The CME may choose to stop monitoring a particular parameter once the required level of confidence/precision has been reached, as long as the calculated minimum number of samples has been achieved. As an example, the following steps could logically be followed for the case of applying a 30% buffer:

1. Visit first 10% of premises required for the 30% buffer. If the number of responses is sufficient to achieve the required reliability level, then stop sampling.
2. If step 1 is not sufficient to achieve the required reliability level, then visit the next 10% of premises (increases the additional sampling to 20% of the 30% buffer). If this additional sampling is sufficient, then stop sampling.
3. If step 2 is not sufficient to achieve the required reliability level, then complete the final 10% of the additional sampling buffer (bringing the total to 30%).

The sampling plan has the following procedures in place to ensure good quality data. The CME will ensure that field personnel have reviewed, understand and have agreed to follow the monitoring plan procedures, including provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response. A quality control and assurance strategy will be documented. Quality control and assurance strategies include addressing non-sampling errors, such as non-response or bias from interviewer. The CME or a competent third party designated by the CME with the proper skills will train the monitoring personnel on how to properly survey households to prevent bias from interviewer. In the case a household refuses to participate, another household will be chosen at random. To reduce interviewer bias, good questionnaire design and well-tested questionnaires will be used.

The calculation of the sample size will be carried out using estimates for parameter proportions, mean values, variances, and standard deviations, as the actual characteristics of the population/sampling frame are unknown. In order to ensure the quality of the sampling results, the CME can draw on the provisions for reliability calculations including estimating the bounds of the confidence interval, the standard error of the mean value or proportion, and the t-value as derived from the t-distribution⁶⁷. In the event that the sampling results do not fulfil the required level of confidence and precision, the CME can undertake additional samples. If the reliability is still not sufficient after raw data and summary statistics are scrutinized and after additional samples have been collected,⁶⁸ the sampling may be repeated with an increased sample size. Alternatively, the CME may choose to apply the lower bound (or higher bound according to the more conservative approach,

As the continued use of ONIL Stoves and the incidence of baseline stove usage among ONIL stove users are binary parameters, there can be no outliers in the sampled data and no treatment for outliers is required. The sample data for $\eta_{new,j}$ is continuous and therefore the presence of outliers is possible. To identify and

⁶⁶ The 2 to 4 values help exemplify variations in response rates. The value of 2 corresponds to higher response rates; the value of 4 is for lower response rates. The actual non-response rates applied to the final sample size shall be determined by CME.

⁶⁷ As provided by the *Guidelines for Sampling and Surveys in CDM Project Activities and Programme of Activities, version 04.0* (EB 69, Annex 5 paragraphs 220 to 290)

⁶⁸ As per EB 69 Annex 5 paragraphs 258 to 314

address outliers for the parameter $\eta_{\text{new},i,j}$. outliers will be defined as those data points with values greater than three standard deviations from the mean of the sample for each vintage.

Data points identified as outliers according to the above analysis will be examined further to correct for possible transcription and data entry errors, but will be omitted from the analysis if no such administrative errors exist.

(i) Data archiving

Hard copies of the surveys will be kept and the database will have back up. Original stove purchase contracts, information collected from the Registration Card) or other means of acceptance by the users will be stored in the main office for the coordinating entity. A back-up of the project database will also be stored on an electric medium by the CME. All data monitored and required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever is later.

(ii) Analysis

The CME will manage a project database that includes the following data that can be directly attributable to each CPA within the PoA, thereby allowing unambiguous determination of the emission reductions attributable to each CPA:

- A list of households participating in each CPA, including name, community/location, distribution/installation date and unique serial number;
- Testing to ensure that the stoves are still operating above the minimum 20% efficiency required by the AMS II.G (version 11.1) methodology, by the CPA Implementer, CME or a third party certified by a national standards body or an appropriate certifying agency recognized by it.
- Where replacements are made, assurance that the efficiency of the new ONIL Stoves is similar to the specified.

Data obtained from the samples will be used to estimate proportions and mean values for the parameters described above. The values will then be factored into the emissions reduction calculations and result in the request for issuance of CERs for that group of CPAs – the primary sampling Units. The parameters are applied for emission reduction calculations as outlined in I.6. 3 of the PoA-DD. The stoves that are not in use will be excluded from emissions reductions calculations and will not be counted towards the total number of ONIL Stoves in operation during the monitoring period. The thermal efficiency of new stoves ($\eta_{\text{new},i}$) will be used in the calculation of the per stove emission reduction, which will be multiplied by the number of stoves in operation in the CPA to obtain the emission reductions per CPA.

