

SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM
(CDM-SSC-CPA-DD) - Version 01



NAME /TITLE OF THE PoA: Distribution of ONIL Stoves - Mexico



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CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)
Version 01

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NOTE:

- (i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.
- (ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)^{1,2} that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

¹ The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

² At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

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SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

>> Distribution of ONIL Stoves – Mexico, San Felipe Usila 1

Version 15
23/11/2012

A.2. Description of the small-scale CPA:

>>

Purpose of the project activity

The small-scale CPA (SSC-CPA) named Distribution of ONIL Stoves – Mexico, San Felipe Usila 1, will involve the distribution and installation of ONIL stoves for use by households in the United Mexican States (hereafter referred to as “Mexico”). This CPA is the first for the Distribution of ONIL Stoves – Mexico PoA and includes 13,859 improved cook stoves benefiting families throughout the country. Before the adoption of the ONIL-certified stove, households in these communities used inefficient, traditional open fires. The ONIL-certified stove helps prevent burn injuries and reduces indoor pollution, which in turn reduces respiratory health issues in rural Mexico. The ONIL Stove is a fuel-efficient stove that reduces the amount of firewood required by households by as much as 58%, compared to the baseline, and allows rural households to save time collecting fuel, and thus spend more time pursuing other activities, such as work or education. Each ONIL Stove in Mexico saves 2.893 tons of CO₂e per year.

C-Quest Capital is the CME of the PoA and HELPS International AC (HELPS International) is the CPA implementer for this CPA.

In its role of CPA implementer, HELPS International will manage the day-to-day stove distribution and management of the CPA. HELPS International is responsible for data collection, storage, and management of the central database where all relevant information required for monitoring will be maintained. CQC will coordinate the monitoring activities of this CPA and will provide guidance and assistance for marketing and promotion activities.

HELPS International manufactures the ONIL stoves and distributes them to communities throughout Mexico. HELPS International sells to community organizations, private landowners or government agencies. In addition to manufacturing, HELPS International provides demonstrations, training to community leaders, delivery to community leaders, and installation by community, customer service and follow-through.

ONIL Stove Technical Details

The ONIL Stove is an improved cook stove that reduces the amount of firewood required by households by up to 58% and results in lower emissions based on its construction and design. Since the efficiency of a traditional open fire is 10%³ and the efficiency of an ONIL Stove is 24%, the ONIL Stove is more efficient than the traditional open fire. The stove is made of cast concrete, manufactured in Mexico, and

³ Default value for open fires as stated in AMS II.G methodology, version 3, “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass”



assembled and installed locally. The stove's construction allows it to be more efficient: complete combustion and more efficient energy transfer of energy to pots ensure fast heating and fuel-efficiency. The cast concrete body is moulded in fiberglass moulds and the clay combustion chamber insulated with pumice. 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 cooking surfaces. Wood ashes or pumice provides insulation that prevents the heat from being wasted heating the stove body. Normally, hot gases do not touch the "plancha" (griddle), wasting their energy. Since the insulation fills the stove cavity to within 1 inch (2.5 cm) of the metal "plancha", all the hot gases are forced into contact with the cooking surfaces, 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.

According to independent stove efficiency tests performed by the independent Aprovecho Research Center ONIL stoves have a "cold start" thermal efficiency is 20 percent, compared to 10 percent⁴ from the traditional open fire method. The ONIL Stove uses 107 grams of wood to boil a liter of water, while the traditional open fire method uses approximately 200 grams⁵. The "hot start" efficiency from Aprovecho testing is 26%. Since the stove retains heat once it has been started in the morning the efficiency used in the methodology is a combination of the cold start efficiency of 20% to account for morning use and the 26% efficiency to account for lunch and evening meals. Thus, the weighted average efficiency used in calculations is 24% ($0.20*(1/3)+0.26*(2/3)$). Annex 3C shows the results from the Aprovecho testing. Note that at time of writing this document, 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. The manufacturer obtained the thermal efficiency results from the Aprovecho Research Center⁶.

Voluntary Coordinated Action and User Agreements

When a household purchases an ONIL Stove, the household owns the stove. However, as CDM funding is subsidizing the sales of the ONIL Stoves, users agree in the Registration Card⁷ to:

- Cede all CERs to HELPS International as the implementing organization.
- Cooperate with HELPS International for monitoring purposes.
- Replace their conventional open fires with the ONIL Stove.
- Inform HELPS International if the ONIL Stove is not in use anymore or handed over to another household.

The Registration Card also holds information regarding:

- The unique stove identification number.
- The GPS coordinates of the stove.
- The location of each household using an ONIL Stove.
- The price of the ONIL Stove and the different modes of payment.

⁴ 10% default value specified in methodology AMS II.G, version 3

⁵ Aprovecho Research Center, 2004, HELPS "ONIL" Griddle Stove Fuel efficiency and Emissions. Page 2.

⁶ Aprovecho Research Center is an experienced independent third party - <http://www.aprovecho.org/lab/index.php>

⁷ 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.

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- The name of the buyer, their contact details (village, local government area, municipality, mobile phone number, if applicable), street name and number (if applicable).
- The name of the user and their contact details (if different from the buyer, e.g. the wife of the buyer).
- Identification of cooking method prior to installation of stove

The buyer confirms in the Registration Card (warranty, purchase receipt, Short Message Service -SMS or Information and Communication Technology-ICT or other means) that up to the date of purchase, wood has been used as primary fuel. Households that were only using fossil fuels (LPG, kerosene) or electricity for cooking are not eligible to receive the ONIL Stove at the reduced price. The buyer also confirms that conventional open fires will not be used anymore and will be disposed of. This will be confirmed when technicians follow-up and check on installation.

Structure of Project Database Information

Each ONIL Stove will start to generate emission reductions in the month following the delivery of the ONIL Stove to account for delays between signing the Purchase Contract and first use.

If replacement of the ONIL Stove within the same household is necessary, e.g. due to damage or theft, the household will get a new ONIL Stove and a new purchase contract will be signed. A new database entry for the replacement stove will be made and the date of last use of the old ONIL Stove will be recorded.

In case of a dropout of a user (e.g. due to shift of the household to a location outside of the boundary of the CPA, or if the user is not using the ONIL Stove anymore), the ending date of the ONIL Stove will be noted and recorded in the database. Dropouts will be identified through field checks by monitoring personnel. In addition, the CPA implementer will remind the user to notify HELPS International if the user moves to a different location. Other interested households may replace the dropouts so that the number of improved cook stoves operating refers to the actual number of stoves in use, not to the number sold.

In case of a change of ownership of the ONIL Stove, whereby the new owner remains within the boundary of the CPA, the name of the old owner will be replaced in the database and in the purchase contract by the name of the new owner. These changes will be recorded during monitoring or communicated to the CPA implementer by ONIL stove users. In case the improved cook stoves are disseminated via distribution points, the information about the respective contact person will be entered into the database.

The ONIL Stove implementation process will be monitored and verified.

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Implementation Schedule

The implementation schedule for Distribution of ONIL Stoves – Mexico, San Felipe Usila 1 is the following:

Event	Date	Database activity
Delivery at community	30/12/2009 to 31/1/2012	Generated database entry including household name, national ID number, and address.
Build database	30/12/ 2009 to 30/7/2012	Additional database entry, including GPS coordinates, confirmation of prior conventional open fires use, collect comments
Follow up/monitoring	Ongoing	Data quality check
Complete CPA DD	30/7/2012	N/A
CPA inclusion	30/7/2012	N/A
Verification	TBD	Review

CDM Consideration

The project is being developed under the Distribution of ONIL Stoves- Mexico PoA and therefore, the CDM has been considered since the beginning of the typical CPA. Prior consideration for the PoA is explained in the PoA DD.

A.3. Entity/individual responsible for the small-scale CPA:

>> Here the information on the entity/individual responsible of the CPA shall be included, henceforth referred to as CPA implementer(s). CPA implementers can be project participants of the PoA, under which the CPA is submitted, provided their name is included in the registered PoA.

HELPS International will be the entity responsible for this SSC-CPA.

A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

>> Distribution of ONIL Stoves – Mexico, San Felipe Usila 1

A.4.1.1. Host Party:

>>United Mexican States (hereafter referred to as “Mexico”)

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A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):

>>Geographic reference or other means of identification⁸, Name/contact details of the entity/individual responsible for the CPA, e.g. in case of stationary CPA geographic reference, in case of mobile CPAs means such as registration number, GPS devices.

Each SSC-CPA will contain a delineated set of households in which ONIL Stoves have been installed within Mexico. HELPS International will record names of end users and their exact location in the SSC-CPA in the program database. End user names locations and stove identification numbers will be collected on stove purchase contracts. The sum of these households within Mexico will define the spatial boundary of the SSC-CPA.

The key geographic location of the applied measure (improved cook stoves) is determined using the database of unique stove IDs, the household addresses, GPS coordinates and owners' names. These parameters uniquely identify the household.

The CPA boundaries equal Mexico's borders. The geographic coordinates for Mexico, the CPA boundary, are: Northernmost and Westernmost point: 32.500000 and -117.033333 (Tijuana); Southernmost point: 14.550000 and -92.166667 (desembocadura del Rio Suchiate); Easternmost point: 21.200000 and -86.716667 (Isla Mujeres).

⁸ E.g. in case of stationary CPA geographic reference, in case of mobile CPAs means such as registration number, GPS devices.



Figure 1. Map of Mexico⁹

A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

>> 30/12/2009¹⁰

⁹ www.lonelyplanet.com/maps/north-america/mexico/ and <http://www.findlatitudeandlongitude.com/?loc=us-mexico+border&id=90366>

¹⁰ The CDM Glossary of terms, version 6 (page 18), states that the start date “In the context of a CDM project or PoA, the earliest date at which either the implementation or construction or real action of the CDM project activity or PoA begins.” EB55, Annex 38, paragraph 7(d) states “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-POADD is first published for global stakeholder consultation.” The start date of this project is December 30, 2009, which is the date when stoves were first delivered (implementation) after the POA and this first SSC-CPA were published for Global Stakeholder Consultation at the UNFCCC website.

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A.4.2.2. Expected operational lifetime of the small-scale CPA:

>>7 years

A.4.3. Choice of the crediting period and related information:

Renewable crediting period

A.4.3.1. Starting date of the crediting period:

>> 01/1/2013 or date of registration, whichever is later

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

>>7 years, renewable twice

NOTE: Please note that the duration of crediting period of any CPA shall be limited to the end date of the PoA regardless of when the CPA was added.

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

>>

Year	Annual estimation of emission reduction in tonnes of CO ₂ e
1	40,090
2	40,090
3	40,090
4	40,090
5	40,090
6	40,090
7	40,090
Total estimated emission reductions (tonnes CO ₂ e)	280,629
Total number of crediting years	7
Annual average over crediting period of estimated reductions (tonnes CO ₂ e)	40,090

A.4.5. Public funding of the CPA:

>>The Distribution of ONIL Stoves – Mexico, San Felipe Usila 1 has not received public funding.

