	Programme of activities design document form (Version 09.0)
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the PoA	DelAgua Public Health Program in Eastern Africa
Version number of the PoA-DD	5.34.4
Completion date of the PoA-DD	08/0112/06/20210
Coordinating/managing entity	DelAgua Health Rwanda Limited
Host Parties	Republic of Rwanda
Applied methodologies and standardized baselines	AMS II.G, Energy efficiency measures in thermal applications of non-renewable biomass, Version 0711.1 AMS-III.AV. ver. 4 - Low greenhouse gas emitting safe drinking water production systems
Sectoral scopes	Scope 3 (Energy Demand)

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PART I. Programme of activities (PoA)

SECTION A. Description of PoA

A.1. Purpose and general description of PoA

This program seeks to improve public health in the Republic of Rwanda. The program will distribute high efficiency cook stoves ~~and/or point of use water filters~~ to end-users, addressing several critical public health challenges. Currently, many families in Rwanda cook their meals and ~~some boil their drinking water~~ over unimproved stoves utilizing biomass~~, or often drink untreated water because of a lack of available fuel~~. Similarly, another leading public health challenge is upper respiratory disease cause in part by indoor air pollution. This program intends to address both of these challenges~~, while also working towards the United Nations Millennium Development Goal 7.C, providing access to safe drinking water~~.

The program will distribute ~~household scale point of use water filters designed to address microbiological contamination to World Health Organization Standards, and/or~~ high efficiency biomass stoves to households in East Africa. ~~Both~~ This technology ~~technologies~~ reduce~~s~~ the use of, and demand for, biomass to cook and/or boil water.

Technologies will be directly distributed to end-users via either of two methods:
1 - at centralized distribution points, where end-users from surrounding villages will be educated on the proper use and maintenance of the technologies.
2 – at retail locations, where individuals will be trained directly by retailers.

Ongoing education/monitoring will continue to respond to user feedback and address maintenance concerns. To the extent possible, distribution and ongoing monitoring will be conducted in collaboration with appropriate government agencies.

According to the Intended Nationally Determined Contribution (INDC) for the Republic of Rwanda, Rwanda has a goal of increasing the adoption/use of improved cookstoves. “Given the fact that poor performing cook stoves are still used in most cases leading to inefficiencies in fuel consumption and health effects, Rwanda intends to increase the diffusion of improved cook stoves and reach 100% of all households in needs 2030.” This PoA supports this goal, and generally encourages sustainable development as follows:

SDG	POA Contribution
3: Ensure healthy lives and promote well-being for all at all ages	The use of improved cookstoves ~~and water filters~~ reduces illness/death related to indoor air pollution~~ and water borne disease~~.
~~6: Ensure availability and sustainable management of water and sanitation for all~~	~~Water filters distributed under this PoA ensure a clean drinking water can~~
7: Ensure access to affordable, reliable, sustainable and modern energy for all	The PoA contributes to the goal of doubling the global rate of improvement in energy efficiency by 2030, through the distribution of more efficiency cookstoves~~ and zero energy water filters~~.
13: Take urgent action to combat climate change and its implications.	The technologies distributed under this PoA will reduce woodfuel consumption, reducing CO_2 emissions

This program is a voluntary action of the Coordinating/Managing Entity.

CPAs under this PoA may be small-scale or microscale. Microscale CPAs shall include units that meet the conditions defined in the “Demonstration of additionality of microscale project activities”

tool, version 13.1. CPAs meeting these conditions are not required to demonstrate compliance with the small-scale threshold limit or the debundling check.
CPAs that do not qualify as microscale CPAs shall meet the requirements defined in paragraphs 124 (m) & (n) of CDM project standard for programmes of activities; version 02.0

A.2. Physical/geographical boundary of PoA

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All CPAs will be located within the Republic of Rwanda.