Implementation

Sampling for the purpose of emission reduction calculation and elaboration of the monitoring report will occur at the end of each monitoring period. This sampling will be conducted by trained personnel either part of the CPA Implementer or CME team, or an experienced third party entity. The credentials and/or training materials for the sampling personnel will be provided to the DOE at verification. The maximum length of one monitoring period will be two years (duration, not calendar years), as AMS II.G., version 11, provides the option for annual or bi-annual monitoring. The CPA Implementer will be responsible for managing household data collection and entry into the project database. Field personnel will receive training on how to properly deal with surveying techniques and reduce errors and sign a document certifying that there is no conflict of interest of those involved in data collection and analysis. If there is conflict of interest, the personnel will not be allowed to participate in data collection and analysis. The project database will record the start and end dates of each monitoring period, and record the emission reductions attributable to each monitoring period. Appropriate record keeping procedures will be implemented to ensure that each monitoring period data set can be transparently attributed to its corresponding CPA, preventing any occurrences of double counting. An internal review of the project database will be able to determine the current status of each SSC-CPA—the duration of previous monitoring periods, the households delivering monitoring data, and current verification activities.

i. Assessment for Leakage

According to methodology II.G, version 11.1, paragraph 48(c) leakage related to the non-renewable woody biomass saved by the project activity shall be assessed on *ex-post* surveys of users and the areas from which the woody biomass is sourced. The methodology offers the alternative that if $B_{\text{old},i,j}$ is multiplied a net to gross adjustment factor of 0.95 to account for leakages, surveys are not required. This PoA will use the 0.95 leakage adjustment factor instead of *ex-post* surveys.

ii. Disposal of Low Efficiency Appliances and Use of Baseline Stoves

The number of households continuing to use a baseline stove in addition to their ONIL stove will be monitored throughout the project lifetime using sampling approach described above.

iii. Monitoring Reporting

The CME will assess all monitoring data and produce a monitoring report for each CPA for the DOE to verify corresponding to the preceding monitoring period of all CPAs. This report will present the data relating to the emission reductions generated by those CPAs during the monitoring period.

I.7.3. Other elements of monitoring plan

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Please refer to Section I.7.2.

SECTION J. Crediting period type and duration

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The type of crediting period for the generic CPA is renewable. The length of each crediting period is 7 years and 00 months.

The CPA is expected to have an operational lifetime of 21 years and 00 months (total of 252 months).

SECTION K. Eligibility criteria for inclusion of CPAs

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No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
1	Geographical boundaries of CPAs consistent with the geographical boundary of the PoA.	(a) The geographical boundary of the CPA is Guatemala. CPA implementers may use self-declaration to prove that all the ONIL Stoves from the CPA will be located in Guatemala.	CPA implementers may use self-declaration to prove that all the ONIL Stoves from the CPA will be located in Guatemala

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
2	Conditions to avoid double counting of GHG emission reductions or net anthropogenic GHG removals, such as unique identifications of product and end-user locations.	<p>(b) Each CPA must ensure no double counting takes place. Each SSC-CPA shall be uniquely identified and defined in an unambiguous manner by a database of uniquely identified households in which ONIL stoves have been installed. Each household will be assigned a unique ID in the database, which will be linked to information for each entry on the following (as appropriate and available):</p> <ul style="list-style-type: none"> • Name of stove user or head of the household • Address of end user or household • Phone number of end user or household (if available) • GPS location of household • Stove model • Date of distribution/installation • ONIL Stove serial number • Retailer/distributor information • Identification of cooking method prior to installation of stove <p>The compliance with the criterion is confirmed via checks on the database.</p>	The compliance with the criterion is confirmed via checks on the database
3	Conditions to check only ONIL stoves will be installed in the CPA and where applicable, distribution mechanisms.	(c) Each SSC-CPA will involve the distribution and installation of ONIL Stoves, either by CPA Implementers or authorized installers under the PoA. CPA implementers must show the database with information as detailed in criterion (b).	CPA implementers must show the database with information as detailed in criterion (b).
4	Conditions to check the start dates of CPAs through documentary evidence;	(d) Each CPA must demonstrate through documentary evidence that the PoA start date is before the CPA start date. Compliance check is done through supporting documentation, like a Registration Card, confirming date of receipt of first stove in the CPA.	Compliance check is done through supporting documentation, like a Registration Card, confirming date of receipt of first stove in the CPA.
5	Conditions to ensure compliance with the applicability of the applied methodologies.	(e) Each SSC-CPA must implement version 11.1 of the baseline and monitoring methodology AMS II.G, "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass" and ensure CPA compliance with applicability of the methodology. Criteria confirmed by evaluating 1) ONIL Stove efficiency report and 2) Documentary evidence that fuel wood has been used since 1989, and 3) through Specific CPA-DD Monitoring Plan.	Criteria confirmed by evaluating 1) ONIL Stove efficiency report and 2) Documentary evidence that fuel wood has been used since 1989, and 3) through Specific CPA-DD Monitoring Plan.