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

>>

As per section A.4.4.1 in the PoA DD, the ONIL Stoves — Mexico typical CPA is exempt from performing de-bundling check.

According to EB 54, Annex 13, paragraph 10, “If each of the independent subsystems/measures (e.g. biogas digester, solar home system) included in the CPA of a PoA is no larger than 1% of the small-scale



thresholds defined by the methodology applied, than that CPA of PoA is exempted from performing de-bundling check i.e., considering as not being a de-bundled component of a large scale activity.” The small-scale threshold is 180 GWhth per year. Each stove in this project is estimated to save around 0.013 GWhth per year, representing only 7.2×10^{-3} percent of the small-scale threshold, thus exempting the SSC-CPA from performing a de-bundling check. The CPA shall be sized such as to not exceed the total number of ONIL stoves that generate more than 180 GWhth in energy savings per annum.¹¹

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

To date, there are no other SSC-CPAs included in any other PoA or in a project activity involving the distribution or installation of ICS within the UNFCCC, or the VCS.¹² or any other relevant voluntary carbon schemes project operating in Mexico using II.G, version 3. The Gold Standard lists project *GS974: Patsari Cookstoves Carbon Mitigation Project, Mexico*. Project GS974 is not part of this CPA.¹³

HELPS International, as the CPA implementer, will ensure that there is no duplication or double counting with other SSC-CPAs. HELPS International will cross check the data management system of the PoA to check for duplicates, and if found, removed those households participating in multiple SSC-CPAs within the PoA. HELPS International will confirm during the monitoring process that each household is not already involved in any other CPA or CDM project involving the distribution and/or installation of ICS (as outlined in section A.4.2.2 of the PoA defining eligibility criteria for inclusion of CPAs).

In addition, each CPA will be cross-checked with other CPAs in the PoA and with CPAs in any other PoA or in a CDM project activity operating in the country using the UNFCCC, the Gold Standard, or another relevant voluntary carbon schemes to ensure that the CPA is not included in any other PoA, CDM project activity or voluntary carbon project activity.¹⁴

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

>>Distribution of ONIL Stoves —Mexico
Version 15
Date: 23/11/2012

¹¹ The threshold limit for each CPA with the HELPS International Onil stove is 13,859 obtained by dividing 180 GWhth by the energy savings per stove of 0.013 GWhth/year.

¹² cdm.unfccc.int/Projects/projsearch.html; www.vcsprojectdatabase.org

¹³ <http://www.cdmgoldstandard.org/our-projects/project-registry>.

¹⁴ *Ibid.*

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B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :

>> The proposed SSC-CPA is deemed to be eligible for inclusion in the PoA when the criteria set out in section A.4.2.2 of the SSC-PoA-DD are met. This SSC-CPA:

Inclusion Criteria

The Distribution of ONIL Stoves – Mexico, San Felipe Usila 1¹⁵

<p>(a) The geographical boundary of the CPA is Mexico.</p>	<p>The PPs self-declare that all stoves will be sold within the boundary of Mexico. Self-declaration was provided to validator.</p>
<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 ICS user or head of the household • Address of ICS user or household • Phone number of ICS user or household • GPS location of household • Stove model • Date of distribution/installation • ICS 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>	<p>The CPA is uniquely identified and defined in an unambiguous manner by a database of uniquely identified households in which ONIL stoves have been installed. Each household has been assigned a unique ID in the database, which is linked to information for each entry on the following:</p> <ul style="list-style-type: none"> ○ Precise geographical / location identification of the household (using GPS or similar technology), ○ Stove serial number (unique identifier) ○ Name of the head of household, and ○ Date of installation of the ONIL stove ○ Stove model ○ Date of distribution/installation ○ ICS serial number ○ Retailer/distributor • Identification of cooking method prior to installation of stove
<p>(c) Each SSC-CPA will involve the distribution and installation of ONIL-certified stoves, either by CPA Implementers or authorized installers under the ICS programme. Each SSC-CPA shall involve the distribution only of ICS for minimum quality and efficiency standards, as listed in Annex 5 of the PoA</p>	<p>This CPA has only distributed and installed ONIL-certified stoves that meet minimum quality and efficiency standards in Annex 5 of the PoA DD. ONIL standards include minimum requirements for quality, efficiency,</p>

¹⁵ Per EB 70, Annex 5, paragraph 13, eligibility criteria need to demonstrate usability to assess inclusion of the CPA.

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DD	usability (in the context of the local population) and safety, reduce indoor air pollution significantly, and be marked with individually identifiable serial numbers. Database has been presented with stove model and ID to confirm only an ONIL certified model is included in the CPA.
(d) Each CPA must demonstrate through documentary evidence that the PoA start date is before the CPA start date. Confirmation is done through supporting documentation, like Registration Card, confirming date of receipt of first stove in the CPA.	PPs provided the validator with proof of installation of the first stove in this CPA to be 30/12/2009 which is not before the than the start date of the PoA which is 30/12/2009. ¹⁶
(e) Each SSC-CPA must implement version 3 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) ICS efficiency report and 2) Documentary evidence that fuel wood has been used since 1989, and 3) through Specific CPA-DD Monitoring Plan.	Compliance with applicability conditions and other requirements of AMS.II.G. V03 are applied and followed by the PPs. The compliance with the two applicability criteria are evidenced by: WBT proving that the ICS implemented under this CPA has an efficiency of 24% as per the manufacturers specifications, hence over the 20% minimum specified in Paragraph 1 of the methodology; and published literature, which was given to the DOE, providing evidence that non-renewable biomass has been used since 31 December 1989 in Mexico. The monitoring plan presented in Annex 4 is in compliance with methodology AMS-II.G version 3
(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.” Implementers should demonstrate additionality by	<ol style="list-style-type: none"> 1) Each unit in the CPA has a unique serial number associated, as evidenced by the CPA database. In addition, each stove will be associated to a household by listing the name of the individual who is the ICS user or head of household. 2) The number of stoves in the CPA is capped at 13,859 as to not exceed the 180 GWh_{th}/year

¹⁶ The first installation of the stoves in CPA named The Distribution of ONIL Stoves – Mexico, San Felipe Usila 1, also marks the beginning of the PoA, therefore the start date is the same.

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<p>confirming the following:</p> <ol style="list-style-type: none"> 1) The CPA is solely composed of isolated ICS; this is evidenced by eligibility criteria b) which defines that each ICS distributed is an isolated unit with a single serial number attached to it. 2) The sum of all ICSs in the CPA (maximum number of ICSs in the CPA) will generate equal or less than 180 GWhth in energy savings per year, so to remain below the small scale threshold limit; this will demonstrated by the following equation which will be presented to the DOE at time of CPA inclusion: Maximum ICS per CPA = 180 $GWh_{th}/(NCV_{biomass} * B_{y,savings})$ 3) ICS units installed under the CPA do not exceed 5% of the SSC threshold; this is evidence by eligibility criteria j), which evidences that each ICS saves in fact no more energy than 1% of the small scale thresholds 	<p>small-scale threshold limit. Calculations outlining the maximum number of stoves in this CPA have been provided to the validator</p> <ol style="list-style-type: none"> 3) Calculations have also been provided demonstrating that the ICS model distributed under this CPA does not result in more than 5% small-scale CDM threshold. The energy savings per stove are 0.013 GWhth or 7.2×10^{-3} % of the small-scale CDM thresholds of 180 GWhth.
<p>(g) Each CPA must show that the target group of ICS is households that were using open cooking fires/traditional stoves, that do not have an ICS, and that are 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 by the user acknowledging it 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>Each household self-identified the cooking method used prior to the installation of the ONIL-certified stove at the time when geographic coordinates and unique identification numbers were collected. At time of inclusion of this CPA, no other CPA using the same name was found in any other PoA or project activity operating in Mexico. The CME researched the web on the relevant websites of the registries. The UNFCCC, the Gold Standard, and other relevant voluntary carbon schemes databases were reviewed. The CME has provided the Registration Card format that will be used under this CPA, and will make available the set of Registration Cards corresponding to each of the CPA stoves to the CME and for verification of emissions reductions.</p>
<p>(h) Each CPA must adhere to all requirements related to sampling for a PoA in accordance with the approved standard (EB 69, Annex 4), as outlined in section E.7.2 of the PoA-DD.</p>	<p>This CPA follows all of the requirements for EB69, Annex 4. Details are provided in the monitoring sections of the PoA DD. The sampling method for all three monitored parameters $n_{y,j}$, SS_y and $\eta_{new, i}$ is multi-stage sampling (as per EB 69 Annex 5 Section E) with two stages. This</p>

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	<p>CPA will be part of a Primary Sampling Unit which represents the first stage sampling unit (refer to Annex 4 of this CPA-DD Subsection iv “Sampling Method”). Primary Sampling Units are groups of CPAs that have the same CPA Implementer and same ICS model. Therefore, this CPA will be grouped with other CPAs where HELPS International is the CPA Implementer and where ONIL Stoves are used. The second stage consists in selecting a number of populations or villages where a sample of stoves will be randomly selected from each village for sampling.</p>
<p>(i) Each CPAs shall be sized such that no CPA will exceed a total number of ICS that generate more than 180 GWhth in energy savings per annum and will remain within that threshold throughout the crediting period of the CPA to conform with the SSC threshold for type II projects as per EB 61 Annex 21 paragraph 3. Supporting calculations must be provided to ensure compliance with this eligibility criterion.</p>	<p>PPs have calculated a maximum number of stoves in this CPA to be limited to 13,859 stoves. Together the stoves energy savings do not exceed 180 GWHth per year. A separate Excel spreadsheet with this information has been provided to the validator. The CPA database lists all stoves distributed under the CPA. Any ICS that takes the CPA over the 180 GWHth threshold will be excluded from the ER calculations.</p>
<p>(j) Each CPA must perform a debundling check and show that it is not part of larger project. Check is done by assuring that each stove included in the CPA saves no more energy than 1% of the small scale thresholds, set at 180 GWhth per year. Supporting calculations must be provided to ensure compliance with this eligibility criterion.</p>	<p>PPs calculated the savings of each stove to each stove in this CPA saves around 0.013 GWth per year, representing only 7.2×10^{-3} percent of the small scale threshold. The excel calculations were presented to the DOE.</p>
<p>(k) Each CPA must provide affirmation that funding from Annex 1 parties, if any, does not result in a diversion of official development assistance (ODA). Confirmation via self-declaration.</p>	<p>HELPS International provided a letter from 3rd party auditors stating that no ODA funds were diverted or used in this CPA. The letter was presented to the DOE.</p>
<p>(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 ICS will be transferred to the CME or to a Project Participant of 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</p>	<p>HELPS International had collected user data using a Registration Card. The implementation team has informed the end user that by purchasing the ICS, the end user is transferring the carbon rights to the CME or focal point entity.</p>

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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 is performed via inspection of Registration Cards or database.	
(m) Each CPA must provide a self-declaration of whether technology transfer exists from Annex 1 countries.	PPs provided self-declaration that no technology transfer took place from Annex 1 countries to Mexico.
(n) Each CPA must clearly show that the implementation of the improved cook stove reduces anthropogenic emissions of GHG. Confirmation via thermal efficiency tests of ICS model or published data.	PPs have shown through published data that the implementation of ICS reduces anthropogenic emissions of GHG.
(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.	Helps International is the Project implementer for this CPA. A declaration signed by a CME representative was provided to the validator.
(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.	The CPA has demonstrated proof of receipt of stoves

B.3. Assessment and demonstration of additionality of the small-scale CPA, as per eligibility criteria listed in the Registered PoA:

>>Additionality Demonstration

According to paragraph 2 (c) of EB 68 Annex 27 “Guidelines on the Demonstration of Additionality of 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.”