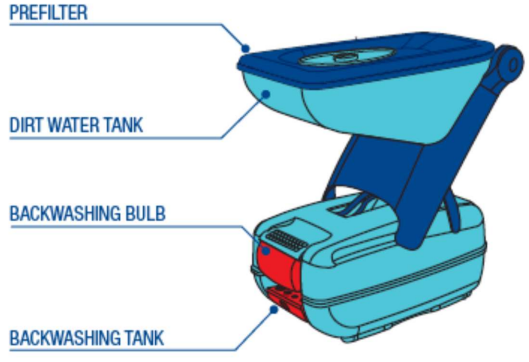
A.3. Technologies/measures

>>
The program will distribute household scale ~~point of use water filters designed to address microbiological contamination to World Health Organization Standards, and/or~~ high efficiency biomass stoves. ~~Both technologies~~ This technology reduces the use of biomass for cooking as compared to the ~~on the~~ baseline stoves, which are predominantly three-stone fires.

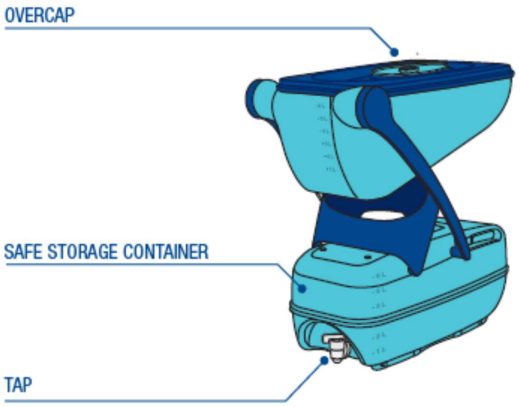
~~**Point of use water filters**~~

~~Water filters distributed under the PoA will meet the "protective" WHO water quality standard for microbiological contamination. One filter that meets this requirement and may be used in this POA is the LifeStraw® Family, manufactured by Vestergaard Frandsen. This device is a point of use microbial water treatment system intended for routine use in low income settings. The system filters up to 18,000 liters of water[1], enough to supply a family of five with microbiologically clean drinking water for at least two years, thus removing the need for frequent (weekly or monthly) intervention. The system requires no electricity or consumables. The system complies with US Environmental Protection Agency Guide Standard and Protocol for Testing Microbiological Water Purifiers, providing treated water that is as good or better than boiling for microbiological contamination.~~

~~The program may use the LifeStraw® Family 2.0, which is designed as a table top unit. The system is shown in the image below.~~



~~[1] Clasen, T. *et al.* 2009. Laboratory assessment of a gravity fed ultrafiltration water treatment device designed for household use in low income settings. *Am. J. Trop. Med. Hyg.*, 80(5), 2009, pp. 819 823".~~



~~**Figure 1: LifeStraw® Family 2.0 System**~~

~~In independent testing[2], the LifeStraw® Family unit exceeded 18,000 liters of treated water. Estimating a usage rate of 5.5 liters per person per day[3] and 4.5[4] persons per household, the LSF may need to be replaced as frequently as every 2 years. Therefore, the project proponent will plan to either repair or replace the LifeStraw® Family unit after approximately two years of use, using revenue generated from the emission reduction sales. Earlier or later replacement will be conducted as appropriate, based on the condition of the LifeStraw® Family units.~~

~~The project proponent reserves the right to select alternative water filter technologies that meet the same or better standards as required in the methodology.~~

High-Efficiency Cook Stoves
The project proponent will distribute high efficiency cook stoves to some households within the project boundary.

One technology that may be employed is the Dura[5] high-efficiency, family-sized cook stove. which is based on the 'rocket stove' concept of operation. A rocket stove increases burning efficiency of firewood by positioning the cooking surface farther away from the combustion point, allowing the volatized gases from the firewood to fully combust. An insulated sub-chimney is used to span this distance between the combustion point and cooking surface. The increased efficiency is due to the fact that the volatile gasses are given a chance to achieve complete combustion as they travel up the sub-chimney. The insulation around the sub-chimney—achieved with locally available pumice stone—prevents heat from being lost to the surroundings.