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
6	Conditions to ensure that CPAs meet the requirements for demonstration of additionality.	<p>(f) According to paragraph 2 (c) of EB 68 Annex 27 "Guidelines on the Demonstration of Additionality for Small-Scale Project Activities" version 09.0, the documentation of barriers is not required for "Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size of each unit is no larger than 5% of the small-scale CDM thresholds." – For CPAs included in first PoA period only.</p> <p>For CPAs that will be included in the second PoA period, additionality shall be demonstrated using Tool 19 "Demonstration of additionality of micro-scale project activities"; version 09 paragraph 12 (a) that is if the project area falls under SUZ category within Guatemala (as defined under paragraph 10 (b) of Tool 19) or 12 (b) that is if the project cookstove technology is less than or equal to 5% technologies prevalent in the project area providing similar services.</p> <p>For CPAs not qualifying under paragraphs 12 (a) or (b), additionality shall be demonstrated using Tool 21 "Demonstration of additionality of small-scale project activities"; version 13.1</p>	<p>For CPAs included in the second PoA period one of the following evidences shall be submitted to DOE -</p> <ol style="list-style-type: none"> 1.CPA is implemented in SUZ area in Guatemala; 2.The project technology is $\leq 5\%$ of prevalent technologies in the area 3. Presence of at least one of the following barriers - <ol style="list-style-type: none"> a) Investment barrier b) Technological barrier c) Barrier due to prevailing practice d) Other barriers.
7	Conditions to check the target group of ONIL Stove and cooking method prior to installation of ONIL Stoves.	<p>(g) Each CPA must show that the target group of ONIL Stoves is households that were using open cooking fires and not already involved or covered by any other CPA or CDM project involving the distribution and/or installation of improved cook stoves. Each household self-identifies the cooking method used prior to the installation of the ICS at the time when geographic coordinates and unique identification numbers are collected. Confirmation of this criterion is done via the Registration Cards where the user acknowledges he/she was not previously using an ICS and that it was previously using open cooking/traditional stoves. The Registration Cards and the database will be available to the CME and for verification of emissions reductions.</p>	<p>The Registration Cards and the database to be submitted to validating/verifying DOE.</p>
8	If the generic CPA applies sampling for the determination of parameter values for calculating GHG emission reductions or net anthropogenic GHG removals, conditions related to sampling requirements for the PoA in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities.	<p>(h) Each CPA must follow sampling requirements for PoA in accordance to approved standards (EB 69, Annex 4), as outlined in section E.7.2 of the PoA DD, where simple random sampling is the selected approach.</p>	<p>Sampling plan to be detailed in CPA DD and should be in compliance with the</p>