The proposed CPA meets the criteria outlined in EB 68 Annex 27 paragraph 2(c). The ICS distributed under this CPA consist of small isolated units, separate from any larger appliances or series of appliances. These ICS are designed for domestic use and the CPA will target exclusively households for ICS distribution, as defined by the PoA-DD, this CPA-DD and the baseline studies. Finally, the unadjusted baseline fuel wood consumption (B_{oid}) in Mexico, used in this CPA, equals total energy savings of 0.0223 GWh_{th} (5.344 tonnes of woody biomass/year x 4.167 $MWh_{th}/tonne$ x 0.001 GWh_{th}/MWh_{th}). This equates to 0.0124% of the SSC threshold of 180 GWh_{th} . Therefore, the ICS included under this CPA will have energy savings of less than 5% of the SSC threshold, as the baseline wood fuel consumption, over which the energy savings are calculated, is already a minimal fraction of that threshold.

In addition, according to EB 60, Annex 26, paragraph 4, a full additionality assessment is not required in the context of component project activities (CPA); rather the confirmation of additionality for CPAs

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should be conducted by means of the eligibility criteria. The proposed CPA meets the CPA inclusion eligibility criteria "f" and "i" outlined in section B.2.

Therefore, the present CPA is additional according to the compliance with eligibility criteria set forth in section B.2 and the definitions outlined in EB 68 Annex 27 paragraph 2 (c).

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

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 considered minor sources of emissions (CH₄ and N₂O) and therefore excluded from the PoA.¹⁷ This approach is conservative, since in reality the emissions of some of these gasses will also be reduced.

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

	Source	Gas	Included?	Justification
Baseline	Firewood for conventional open fire	CO2	Yes	Important source of emissions
		CH4	No	Gas is excluded for simplification. This is a conservative assumption.
		N2O	No	Gas is excluded for simplification. This is a conservative assumption.
Project Activity	Firewood for ONIL Stove	CO2	Yes	Important source of emissions
		CH4	No	Gas is excluded for simplification. This is a conservative assumption.
		N2O	No	Gas is excluded for simplification. This is a conservative assumption.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

>>

Data / Parameter:	B_{old}
Data unit:	tonnes/year
Description:	Quantity of woody biomass used in the absence of the project activity (per appliance)
Source of data used:	Baseline survey, ex-ante

¹⁷ GIRA, 2003, *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 Apropiada (GIRA), A.C.*, The user of biomass as energy source in households, effects on the environment and health, and possible solutions. Final report of the Interdisciplinary Appropriate Technology Group (GIRA), page 9.

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Value applied:	5.34
Justification of the choice of data or description of measurement methods and procedures actually applied:	The baseline survey assessed the average biomass usage per household per annum amongst users of traditional 3-stone fires or traditional pot support, according to interviews in Mexico.
Any comment:	

Data / Parameter:	L
Data unit:	Fraction
Description:	Net to gross adjustment factor to account for leakage
Source of data to be used:	Methodology II,G, version 3 leakage adjustment factor
Value applied	0.95 (default value per methodology II.G, version 3)
Justification of the choice of data or description of measurement methods and procedures to be applied:	A net to gross adjustment factor (0.95 default) is applied in order to adjust B_{old} to account for leakages as per paragraph 13 (a) of the AMS II.G, version 3 methodology.
Any comment:	

Data / Parameter:	η_{old}
Data unit:	Fraction
Description:	Efficiency of the system being replaced
Source of data used:	AMS II.G, <i>ex-ante</i>
Value applied:	0.10 (default for conventional open fire, as stated in methodology)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Provided as default value since replaced system is conventional open fire.
Any comment:	

Data / Parameter:	f_{NRB}
Data unit:	Fraction
Description:	Fraction of non-renewable biomass saved by the project activity
Source of data used:	FAO and CONAFOR, <i>ex-ante</i>
Value applied:	0.87
Justification of the	For biomass savings to be calculated, the portion of biomass used that is

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choice of data or description of measurement methods and procedures actually applied :	<p>renewable must be accounted for based on the methodology. The FAO 2010 report¹⁸ gives a reforested area value of 247,600 ha/yr (p 38), average forest densities of 60.25 m³/ha for conifers and 38.82 m³/yr for hardwoods. Reforested areas in Mexico are 0.2527 conifer and 0.7473 hardwoods, which give a total reforested volume of 10,952,872.76 m³. Value of 0.6 tonnes/m³ (average density of oak of which baseline survey identified as most commonly used fuel wood) is used to translate DRB to mass. Since reforested trees have a survival rate of 57.6% DRB is adjusted accordingly to exclude the trees which did not survive.¹⁹</p> <p>The B_{old} number (5.34 tonnes of fuel wood per household per year) obtained from the baseline survey is multiplied by the estimated number of homes in Mexico (5.44 million) that still use open fires to obtain an estimate of the total amount of fuel wood used in Mexico (B_{old,mexico}).</p> <p>NRB is B_{old,Mexico} (excluding fuel wood used in baseline stoves) minus the DRB component (excluding trees that did not survive). Then, $f_{NRB} = NRB / (NRB + DRB)$</p>
Any comment:	

Data / Parameter:	NCV_{biomass}
Data unit:	TJ/t
Description:	Net calorific value of non-renewable biomass that is substituted
Source of data used:	IPCC default value for fuel wood, <i>ex-ante</i>
Value applied:	0.015 TJ/tonne
Justification of the choice of data or description of measurement methods and procedures actually applied:	Default value that is provided in AMS II.G, version 3.
Any comment:	

Data / Parameter:	EF_{projected fossilfuel}
Data unit:	t CO ₂ /TJ
Description:	Emission factor for the substitution of non-renewable biomass by similar consumers
Source of data used:	IPCC default value, <i>ex-ante</i>
Value applied:	81.6 t CO ₂ /TJ

¹⁸ FAO, *Evaluacion de los Recursos Forestales Mundiales, Informe Nacional, 2010, Mexico*, World Forest Resources Assessment, National Report, 2010, Mexico. www.fao.org/forestry/fra/67090/en/mex/; Data on reforested hectares on Page 38, data on average tree density and percentage of each on Page 43

¹⁹ *Reforestacion, Evaluacion Externa Ejercicio Fiscal 2007*, CONAFOR, Colegio de Postgraduados and SEMARNAT, http://www.era-mx.org/biblio/Evaluacion_Colpos_Reforestacion_2007.pdf

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Justification of the choice of data or description of measurement methods and procedures actually applied:	Default value that is provided in AMS II.G, version 3.
Any comment:	

B.5.2. Ex-ante calculation of emission reductions:

>>The equations under the Distribution of ONIL Stoves – Mexico PoA section E.6.2 are applied for the CPA.

Project emissions reductions consist of reductions in fuel wood use of the stoves compared to traditional cooking methods in households. Thermal energy savings per ONIL Stove are calculated by multiplying the annual biomass savings per ONIL Stove with the fraction of non-renewable biomass, its calorific value, the default emissions factor value ($EF_{\text{projected_fossilfuel}}$), and a leakage adjustment in the following manner

$$ER_y = B_{y,\text{savings}} * f_{\text{NRB},y} * NCV_{\text{biomass}} * EF_{\text{projected_fossilfuels}} * L$$

Where:

- ER_y Emissions reductions during the year in t CO₂e
- $B_{y,\text{savings}}$ Quantity of biomass that is saved in tonnes
- $f_{\text{NRB},y}$ Fraction of biomass saved by the project activity in year y that can be established as non-renewable biomass
- NCV_{biomass} Net calorific value of non-renewable biomass that is substituted (IPCC default value for fuel wood 0.015 TJ/tonne)
- $EF_{\text{projected_fossilfuel}}$ Emission factor for the substitution of non-newable biomass by similar consumers. Use a value of 81.6 tCO₂/TJ
- L A net to gross adjustment factor (0.95 default) is applied above (equation (1) of AMS II.G, version 3) in order to adjust B_{old} to account for leakages as per paragraph 13 (a) of the methodology.

Calculating $B_{y,\text{savings}}$

According to the AMS II.G (version 3) methodology, $B_{y,\text{savings}}$ may be calculated in a number of ways (as per Options 1, 2 and 3 in Paragraph 6) and the PoA will allow the use of Option 2 in CPAs under this POA. Option 1 is excluded because of the need to perform a Kitchen Performance Test, which will not be used in this PoA. Option 3 is excluded because WBTs tend to be more accurate and easier to implement than controlled cooking tests, and WBTs can use a default for the original efficiency. In all instances, the possible variation in performance of stoves of different vintages will be accounted for in calculating $B_{y,\text{savings}}$.



Option 2.

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

Where:

B_{old}	Quantity of wood fuel used in the absence of the project activity in tonnes
η_{old}	A default value of 0.10 may be optionally used if the replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e. without a grate or a chimney;
η_{new}	Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol.

$$B_{y,savings} = B_{old} \cdot \left[\sum_{i=1}^n N_{y,i} \left(1 - \frac{\eta_{old}}{\eta_{new,i}}\right) \right]$$

To account for stoves which have been in operation for fractions of the monitoring period the following formula is used::

$$N_{y,i} = \sum_{j=1}^{J_y} n_{y,j} \cdot t_{y,j}$$

Where:

$N_{y,i}$	Total number of stoves in operation for a full monitoring period equivalent within each SSC-CPA
$n_{y,j}$	Number of ICS operating in monitoring period y for j days,
j	days since installation or distribution of the ONIL stoves (or start date of monitoring period for ONIL stoves installed/distributed in prior monitoring periods), until end of monitoring period
$t_{y,j}$	Fraction of monitoring period y that the stove is in operation ($t_{y,j} = j/J_y$). Note, for ONIL stoves installed in prior monitoring periods $t_{y,j} = 1$.
J_y	Total number of days in the monitoring period y

For the purposes of calculating ex-ante emission reductions a baseline adjustment factor has to be applied to B_{old} to account for fuel-wood used in a second stove. The baseline survey obtained the average amount of fuel wood used by households with ONIL stoves. From this sample the households identified as having a baseline stove in use along with an ONIL stove were separated. The difference between the average fuel wood use of all ONIL households interviewed and the ONIL household with a baseline stove is then subtracted from B_{old} to generate the adjusted baseline fuel consumption ($B_{old,adjusted}$).



From the baseline survey, we have the average daily fuel wood consumption by all households using an ONIL stove:

$$= 9.76 \text{ kg/day (see Annex 3B)}$$

Average daily fuel wood consumption by subset of households using an ONIL stove and a baseline stove:

$$= 11.87 \text{ kg/day (see Annex 3B)}$$

Difference in average daily fuel consumption

$$= 11.87 \text{ kg/day} - 9.76 \text{ kg/day}$$

$$= 2.11 \text{ kg/day}$$

The difference in fuel consumption is then adjusted to the number of households using ONIL and baseline stoves (58%)

$$= 2.11 \text{ kg/day} * 0.571$$

$$= 1.20 \text{ kg/day}$$

Daily B_{old} = 14.64 kg/day (see Annex 3B)

Less correction = 14.64 kg/day - 1.20 kg/day = 13.44 kg/day

Per year = (13.44 kg/day * 365) / 1000

$B_{old, adjusted}$ = 4.90 tonnes/year

The percentage of households continuing to use a baseline stove in addition to an ICS will be monitored in order to address paragraph 20 (b) of the AMS II.G (version 3) methodology. The monitored (ex-post) percentage of ICS users continuing to use a baseline stove in addition to the ICS (parameter SS_y) will be compared to the ex-ante percentage found in the baseline (58%) and B_{old} will be adjusted proportionally based on the proportional change in the percentage. The parameter used to calculate ex-post $B_{y, savings}$ will be $B_{old, adjusted}$ in order to account ex-post for fuel-wood used in baseline stoves in addition to ICS. This procedure is outlined here (in the formula below ‘n’ indicates the *oldest* ICS vintage):

$$B_{y, savings} = B_{old, adjusted} * \left[\sum_{i=1}^n N_{y,i} \left(1 - \frac{\eta_{old}}{\eta_{new,i}} \right) \right]$$

Where:

$N_{y,i}$ Total number of stoves in operation for a full monitoring period equivalent within each SSC-CPA

η_{old} Efficiency of the baseline system/s being replaced. The 0.10 default value is used as the replaced systems are three-stone fires or conventional systems lacking improved combustion air supply mechanism and flue gas ventilation system i.e., traditional stoves.

η_{new} Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol.

$$B_{old, adjusted} = B_{old} - 0.45 * SS_y / 0.571$$

and,

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0.45 Difference between the average fuel consumption of households only having an ICS and households having an ICS and baseline stoves (11.87-9.76) Kg/household/day*365 days/year/1000Kg/ton according to baseline studies (.77); in tons per year, multiplied by 0.58

0.571 Is the fraction of households in baseline study that use baseline stoves along with ICS stoves

SS_y Is the fraction of households with an ICS that are also using baseline stoves. Calculated as: Total households with ICS that use baseline stoves (BLS)/Total number of ONIL certified stoves in sample;

Emissions reductions are thus computed as:

$$ER_y = B_{y,savings} \cdot f_{NRBy} \cdot NCV_{biomass} \cdot EF_{projected_fossilfuel} \cdot L$$

$B_{y,savings}$ per stove = 4.90* (1-0.1 / .24) = 2.86 tonnes of wood saved per stove per year
 CERs/stove = 2.86 * .87 * .015 * 81.6 * .95 = 2.893 CERs per stove

The maximum number of ONIL Stoves in the CPA will be dependent on the biomass saved by each ONIL Stove ($B_{y,savings}$). As a conservative assumption to estimate CPA size, $B_{y,saving}$ in one year are estimated from B_{old} .²⁰ The following formula is used to estimate the maximum number of stoves in the CPA:

$$\text{Maximum ONIL Stoves per CPA} = 180 \text{ GWh}_{th} / (NCV_{biomass} * B_{y,savings})$$

$$13,859 = 180 \text{ GWh}_{th} / (((0.015 \text{ TJ/tonne}) * (277777.777778 \text{ kWh/TJ}) / 1000000) * (5.34 * (1 - (0.10 / [0.24])))$$

Given the maximum of 13,859 stoves in this CPA, total yearly emissions reductions from this CPA, using the formula below, would be:

$$ER_y = B_{y,savings} \cdot f_{NRBy} \cdot NCV_{biomass} \cdot EF_{projected_fossilfuel} \cdot L$$

$$\begin{aligned} ER &= 2.86 * 0.87 * 0.015 * 81.6 * 0.95 \\ &= 2.893 \text{ t/CO}_2 \text{ per appliance} \end{aligned}$$

$$N_y = \text{Number of appliances in CPA}$$

²⁰ B_{old} is proportional to the firewood savings and is larger than the $B_{old,adjusted}$ value. Consequently, the woody biomass savings per stove would be larger which, in turn, would result in a conservative maximum number of ONIL Stoves in the CPA.

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Thus,
 $ER_{tCO_2} = 13,859^{21}$
 $= 13,859 * 2.893$
 $= 40,090$ per year

YEAR	1	2	3	4	5	6	7
N_y	13,859	13,859	13,859	13,859	13,859	13,859	13,859
ER_{tCO_2}	40,090	40,090	40,090	40,090	40,090	40,090	40,090

See Annex 3 for a spreadsheet calculation.

B.5.3. Summary of the ex-ante estimation of emission reductions:

>>

Year	Annual estimation of emission reduction in tonnes of CO ₂ e
1	40,090
2	40,090
3	40,090
4	40,090
5	40,090
6	40,090
7	40,090
Total estimated emission reductions (tonnes CO ₂ e)	280,629
Total number of crediting years	7
Annual average over crediting period of estimated reductions (tonnes CO ₂ e)	40,090

B.6.1. Description of the monitoring plan:

>> As stipulated by AMS II.G., Version 3, the monitoring plan is described below:

This CPA is in accordance to eligibility criteria (h) in section B.2, the sampling procedure/sampling plan, as described in the PoA DD section E.7.2 and meets the monitoring plan requirements for CPA inclusion.

The following parameters will be monitored:

(Copy this table for each data and parameter)

Data / Parameter:	$n_{v,j}$
--------------------------	-----------

²¹ Though the implementation plan in the PoA lists 15,000 stoves for the year 2012, this CPA (The Distribution of ONIL Stoves – Mexico, San Felipe Usila 1) contains 13,859 stoves which is the maximum number allowed in a CPA. The 13,859 is obtained by dividing 180 GWhth by the energy savings per stove of 0.0129 GWhth/year This is an ex-ante estimation of stoves installed and the real number of stoves will assessed and used for CER calculation ex-post, during verification.

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Data unit:	Quantity
Description:	Number of stoves still in operation during the monitoring period as determined by the monitoring survey. This includes total number of stoves distributed/installed in the entire CPA.
Source of data to be used:	ICS registration data and data from the Sampling Plan.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	This will be a monitored parameter, so will only be available ex-post. The monitoring survey will collect the number of stoves that are not in use and these will be removed from the CPA database. The survey will also provide a drop-out rate, which will be applied to the ER calculations for Primary Sampling Unit.
Description of measurement methods and procedures to be applied:	The percentage of stoves found to be still in operation based on the sampling plan in each monitoring period will be applied to the total number of stoves distributed/installed in this CPA (according to the ICS registration records in the monitoring database and the applicable sample frame) when calculating emission reductions. If, based on the sample size selected in any monitoring period, the confidence/precision requirements set out in EB 69 Annex 4 are not satisfied, then CPA Implementers will follow the procedures outlined in the Monitoring Plan (E.7.2 of the PoA-DD) to ensure required level of confidence/precision is met, or appropriate conservative values as defined by AMS II.G Version 3 are used.
QA/QC procedures to be applied:	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.
Any comment:	See section E.7.2 of the PoA-DD for more detail on monitoring procedures

Data / Parameter:	$\eta_{new,i}$
Data unit:	fraction
Description:	Efficiency of the ICS
Source of data to be used:	Efficiency tests in each monitoring period
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Variable based on efficiency tests conducted during monitoring period. For stoves of different vintages a weighted average of the different vintages and efficiencies (determined using the WBT version 3 or more recent version if available) will be used.
Description of measurement methods and procedures to be applied:	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. 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.
QA/QC procedures to be applied:	The WBT Protocol 3.0 or a more recent version will be used at CME discretion

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Any comment:	See section E.7.2 of the PoA-DD for more detail on monitoring procedures
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Data / Parameter:	SS_y
Data unit:	Fraction
Description:	The fraction of ongoing baseline stove use within the population of in-use ICS during a monitoring period.
Source of data to be used:	Monitoring of ongoing baseline stove use will be undertaken using the sampling approach outlined in section E.7.2 of the PoA-DD (to meet EB 69 Annex 4 confidence/precision requirements).
Value of data applied for the purpose of calculating expected emission reductions in section B.5	This will be a monitored parameter, so will only be available ex-post. The value applied for the purposes of calculating expected emission reductions is CPA specific according to the baseline biomass consumption applied.
Description of measurement methods and procedures to be applied:	A survey will be conducted asking households if they use a second (baseline) stove as per the monitoring plan outlined in Section E.7.2 of the PoA-DD. SS_y will be calculated in each monitoring period as follows: the number of sampled households with operational ICS that also continue to use a baseline stove divided by the total number of operational ICS in the sample. This parameter will be used to calculate the ex-post baseline adjustment factor in each monitoring period, as outlined in section E.6.2. This parameter is used to address paragraph 20 (b) of the AMS II.G (Version 3) methodology.
QA/QC procedures to be applied:	Data for this parameter will be collected using the same survey for the parameter $n_{y,i}$ (appliances in operation) conducted by trained project staff members. Internal crosschecks by the CME or CPA implementer will be undertaken as QC.
Any comment:	See section E.7.2 of the PoA-DD for more detail on monitoring procedures

Data / Parameter:	$t_{v,i}$
Data unit:	Fraction
Description:	Fraction of CPA monitoring year (<i>i</i>) elapsed since purchase of stove
Source of data to be used:	Sales records
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Dependent on date of purchase of stoves. Value = <i>j</i> days since installation/365 Where stoves were purchased during previous CPA monitoring periods, this value will be set to 1.0.
Description of measurement methods and procedures to be applied:	Receipt records will provide a simple means to calculate the time elapsed since the installation of ICS, and thus the period during a single monitoring period
QA/QC procedures to be applied:	The values will be quality assured by way of the spot-checking undertaken throughout the life of the CPA. This will involve periodic visits to a random subsample of the population.
Any comment:	Purchase date is used as indication of date of commencement of operation of the

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	ICS.
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Data / Parameter:	B_{old} Adjusted
Data unit:	Tonnes/year
Description:	If baseline stoves continue to be used, monitoring shall ensure that fuel-wood consumption of those stoves is excluded from B _{old} .
Source of data to be used:	Baseline survey, <i>ex-ante</i> ; monitoring survey <i>ex-post</i>
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Variable - 4.90 used for the ex-ante calculations
Description of measurement methods and procedures to be applied:	<p>II.G/Version 3, requires that monitoring ensures that (a) Either the replaced low efficiency appliances are disposed of and not used within the boundary or within the region; or (b) If baseline stoves continue to be used, monitoring shall ensure that the fuel-wood consumption of those stoves is prorated in B_{old}. Since the CME cannot require end users to dispose of stoves, option (b) is used and the wood used for any baselines stoves that continue to be in use was discounted from B_{old}.</p> <p>The baseline survey captured the number of households using a baseline stove in addition to the ONIL stove. The difference between the amount of wood used by households with a second baseline stove (2 stoves) and all households with an ONIL stoves gives the amount of wood attributed to the use of the baseline stove. This amount is multiplied by the proportion of households using the 2 stoves and then subtracted from Bold.</p>
QA/QC procedures to be applied:	
Any comment:	

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>>
N/A

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

>>
N/A

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SECTION D. Stakeholders' comments

>> N/A

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

>>
N/A

D.3. Summary of the comments received:

>>
N/A

D.4. Report on how due account was taken of any comments received:

>> N/A

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Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding from Annex 1 countries is used for this SSC-CPA.