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
9	Conditions for the debundling check based on the "Methodological tool: Assessment of debundling for small-scale project activities"	According to paragraph 124 (n) of CDM project standard for programmes of activities; version 02.0 de-bundling check is not required for projects if generic CPA consists solely of microscale CDM units. CPAs to present calculations for establishing same.	CPAs to present calculations for establishing same
10	Conditions to provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance;	(k) Each CPA must provide affirmation that funding from Annex 1 parties, if any, does not result in a diversion of official development assistance. Confirmation via self-declaration.	Confirmation via self-declaration
11	Conditions to ensure that an agreement in place between the household user (Stove owner) and CPA implementer regarding the ownership of the CERs.	(l) Each CPA must have a contractual agreement, such as a Registration Card with the household user, indicating that CERs generated by the use of the ONIL Stove will be transferred to the CME or a Project Participant in this PoA. The precise mechanism can be established on a CPA basis. For example, a registration card, Short Message Service (SMS), Information and Communication Technologies (ICT), or other means, signed or accepted by the end-user upon distribution or installation of the stove, stating that the end-user voluntarily participates in the POA and transfers ownership of the carbon assets for the life of the stove. Confirmation via inspection of Registration Card or database.	Confirmation via inspection of Registration Card or database.
12	Conditions to check whether technology transfer exists from Annex 1 countries.	(m) Each CPA must provide a self-declaration of whether technology transfer exists from Annex 1 countries.	Self declaration by CME/CPA implementer
13	Specification of the technology/measure and performance specification based on testing/certification.	(n) Each CPA must clearly show that the implementation of the improved cook stove reduces anthropogenic emissions of GHG. Confirmation via efficiency tests on the ONIL Stove model.	WBT test/manufacturer's specification
14	Conditions to confirm the approval of CPA by the CME for inclusion of CPA into the PoA.	(o) Each CPA must be approved by the CME prior to its incorporation into the SSC-PoA. Confirmation via letter of approval signed by CME representative.	Confirmation via letter of approval signed by CME representative.
15	Proof of receipt of ONIL Stoves by the household user.	(p) Each CPA must show proof of delivery and receipt of stoves already distributed under the CPA (if any). Confirmation via Registration Card or user-signed receipt.	Confirmation via Registration Card or user-signed receipt
16	Local Stakeholders consultation and Environment Impact Analysis	(q) Local Stakeholders consultation and Environment Impact Analysis have been undertaken at PoA level	Individual CPAs are not required to demonstrate eligibility criteria with respect to LSC and EIA as both have been undertaken at PoA level.

Appendix 1. Contact information of coordinating/managing entity and project participants

Coordinating/managing entity and/or project participants	<input checked="" type="checkbox"/> Coordinating/managing entity <input type="checkbox"/> Project participant
Organization name	HELPS International Incorporated
Country	Guatemala
Address	Calzada Atanasio Tzul 21-00 Zona 12 Complejo Empresarial El Cortijo II Bodega 517 01007 Guatemala
Telephone	011(502) 2428-6600
Fax	011(502) 2428-6666
E-mail	-
Website	www.helpsintl.org
Contact person	Richard Grinnell

Coordinating/managing entity and/or project participants	<input type="checkbox"/> Coordinating/managing entity <input checked="" type="checkbox"/> Project participant
Organization name	C-Quest Capital LLC
Country	USA
Address	1211 Connecticut Ave NW, Suite 800, Washington DC 20036
Telephone	+1 (202) 416 2410
Fax	+1 (202) 416 2499
E-mail	cqc-operations@cquestcapital.com
Website	www.cquestcapital.com
Contact person	Isabel Alegre

Coordinating/managing entity and/or project participants	<input type="checkbox"/> Coordinating/managing entity <input checked="" type="checkbox"/> Project participant
Organization name	ECOYE Co LTD
Country	Republic of Korea
Address	1503, Tower B, 70 Dusan-ro Geumcheon-gu Seoul Republic of Korea
Telephone	Office: +82- 2-6480-7346
Fax	n/a
E-mail	sangsun_ha@ecoeye.com
Website	www.ecoeye.com
Contact person	Mr. Sangsun HA

Appendix 2. Affirmation regarding public funding

No public funding will be made available for the proposed PoA, or any CPA under the proposed PoA. If any public funding it is ensured there is no diversion of Official Development Assistance (ODA).

Appendix 3. Applicability of methodologies and standardized baselines

Applicability of Methodology has been detailed in section I

Appendix 4. Further background information on ex ante calculation of emission reductions

Please refer to section I.6.3

Appendix 5. Further background information on monitoring plan

Monitoring plan has been detailed in section I.7.2

Appendix 6. Summary report of comments received from local stakeholders

Detailed Summary of comments has been reported in Section F.3

Appendix 7. Summary of post-registration changes

The following changes have been made in the PoA-DD and approved on 02/07/2018:

a) Addition of project participant

Ecoeye Co., Ltd. is added as new project participant to the PoA and its detail is updated accordingly in PoA-DD.

b) Changes to monitoring plan

During the registration, the sampling method applied in the monitoring plan is multi-stage sampling. Multi-stage sampling is a sophisticated method which is not easy to be implemented and the data analysis is difficult. Given that the population being studied is relatively homogeneous with respect to the parameter being studied, therefore simple random sampling is chosen to replace the existing sampling method. Accordingly, sampling frame, sampling method and sample size calculation of monitoring plan is revised with information correlated with simple random sampling.