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Annex 3

BASELINE INFORMATION

Calculation of Annual Emissions Reductions for typical SSC-CPA

Annex 3A: Questionnaire ONIL Stove Survey (before or without ONIL Stove use)

**ONIL STOVE SURVEY
MÉXICO**

1. What type of stove do you use to cook? May have more than one answer.

	Answer	Mark with X	# Days/week
a.	Open fire (3 stone) /comal		
b.	ONIL		
c.	De Gas		
d.	Electricity		
e.	Other :		

2. ¿What type of fuel do you use in your house for cooking? May have more than one answer..

	Response	Mark with X
a	Fuel wood (leña)	
b.	Agricultural waste (coconut, coco, sugar cane, etc.)	
c.	Electricity	
d.	LPG	
e.	Other: (Specify)	

If LPG is used: what size tank do you use ___? How long does this tank last _____?

3. Fow what activity do you use the fuel wood in your house?

	Response	Mark with X
a.	Make tortillas	
a.	Cook	
b.	Cook beans	
c.	Boil water	
d.	Warm home	
e.	Other use:	

4. How do you obtain your fuel wood (leña)?

	Response	Mark with X
a.	Purchased	
b.	Gathered in someone else's property	
c.	Gathered in own property	
d.	Forest thinning	
e.	Gather in forest	
f.	Other way: (specify)	

5. How much fuel wood do you use each day?

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(The interviewee must physically show the interviewer how much wood is used daily and the interviewer will weigh it)

Amount weighed: _____ Kg.

6. ¿How much wood do you use each week?

Response		Before having ONIL stove	Since having ONIL stove
a.	Don't use		
b.	Less than 1 carga ²²		
c.	1 carga		
d.	1 bestia = 2 cargas		
e.	1 tercio ²³ = 1 vara largo x 1 vara alto		
f.	½ tarea = 4 cargas		
g.	1 tarea = 8 cargas= 1vara largo x4 varas alto		
h.	Otra:		

7. ¿What tree type do you use most for leña?

Response	Mark w X	Response	Mark w X
Avocado (<i>Persea americana</i>)		Macadamia (<i>Macadamia</i>)	
Bambu		Olive tree (<i>Olea europaea</i>)	
Coffee (<i>Coffea sp.</i>)		Sapote (<i>Manikara zapota</i>)	
Mahogany (<i>Swietenia macrophylla</i>)		Agave stalk (<i>Agave sp.</i>)	
Pine (<i>Pinus sp.</i>)		Pointleaf Manzanita (<i>Arctostaphylos pungens</i>)	
Wild cherry (<i>Prunus serotonina</i>)		Camphor tree (<i>Cinnamomum camphora</i>)	
Wild cashew (<i>Anacardium excelsum</i>)		Pomegranate (<i>Punica granatum</i>)	

²² One 'carga', a local measurement, is approximately equivalent to fuel wood log pile approximately one meter long and .50 m high, <http://tiny.cc/jo98n>;

²³ One 'tercio', 'vara largo' or 'vara alto', a local measurement, is approximately equivalent to one cubic yard

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Response	Mark w X	Response	Mark w X
Salmwood (<i>Cordia alliodora</i>)		Pine (<i>Pinus sp.</i>)	
Palo Sangrado (<i>Croton draco</i>)		Nance (<i>Byrsonima crassifolia</i>)	
Garambullo (<i>Myrtillocactus geometrizans</i>)		Gum myrrh (<i>Commiphora myrrha</i>)	
Mexican Alder (<i>Alnus jorullensis</i>)		Guaba tree (<i>Psidium guajava</i>)	
Copal (<i>Protium copal</i>)		Mammee (<i>Mammea americana</i>)	
Capulin (<i>Prunus serotina</i>)		Spanish cedar (<i>Cedrella odorata</i>)	
Mango (<i>Mangifera indica</i>)		Naranjo (<i>Citrus sinensis</i>)	
Chalohuite (<i>Inga spuria</i>)		Mata Caballo (<i>Lobelia sp.</i>)	
Ocote (<i>Pinus ocotea</i>)		Mezquite (<i>Prosopis sp.</i>)	
Huizache (<i>Acacia farnesiana</i>)		Angelica Tree (<i>Dendropanax arboreus</i>)	
Gliricidia (<i>Gliricidia sepium</i>)		Nogal (<i>Juglans regia</i>)	
Pimienta (<i>Piper nigrum</i>)		Pirul (<i>Schinus molle</i>)	
Lima (<i>Citrus sp.</i>)		Rock rose (<i>Cistus sp.</i>)	

8. ¿How much does your family spend on fire wood monthly?

	Response	Mark with X	Amount
a.	Less than 50		
b.	Between 51 and 100		
c.	Between 101 and 150		
d.	Between 151 and 200		
e.	Between 201 and 250		
f.	More than 250		
g.	Otra:		

General info:

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9. Interviewee's name: _____
10. Have you always used firewood for cooking? Y N (to cross reference with age to establish 1989 fuel wood use).
11. Gender: F_____ M_____ 11. Number of people in family: _____
12. State/Municipality/Community: _____
13. Comments:

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Annex 3B: Survey Results

Results for end users not using the ONIL Stove

Question		Unit	TOTAL	Percent of N
	Number of households interviewed (N)	N	211	100%
2	Average N° of eaters	N	5.0	
3	Fuel Wood Users	N	210	99.5%
3	Agricultural Waste	N	67	32 %
3	Electricity Users	N	1	0.5%
3	LPG Users	N	90	43%
3	Kerosene Users	N	0	0.0%
3	Cardboard	N	0	0.5%
3	Wood shavings	N	0	0.0%
4	Fuel Wood Procurement: collecting	N	180	74.0%
4	Fuel Wood Procurement: buying	N	59	24.0%
5	Daily wood consumption	kg/day	14.6	
10	Use of non-renewable biomass since 1989 (years using biomass)	N		99%
	Mean Wood Fuel consumption (incl. Charcoal) per eater	kg/day	2.92	
	Mean Annual wood fuel weight per household (incl. Charcoal)	kg/a	1.065.8	
	Standard Deviation of Mean daily wood fuel weight per household	kg/day	9.60	

Results for end users using the ONIL Stove

Question		Unit	TOTAL	Percent of N
	Number of households interviewed (N)	N	229	100%
2	Average N° of eaters	N	5.0	
3	Fuel Wood Users	N	228	99.6%
3	Agricultural Waste	N	67	32 %
3	Electricity Users	N	1	0.5%
3	LPG Users	N	75	43%
3	Kerosene Users	N	0	0.0%
3	Cardboard	N	0	0.5%
3	Wood shavings	N	0	0.0%
4	Fuel Wood Procurement: collecting	N	130	74.0%
4	Fuel Wood Procurement: buying	N	68	24.0%
5	Daily wood consumption	kg/day	9.8	
10	Use of non-renewable biomass since 1989 (years using biomass)	N		98%
	Mean Wood Fuel consumption per eater	kg/day	1.92	
	Mean Annual wood fuel weight per household	kg/a	1065.8	
	Standard Deviation of Mean daily wood fuel weight per household	kg/day	9.6	

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Annex 3C: Efficiency of the system being deployed as compared to the system being replaced. Test performed by the Aprovecho Research Center in Cottage Grove, Oregon, USA²⁴.

HELPS "ONIL" Griddle Stove

Stove type / model	Helps ONIL stove		Total Emissions		Specific Emissions (per liter water) (corrected for moisture content and initial water temp)		Correction Factor
Location	Aprovecho						
Wood species	douglas fir						
Wind conditions	none						
				Phase 1 (cold start)			
1. HIGH POWER TEST (COLD START)	units	Test 1	Totals				0.0827
Time to boil Pot #1	min	29	CO	47.19	grams	CO	3.9000 gr/liter
Burning rate	g/min	35.55	CO2	1978	grams	CO2	163.4808 gr/liter
Thermal efficiency	--	0.20	HC(propane)	1.6114	grams	HC(propane)	0.1332 gr/liter
Specific fuel consumption	g/liter	129.25	appx PM mg	107	mg	appx PM mg	8.8627 gr/liter
Temp-corrected specific consumption	g/liter	107.12	CO/CO2ratio	0.0375			
Firepower	watts	11,090	Flame Temp	781	degrees C		
				Phase 2 (hot start)			
2. HIGH POWER TEST (HOT START)	units	Test 1	Totals				
Time to boil Pot #1	min	23	CO	23.25	grams	CO	1.9569 gr/liter
Burning rate	g/min	32.79	CO2	1524	grams	CO2	128.2684 gr/liter
Thermal efficiency	--	0.26	HC(propane)	1.2943	grams	HC(propane)	0.1089 gr/liter
Specific fuel consumption	g/liter	98.81	appx PM mg	86	mg	appx PM mg	7.2716 gr/liter
Temp-corrected specific consumption	g/liter	83.08	CO/CO2ratio	0.0240			
Firepower	watts	10,527	Flame Temp	873	degrees C		
				Phase 3 (simmer)			
3. LOW POWER (SIMMER)	units	Test 1	Totals				
Burning rate	g/min	12.71	CO	23.62	grams	CO	5.6007 gr/liter
Thermal efficiency	--	0.16	CO2	1462	grams	CO2	346.6415 gr/liter
Specific fuel consumption	g/liter	142.48	HC(propane)	2.2962	grams	HC(propane)	0.5444 gr/liter
Firepower	watts	4,081	appx PM mg	112	mg	appx PM mg	26.5504 gr/liter
Turn-down ratio	--	2.58	CO/CO2ratio	0.0254			
			Flame Temp	544	degrees C		

Results at a Glance

- Hot Start: 26% thermal efficiency
- 5 litres of water boils in 23 minutes
- 83 grams of wood are used to boil a litre of water
- 32 grams of wood are used per minute at high power

Compared to Household Open Fire

- Tests on open fire resulted in an average thermal efficiency of 11% (Aprovecho, 1997)
- An open fire can use approximately 200 grams to boil a litre of water. (Aprovecho, 1997)

See notes on Open Fire Performance (page 8)

²⁴ <http://www.aprovecho.org/lab/home>

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Annex 3D: Baseline Calculations

CERs per Appliance

Year	Unit	Value	Source
B_{old}	t/a	5.34	Baseline Survey, see Annex 3B
$B_{old\ adjusted}$	t/a	4.90	Baselines Survey
L_y (Leakage, 5%)	t/a	0.95	Net to gross adjustment factor II.G, v3
η_{old}		0.1	Default IPCC value per II.G, v3
η_{new}		0.24	Aprovecho Data 2004, for the HELPS-manufactured ONIL stove. See Annex 3C.
$B_{y,savings}$	t/a	2.86	Calculated
$f_{NRB, y}$		0.87	Calculated based on FAO and CONAFOR data
$NCV_{biomass}$ (TJ7t)	TJ/t	0.015	IPCC Default Value
$EF_{projected\ fossil\ fuel}$	tCO ₂ /TJ	81.6	Default IPCC value per II.G, v3
ER_y	tCO₂	2.893	Calculated

Survey Results	No stoves	With Stove	Data Source
Amount of wood used per household/day KG	14.6	9.8	Survey
Average # of people per household	5.000	5.10	Survey
Households	211	229	Survey
Amount of wood used per household per year (TONS)	5.34	3.58	Calculated
Estimation of non-renewable wood fraction (f_{NRB_y})			
Population in Mexico using fuel wood	27,200,000		Masera, 2005, Energy for Sustainable Development
# of households in region using fuel wood	5,440,000		Calculated: total population/number of eaters per household
B_{old_Mexico} (Quantity of biomass used in absence of appliance) TOTAL	29,069,184		Calculated (Tons per year)
Demonstrably Renewable woody biomass (DRB)	3,785,313		See f_{NRB} tab in ER Calculation Sheet
B_{old_Mexico}	29,069,184		Calculated
NRB: $B_{oldMexico} - DRB$	25,283,871		Calculated
$f_{NRB} = NRB/(NRB+DRB)$	0.87		Calculated



Annex 4

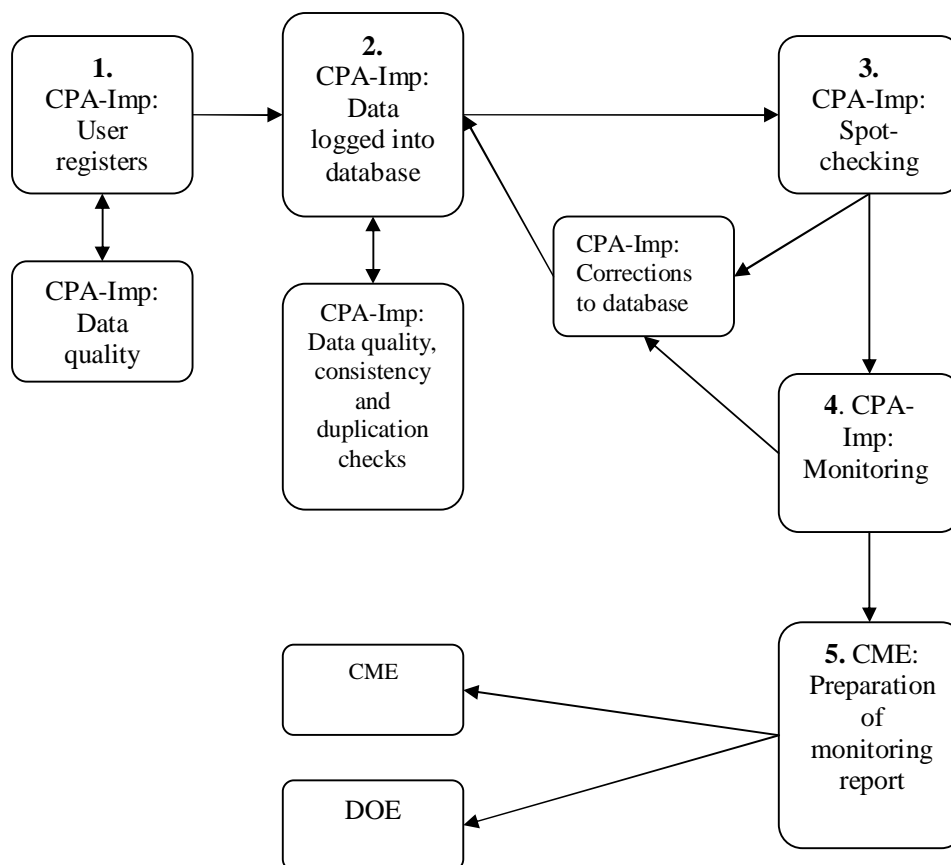
MONITORING PLAN

The Monitoring Plan applied in this CPA 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 3.0 on the basis of the amount of non-renewable biomass saved by the ICS in the project activity. The key elements are the following:

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



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 in this case is HELPS International.



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 (eg. change in the address of a user) will be updated on the database , and in the case ICS 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 the CPA Implementer and assist them in implementing each element of the monitoring plan. The monitoring plan shall be elaborated per CPA an 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*²⁵ the sampling plan is the following:

(a) Sampling Design

Due to the large number of ICS envisioned to be distributed as part of the CPAs to be included in the PoA, it is not economically feasible to monitor each individual ICS 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 EB 69, Annex 4.

(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 20 of EB 69 Annex 4) for annual and 95/5 for biennial sampling across CPAs (as per Methodology AMS-II.G version 03 paragraph 22). In case a single CPA is sampled, 90/10 precision for annual and 95/5 precision shall be required for biennial sampling.²⁶

Monitored Parameters:

Parameter	Description of Parameter
$n_{v,j}$	Proportion of ICS still in operation
SS_v	Percentage of continued baseline stove use among ICS households in the database
$\eta_{new,i}$	Thermal Efficiency of operational ICS

(ii) Target Populations:

²⁵ EB 69 Report Annex 4

²⁶ Single CPA sampling will only be applicable when a Primary Sampling Unit only consists of one CPA.



- The target population for the proportion of ICS still in operation ($n_{y,j}$) and for percentage of continued baseline stove use among ICS households in the database (SS_y) of this POA are all households in the POA database which are using fuel wood in ICS distributed under the POA for cooking.
- The target population for efficiency of new appliances ($\eta_{new,i}$) is the set of stoves (same model and manufacturer) installed in vintage i across CPAs that are working and are in the database.

(iii) Sampling Frame

Two sampling frames shall be defined:

- 1) Sampling frame for proportion of ICS still in operation ($n_{y,j}$) and percentage of continued baseline stove use among ICS households in the database (SS_y)

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 ICS and the Monitoring Survey (which includes a household questionnaire and visual inspection of ICSs) 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 EB 69 Annex 4 “Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities”.

The POA is open to different CPA Implementers and different models of ICS. As explained below (on section “sampling method”), to take the different characteristics of different CPA Implementer and ICS models into consideration, CPAs shall be grouped together to create a Primary Sampling Unit which is homogenous. As per EB 69 Annex 4, section V, paragraph 20, footnote 18, for 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, a 95/10 confidence/precision is applied for annual sampling. As per Methodology AMS-II.G version 03 paragraph 22, a 95/5 confidence/precision shall be achieved for annual and 95/5 for biennial sampling. In case a single CPA is sampled or sampling is not done across CPAs, 90/10 confidence/precision for annual and 95/5 confidence/precision shall be required for biennial sampling.²⁷

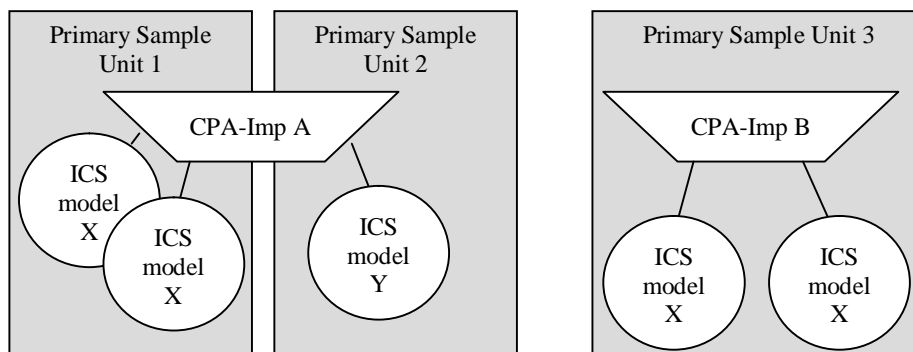
The first step is to identify the Primary Sampling Units. Primary sampling units are CPAs which have:

1. The same CPA Implementer
2. The same ICS model

Ie. CPAs with the same CPA Implementer and same ICS 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 ICS model, these form two different Primary Sampling Units. Same is true if the same CPA Implementer has two different ICS 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.

²⁷ As per Methodology AMS-II.G version 03 paragraph 22



Municipalities where ICSs are distributed in Primary Sampling Units will form Secondary Sampling Units.

2) Thermal Efficiency of operational ICS ($\eta_{new,i}$)

The thermal efficiency of operational ICSs shall vary in accordance with its model, but not within different CPA Implementers. Hence for parameter $\eta_{new,i}$ the Primary Sampling Unit shall be defined as the group of ICSs of the same model and same vintage. I.e. take the example of different CPA Implementers are implementing CPAs using an ICS 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 ICSs 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) ICSs of Model Y and vintage 1 (less than one year in operation); 2) ICSs of Model Y and vintage 2 (between one and two years of operation); and 3) ICSs of Model Y and vintage 3 (between two and three years old in operation).

(iv) Sampling Method

The sampling method for all three monitored parameters $n_{y,j}$, SS_y and $\eta_{new,i}$, is multi-stage sampling (as per EB 69 Annex 5 Section II). This is the most appropriate method as given the large number of ICSs and the geographical area of the country where ICSs are expected to be disseminated, using this approach the sampling effort can be concentrated in a set of localities (municipalities, villages, etc – as per footnote 26 below), thereby reducing travel needs and associated costs. This method is justified by the fact that though the baseline of the POA is homogenous, the ICS models and CPA Implementer may vary for different CPAs, hence it is appropriate to use a two step approach so to take these variations into consideration.