Following editorial changes/correction are being made in the current PoA-DD:

Under section B: misleading statement that WBT will be conducted by the third party has been changed by the statement “WBT will be conducted by CPA Implementer, CME or a third party certified by a national standards body or an appropriate certifying agency recognized by it”.

Under section I.7.1: misleading statement “*The tests will be coordinated by the CME and undertaken by an independent third party following WBT protocol 3.0 (or more recent version at the discretion of the CME) by the project team or an experienced third party*” has been changed to “*The tests will be coordinated by the CME and undertaken by the CPA Implementer, CME or an independent third party following WBT protocol 3.0 (or more recent version at the discretion of the CME).*”

Above correction is in consistence with the applied methodology AMS II.G ver. 3 and the statement mentioned on page 54 (section I.7.2) of the PoA DD.

The following changes have been made in the PoA-DD:

A. Corrections

- (i) Addition of details in Section A.1 and Section B to clearly define the role of Ecoeye Co., Ltd.
- (ii) Annex 1- address of the following project participant – Ecoeye Co. Ltd., has been revised to make it similar to MOC statement.

B. Changes to programme design

(i) Change in criteria to limit the number of stoves in a CPA to small scale threshold

According to the registered PoA, CPAs implemented under PoA had to demonstrate that the maximum number of stoves to be distributed in each was limited to the small-scale threshold throughout the crediting period. However, in accordance with paragraph 124 (m) of the CDM project standard for programmes of activities; version 02.0, this criterion has been revised since the generic CPA consists solely of units that qualify as microscale CDM units and hence CPAs are exempted from demonstrating small scale compliance.

(ii) A revision to the eligibility criteria

During the registration, each CPA was considered as small-scale project activity and Methodological tool: “Demonstration of additionality of small-scale project activities” was applied for the PoA. However, as each CPA being developed under the present PoA is envisaged to consist exclusively of units that can be defined as microscale CDM unit hence requirements for de-bundling check and check for the CPAs to remain under the small-scale threshold throughout the crediting period under eligibility criteria 6, 9 and 10 has been deleted.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
09.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN); • Make editorial improvements.
08.1	28 June 2017	Revision to: <ul style="list-style-type: none"> • Remove a duplicated instruction; • Make editorial improvement.
08.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Improve consistency with the “CDM project standard for programmes of activities” and with the PDD and CPA-DD forms; • Make editorial improvement.
07.0	25 May 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN) (version 01.0); • Incorporate the “Programme design document form for small-scale CDM programmes of activities” (CDM-SSC-PoA-DD-FORM); • Make editorial improvement.
06.0	15 April 2016	Revision to ensure consistency with the “Standard: Applicability of sectoral scopes” (CDM-EB88-A04-STAN) (version 01.0).
05.0	9 March 2015	Revision to: <ul style="list-style-type: none"> • Include provisions related to choice of start date of PoA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Add exception for generic CPA where technology is under positive lists; • Make editorial improvement.
04.1	5 August 2014	Editorial revision to correct the document information table.
04.0	25 June 2014	Revision to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the project design document form for CDM programme of activities (these instructions supersede the Guideline: Completing the programme design document form for CDM programme of activities (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the PoA in B.4 and Appendix 1; • Add general instructions on post-registration changes in paragraphs 2 and 3 of general instructions and Appendix 6; • Change the reference number from F-CDM-PoA-DD to CDM-PoA-DD-FORM; • Make editorial improvement.

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	3 December 2012	EB 70 Revision to reflect changes to the <i>Guideline: Completing the programme design document form for CDM programmes of activities</i> (EB 70, Annex 6).
02.0	13 March 2012	EB 66 Revision required to ensure consistency with the "Guidelines for completing the programme design document form for CDM programmes of activities" (EB 66, annex 12).
01.0	27 July 2007	EB 33, Annex 41 Initial publication.
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