A multi-stage sampling combines the cluster and simple random sampling approaches in a multi-stage approach, and can be thought of as sampling from a number of groups, and then going on to sample units within each group (paragraph 73 of EB 69 Annex 5). In a first stage, all CPAs that have been included in the monitoring period are grouped into Primary Sampling Units - following the 2 sampling frames described above (ie. Primary Sampling Units for $n_{y,j}$ and SS_y are CPAs with same CPA Implementer and ICS model; and Primary Sampling Units for $\eta_{new,i}$ are CPAs with the same ICS model and vintage regardless of CPA Implementer). Each Primary Sampling Unit will be comprised of a number of



municipalities²⁸ – the Secondary Sampling Units – and the number of households/ICS within each sampled municipality which will be visited/sampled. The number of municipalities to be sampled is selected using a simple random sampling approach from a list of all municipalities present in each Primary Sampling Unit. Once the municipalities are defined, ICS/households present in each municipality will be randomly selected.

To ensure a random selection of municipalities and ICS, random number generators shall be applied. Each ICS in the target population is uniquely identifiable by its unique ID number. Each ICS can thus be allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of ICS in the Database for that pre-defined sampling frame. Applying the random number generators, the ICS can then be randomly chosen from the defined population up to the required sample size as calculated by the CME. This is also applicable to municipalities, as the database will contain all the municipalities where ICSs are located and therefore each municipality can be assigned a number at 1 and increasing up to the total number of municipalities in the Database for that pre-defined sampling frame.

To determine the parameters, sampling will involve the following approaches (outcome in brackets):

- $n_{y,j}$: Visual inspection of the premises to see if ICS is operational and in use. Interview with end user if required to verify that ICS is still in use (Yes/No)
- SS_y : Interview with end user and visual inspection to determine if a baseline (replaced) stove is still being used in addition to ICS (Yes/No)
- $\eta_{new,i}$: ICS will be tested using WBTs (ICS thermal efficiency)

The efficiency of ICS ($\eta_{new,i}$) as determined by the water boiling test evaluated during the monitoring period.

The efficiency of ICS will be determined across CPAs using the same stove model and same vintage (Primary Sample Unit). Using the formulas in the “Sample Size” section below, the CME will randomly sample the required number of ICS from a certain (dictated by the calculations below) number of municipalities. Eg. In the below calculations, in order to meet the minimum sampling size, the CME will randomly sample 3 ICS in each of the 6 municipalities. 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 single ICS manufacturer/model but had two vintages: 75% of the total ICS distributed have been in use for less than 365 days (ie. vintage 1) and 25% have been in operation for over 365 days but less than 730 days (ie. vintage 2). For each vintage, a number of municipalities and ICSs within those municipalities are to be randomly selected and sampled and the appropriate number of municipalities and households 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 . Ie. if $\eta_{new,i}$ for stoves of vintage 1 is 26% and for vintage 2 is 24%, then all ICS which have been in use for less than a year (vintage 1) will use a thermal efficiency of 26% in its calculations, while stoves vintage 2 will use 24%. In the event the monitoring period is over one year

²⁸ Towns, populations centres, villages can be included/used as long as it is not considered as urban area as defined in footnote 4. Ie. the CME may opt to sample across towns, population centres, villages instead of municipalities per se, assuming there is enough and appropriate data to define a town, population centre or village for that monitoring period.



(let's use the example of 2 years) and an ICS has 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 ICS 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 annual²⁹ and 95/5 confidence/precision for biennial sampling.³⁰ In case a single CPA is sampled, a 90/10 confidence/precision is required for annual sampling and 95/5 confidence/precision shall be required for biennial sampling.³¹

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, a random sample of municipalities will be selected from each Primary Sampling Unit. Households within the selected municipalities will then be randomly selected among the population in the selected municipalities. 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 ICS during a monitoring period (SS_y), and the average ICS efficiency, ($\eta_{new,i}$). The parameters $n_{y,j}$ and SS_y will be sampled in a single survey with a random sample of households and municipalities using the above described confidence/precision levels depending on annual or biennial monitoring frequency.

An overview of the estimated sample sizes for a hypothetical population of 289 municipalities and 33.5 ICS per municipality applying a level of 95/10 is provided below. Of the three parameters to be monitored, two are proportions/percentages (SS_y and $n_{y,j}$) and one is a mean value $\eta_{new,i}$.

The proposed multi-stage sampling approach requires the estimation of municipality sample sizes for each Primary Sampling Unit. The CME shall decide the number of ICS to sample within each municipality and calculate the municipality sample sizes accordingly to meet the required level of confidence/precision. All Primary Sampling Units (unique combinations of ICS models and CPA Implementer, or groups of same ICS model and vintage) will be sampled. Therefore, the selection of a sample of Primary Sampling Units will not be required. However, given the multitude of Secondary Sampling Units (municipalities) and ICS envisaged to make part of the proposed PoA, using a sampling approach for these sampling units is considered appropriate. The municipalities and then the ICS within municipalities to sample shall be randomly selected.

In order to calculate the required sample size estimates, values for the proportions, mean values, and variances or standard deviations are required. For the first monitoring period, values from a pilot shall be applied. For the following monitoring periods, the estimates shall be adjusted taken the results of the previous monitoring period(s) into account.

²⁹ As per EB 69 Annex 4 Section V paragraph 20, footnote 18

³⁰ As per Methodology AMS-II.G version 03 paragraph 22

³¹ As per Methodology AMS-II.G version 03 paragraph 22



To estimate the number of municipalities to be sampled for parameters $n_{y,j}$ and SS_y , the following equation³² is used:

$$c \geq \frac{\frac{SD_B^2}{\bar{p}^2} \times \frac{M}{M-1} + \frac{1}{\bar{u}} \times \frac{SD_W^2}{\bar{p}^2} \times \frac{(\bar{N} - \bar{u})}{(\bar{N} - 1)}}{\frac{precision^2}{z^2} + \frac{1}{M-1} \times \frac{SD_B^2}{\bar{p}^2}}$$

Where:

- c = number of municipalities that should be sampled
- M = total number of municipalities in the population
- \bar{u} = number of households/ICS to be sampled within each municipality
- \bar{N} = average number of households with ICS per municipality
- SD_B^2 = Unit variance (variance between municipalities)
- SD_W^2 = average of group variances (average within municipality variation)
- p = overall proportion
- z = Constant (z-score) referring to the level of confidence (e.g. 1.96 for 95% confidence).
- Precision = Required precision (e.g. 10% = 0.1)

A pilot study revealed initial values to estimate sample sizes for Primary Sampling Units where the CPA Implementer is HELPS International and the stove model is the “ONIL plancha” stove. These values (obtained for parameters SS_y and $n_{y,i}$) are used to exemplify the sample size calculations and are presented below:

	SS_y	$n_{y,i}$
Proportion value (p)	0.562	0.903
Unit variance (SD_B^2)	0.054	0.004
Average of group variances (SD_W^2)	0.200	0.085

If the proportion values are lower than 0.5, it is appropriate³³ to use the larger proportion (1-p) to determine the sample size.

In addition, the following assumptions are made to exemplify the sample size calculation for parameters $n_{y,j}$ and SS_y :³⁴

- The total number of municipalities in the Primary Sampling Unit is 289 (also applicable to η_{new})
- The number of households to be sampled within each municipality is 30

³² Equation 16, *Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities (EB69, Annex 5, Version 2.0)*

³³ In accordance to EB 69 Annex 4 “Standards for Sampling and Surveys for CDM Project Activities and Programme of Activities,” paragraph 11(a)

³⁴ These assumptions will be updated prior to the monitoring effort to optimize the cost of the sampling effort and to reflect the actual number of municipalities to be included in the monitoring period.



- The average number of households with ICS per municipality is 33.55 (also applicable to n_{new})

In cases where the sample size required for a municipality is larger than the number of ICS available for monitoring in that location,³⁵ the sample will be complemented by selecting the next closest ICS to the municipality until the proposed number of households with ICS is obtained. The determination of the closest ICS to the municipality will be estimated using GPS coordinates, and measured from a midpoint of the chosen municipality³⁶

The sample size equation will be updated with the values obtained during monitoring from previous years or with pilot data collected by CPA Implementers or the CME. If the number of municipalities is determined to be insufficient based on actual monitoring data, additional municipalities will be randomly selected from the Database until the desired level of confidence/precision is attained for a specific Primary Sampling Unit.

In cases where for any reason (eg. physical access impaired by natural conditions such as flooding; or political instability leading to insecure conditions, etc) a municipality cannot be sampled, another municipality will be randomly selected from the database.

Sample size calculation:

The calculation of the required sample size for each parameter in the first monitoring period is illustrated below for a 95/10 level of confidence and precision (for biennial monitoring periods the sample sizes will be recalculated using 95/5 values). In all cases a conservative approach is taken, however if for any parameter the required 95/10 confidence/precision is not met then the CME will randomly select an additional sample and collect further data from this sample to ensure the pooled data meet or exceed the required thresholds.

Parameter $n_{y,j}$:

Based on the values of the pilot and assumptions outlined above, the resulting sampling size for a 95/10 confidence/precision is calculated as:

$$c \geq \frac{\frac{0.004}{0.90^2} \times \frac{289}{289-1} + \frac{1}{30} \times \frac{0.085}{0.90^2} \times \frac{(33.55-30)}{(33.55-1)}}{\frac{0.1^2}{1.96^2} + \frac{1}{289-1} \times \frac{0.004}{0.90^2}} = 1.95$$

Therefore, in this case a sample size of 2 municipalities where 30 stoves are sampled in each municipality is sufficient to achieve the required confidence/precision for the $n_{y,j}$ value.

³⁵ The ICS available for monitoring are the number of households with ICS in that village that are willing to respond to monitoring surveys and inspections.

³⁶ The midpoint of any given village shall be defined as the average GPS coordinates (longitude and latitude) of all ICS in that village contained in the CME Database.



In case the resulting sample size to achieve the desired confidence/precision levels is smaller than 30 ICS, then the sample size shall increase to 30 accordance with EB 69 Annex 4, Section IV, paragraph 12 and footnote 15 to approximate normal distribution. The increase shall be made in the number of ICS sampled per municipality or the number of municipalities to sample.

Parameter SS_y :

Based on the pilot study results and the above assumptions, the sample size calculation for a 95/10 confidence/precision would be:³⁷

$$c \geq \frac{\frac{0.05}{0.77^2} \times \frac{289}{289-1} + \frac{1}{30} \times \frac{0.2}{0.77^2} \times \frac{(33.55-30)}{(33.55-1)}}{\frac{0.1^2}{1.96^2} + \frac{1}{289-1} \times \frac{0.05}{0.77^2}} = 54.65$$

The resulting sample size in this case is 55 municipalities where 30 stoves are sampled in each municipality.

As in the case of parameter $n_{y,i}$, if the resulting sample size based on the above equation is smaller than 30 ICS, then the sample size shall increase to 30 in accordance with EB 69 Annex 4, Section IV, paragraph 12. The increase shall be applied to the number of ICS sampled per municipality or the number of municipalities to sample.

η_{new} :

For the purposes of determining sample size in the first monitoring period, the performance of ICS 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 ICS. The ICS models that are manufactured in modern factories tend to be very highly efficient (30-50% thermal efficiency) and have been designed to meet stringent efficiency specifications so the standard deviation is expected to be relatively low. Where key components of ICS (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 number of municipalities to be sampled for parameter η_{new} the following equation³⁸ is used:

³⁷ Note that the proportion value in the equation has been modified to 1-p in accordance with EB 69 Annex 4 paragraph 11(a)

³⁸ Equation 33, *Guidelines for Sampling and Surveys in CDM Project Activities and Programme of Activities (EB69, Annex 5, Version 1.0)*



$$c \geq \frac{\left(\frac{SD_B}{Clustermean} \right)^2 \times \frac{M}{M-1} + \frac{1}{\bar{u}} \times \left(\frac{SD_w}{Clustermean} \right)^2 \times \frac{(\bar{N} - \bar{u})}{(\bar{N} - 1)}}{\left(\frac{precision}{z} \right)^2 + \frac{1}{M-1} \times \left(\frac{SD_B}{Clustermean} \right)^2}$$

Where:

- c = number of municipalities that should be sampled
- M = total number of municipalities in the population
- \bar{u} = number of households/ICS to be sampled within each municipality
- \bar{N} = average number of households with ICS per municipality
- SD_B^2 = Unit variance (variance between municipalities)
- SD_w^2 = average of group variances (average within municipality variation)
- Clustermean = average efficiency of ICS across municipalities
- Overallmean = average efficiency of all ICS sampled
- z = Constant (z-score) referring to the level of confidence (e.g. 1.96 for 95% confidence).
- Precision* = Required precision (e.g. 10% = 0.1)

Given that the same number of stoves will be tested in each municipality, the weight of each ICS to the Clustermean and to the Overallmean is the same. Hence the Clustermean is equal to the Overallmean – ie. the average of efficiency of ICSs across municipalities is the same of the average efficiency of all ICSs monitored. The above equation shall, therefore, be simplified as:

$$c \geq \frac{\left(\frac{SD_B}{mean} \right)^2 \times \frac{M}{M-1} + \frac{1}{\bar{u}} \times \left(\frac{SD_w}{mean} \right)^2 \times \frac{(\bar{N} - \bar{u})}{(\bar{N} - 1)}}{\left(\frac{precision}{z} \right)^2 + \frac{1}{M-1} \times \left(\frac{SD_B}{mean} \right)^2}$$

Where:

- Mean = mean thermal efficiency of the monitored ICSs

Given that variability is mostly dependent on the inherent characteristics of the units (ICS) and is not expected to be greatly affected by local conditions, the variation in efficiency across municipalities is thought to be lower than the variation within municipalities. For the example below, it is assumed that the efficiency is the same as the ICS for the first CPA, or 24%. The unit standard deviation is 1.93% and the average of within municipality standard deviation is 4.35%.³⁹ The number of ICS to be sampled from each municipality is set at 5 for the purposes of exemplifying the calculations and the thermal efficiency of the ICS model is 24%⁴⁰.

³⁹ The values were estimated using an Excel simulation of a pilot, where 6 municipalities are selected and 5 ICS are tested in each municipality for thermal efficiency. Random generators following a normal distribution were used to simulate the pilot. The simulation used a 4.9% standard deviation, based on the project planner knowledge of the data as per EB 69 Annex 4 paragraph 12 (c), and a mean of 24% based on test results.

⁴⁰ 24% is the thermal efficiency (η_{new}) of the ICS used in the first CPA



$$c \geq \frac{\frac{0.0193^2}{0.24^2} \times \frac{289}{289-1} + \frac{1}{6} \times \frac{0.0435^2}{0.24^2} \times \frac{(33.55-6)}{(33.55-1)}}{\frac{0.1^2}{1.96^2} + \frac{1}{289-1} \times \frac{0.0193^2}{0.24^2}} = 4.21$$

Under this approach, the number of municipalities where 6 stoves will be sampled is 5 to achieve the required 95/10 confidence/precision. As a conservative measure, if the resulting sample data is found not to meet the 95/10 threshold then additional municipalities will be randomly selected to test ICS until the required 95/10 threshold is met.

If the resulting sample size based on the above equation is smaller than 30 ICS, then the sample size shall increase to 30 in accordance with EB 69 Annex 4, Section IV, paragraph 12. The increase shall be applied to the number of ICS sampled per municipality. Eg. If hypothetically, the calculations resulted in 5 municipalities to sample where 5 ICSs are tested in each municipality (for a total of 25 ICS tested), then the number of ICS to test per municipality would increase 6 to achieve the minimum required sample size of 30.

The CME may choose to use the same municipalities to monitor more than one parameter. For instance, the CME can sample SS_y , $n_{y,i}$ and $\eta_{new,i}$ –or a combination of these parameters- in the same municipality. To do this, the CME shall first randomly select a list of municipalities from the pool of municipalities in the database. The number of municipalities to select in this first stage corresponds to the largest municipality sample size obtained for any of the monitoring parameters. In the examples above, the largest municipality sample size required corresponds to parameter SS_y (SS_y needs a sample of 55 municipalities, while $n_{y,i}$ and $\eta_{new,i}$ only need 2 and 5 respectively). From this pool, the CME will randomly select municipalities for the parameters that require smaller municipality sample sizes. For example, from the initial pool of 55 municipalities where SS_y will be sampled, the CME would randomly select 5 municipalities to sample parameter $\eta_{new,i}$. Likewise, from the same pool of 55 municipalities, the CME will randomly select 2 municipalities to sample $n_{y,i}$. Sampling more than one parameter in the same municipality helps reduce travel needs for monitoring and the associated costs. At the same time this approach ensures the random selection of municipalities for every parameter, as municipalities are randomly selected.

If municipality sample sizes are the same for the three monitoring parameters, the random selection of municipalities would only be performed once for all parameters.

Water Boiling Tests for portable stoves may be conducted *in situ* or elsewhere, but using stoves whose users are located in the selected municipalities. In the same fashion, the surveys for $n_{y,j}$ and SS_y will be conducted in the same households – ie. using the above example, both parameters will be assessed in 20 households for each municipality.

(b) Data:

(i) Field Measurements:

To monitor the number of stoves that continue to be in use ($n_{y,j}$) and the percentage of continued baseline stove use among ICS households in the database (SS_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 ICS model in this PoA. The method of collecting data will be field surveys of required sample size of ICS 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. To monitor the efficiency of the stove at least every two years (as required by the AMS II.G version 3 methodology) 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 3)	Methods to be applied	Comments on seasonal fluctuation
$n_{y,j}$	Monitoring will likely occur every 12 months	No less frequently than every two years	Visits to the premises, visual inspection and interview with ICS end-user	Unlikely to be due to any seasonal fluctuation.
SSy	Monitoring will likely occur every 12 months	No less frequently than every two years	Visits to the premises, visual inspection and interview with ICS end-user.	Unlikely to be due to any seasonal fluctuation.
$\eta_{new,i}$	Monitoring will likely occur every 12 months, and will include ICS from all vintages for which emissions reductions are to be claimed in that monitoring period.	No less frequently than every two years	Water Boiling Test (WBT) Protocol Version 3.0 (or more recent at the discretion of the CME).	Not due to any seasonal fluctuation.

(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 ICS):⁴¹

- Oversampling: Randomly draw a sample of at minimum 24 ICS and collect data from each

⁴¹ 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.



- Buffer Group: Randomly draw a sample of at minimum 24 ICS and collect data from only 22 ICS. If this would not result in the required sample size data would be collected from the additional 2 ICS that were selected in the sample.
- Draw an additional sample: Randomly draw a sample of 22 ICS 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 $n_{y,j}$ or $\eta_{new,i}$) or, with a conservative approach according to the parameter definitions, the upper confidence bound of SS_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-distribution⁴². 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 collected⁴³, 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 for example in the proportion of end-users who continue to use a baseline stove, SS_y) of the sampling results as is allowed for by the methodology (AMS II G v3, paragraph 22).

⁴² As provided by the *Guidelines for Sampling and Surveys in CDM Project Activities and Programme of Activities* (EB 69, Annex 5 paragraphs 220 to 290)

⁴³ As per EB 69 Annex 5 paragraphs 258 to 314



As the continued use of ICS and the incidence of baseline stove usage among ICS users are binary parameters, there can be no outliers in the sampled data and no treatment for outliers is required. The sample data for $\eta_{new,i}$ is continuous and therefore the presence of outliers is possible. The following approach will be used to identify and address outliers for the parameter $\eta_{new,i}$.

Because the sample size of parameter $\eta_{new,i}$ will by definition be 30 or above in any monitoring period, 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 3) 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 ICS 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 Units⁴⁴. The parameters are applied for emission reduction calculations as outlined in E.6.2 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 ICS in operation during the monitoring period. The thermal efficiency of new stoves ($\eta_{new,i}$) 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*

⁴⁴ For avoidance of doubt, each CPA will produce a monitoring report using the appropriate monitoring parameters.



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 personal either part of the CPA Implementer or CME team, or an experienced third party entity. The credentials and/or training materials for the sampling personal 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 3, 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

See Section E.2. According to methodology II.G, version 3, 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_{old} 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.

The other source of leakage occurs if equipment currently being utilised is transferred from outside the boundary to the project activity. All ICS in the PoA will be newly manufactured/assembled or newly installed. Where second-hand/used ICS are distributed to an end-user the ICS will be from within the project (ie previously newly manufactured/assembled and either a demonstration model or transferred from one end-user within the project to another new or existing end-user). In both of these cases there will no equipment (ICS) being utilized outside the project area (any project non-participant) that is transferred to the project area (included as an ICS in the database) so leakage defined in paragraph 14 of the AMS II.G (version 3) methodology is not considered. Where second-hand/used ICS are transferred within the project area (between end-user project participants) the database will be updated to reflect this change to ensure there is no double counting of ICS.

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

When an ICS is installed the end user receives information explaining that the conventional open fire appliance must no longer be used. Follow-up meetings with end users will ensure that those who have received an ICS are using it properly and that the conventional open fire is no longer in use. As per methodological condition 20 (b), if it is determined that the conventional open fire is still in use and the ICS is also in use, the wood used in conventional open fire will be subtracted from B_{old} . The number of households continuing to use a baseline stove in addition to their ICS, will be monitored throughout the project lifetime. This will be achieved using a single sample for in-use appliances ($n_{y,i}$) described above, and will meet EB 69 Annex 4 confidence/precision requirements. The number of households continuing to use a baseline stove, in addition to their ICS, will be used to calculate the percentage of households with operational ICS that also use a baseline stove (SS_y).

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.