~~[2] Clasen, T. et al. 2009. Laboratory assessment of a gravity-fed ultrafiltration water treatment device designed for household use in low-income settings. *Am. J. Trop. Med. Hyg*, 80(5), 2009, pp. 819–823".~~

~~[3] This is the maximum usage rate allowed by the methodology, and provides a more conservative estimate of the operational lifetime of each filter.~~

~~[4] Republic of Rwanda Demographic and Health Survey, 2010 – published December 2011, ICF International (page 12)~~

[5] The stove distributed was previously called the EcoZoom Dura, which is a reference to a previous partner on the project. The CME is working with new project partners, and so the stove name is being changed to avoid confusion. The stove manufacturer has confirmed that this is a cosmetic change and will not affect stove performance.

The premise of the high-efficiency stoves is to concentrate the burning material while channeling air flow to create a more complete burn. Theoretically, a complete burn of carbon rich material will also result in little to no smoke. This complete burn utilizes all combustible material creating intense heat and leaving small amounts of residual material. The Dura will be distributed as part of this program

and is shown in ~~Figure 1:~~ Figure 2: Dura High-Efficiency Cook Stove. The thermal efficiency of this stove is show that the thermal efficiency of the stove is 44.9% with pot skirt and 40.9% without pot skirt.[6] ~~up to 46%, depending on usage.~~[7]

The operational lifetime of the Dura is expected to be 5 years, ~~to be 5 years~~[8], depending on usage. DelAgua will monitor usage and will repair stoves as necessary, or replace units that have reached the end of their useful life.

Figure 12: Dura High-Efficiency Cook Stove

The project proponent reserves the right to select alternative cook stove technologies that meet the same or better standards as required in the methodology., ~~including, for example, the Phillips gasifier biomass pellet stove or the Paradigm EZY Stove~~. ~~The project proponent is also researching charcoal stoves that may be appropriate for the region~~

A.4. Coordinating/managing entity

The CME is DelAgua Health Rwanda Limited.

[6] Certification report provided to DOE

[7] ~~Standards of Wood Stove Dura 32CM With Pot Skirt; Zhejiang Huiwnemei Stove Co., LTD. (See Filename: Manufacturers Specs_Dura~~

[8] ~~The expected lifetime of the EcoZoom Dura is based on manufacturer expectations, as communicated to DelAgua. This communication is provided to the DOE.~~

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A.5. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of Rwanda (host)	DelAgua Health Rwanda Limited (private entity)	No

A.6. Public funding of PoA

>>
Some of the equipment may be owned by the project proponent and then donated by the project proponent to the sovereign governments within the POA region, and assigned to the project proponent for distribution management and carbon emission reduction collection. Taxes and duties on the technologies may be waived or otherwise accounted for by host governments under some circumstances. Host governments may choose to assume some costs including warehousing, logistics and human resources.

Additionally, the project proponent may seek funding support through Nationally Appropriate Mitigation Actions (NAMAs). Donors will certify that any funds provided is not a diversion of official development aid (ODA). "

SECTION B. Management system

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The management system is ~~based on EB 65, Annex 3 "Standard for Demonstration of Additionality, Development of Eligibility Criteria, and Application of Multiple Methodologies for Programme of Activities", and~~ is comprised of the following element:

(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;

CPA Implementer is responsible for developing the CPA-DD, and for gathering all required documentation to demonstrate compliance with the eligibility criteria. The CPA-DD and supporting documentation will be submitted to the Program Director of DelAgua. The Program Director, or a suitably trained designate, will be responsible the process of inclusion of CPAs.
In the event that CPA inclusions are designated to another CME staff, this staff shall have received training on each aspect of the project (education, monitoring, database), and shall be knowledgeable of CDM requirements, including additionality and double-counting of CPAs.

(b) Records of arrangement for training and capacity development for personnel;

The CME is responsible for training any contractors used during distribution, education and monitoring activities. The CME will ensure training of all on-site staff with respect to adherence to the Monitoring Plan of the project activity. Records of the training will be kept for at least 2 years after the end of the crediting period of the relevant project activity.

(c) Procedures for technical review of inclusion of CPAs;

All CPAs are owned and managed by DelAgua, the CME. The Program Director of DelAgua will designate appropriately trained technical staff to draft the CPA-DD and gather sufficient documentation to demonstrate compliance with the eligibility criteria defined in section K.~~.~~ The documentation will be reviewed and approved by the Program Director of DelAgua.

(d) A procedure to avoid double accounting (e.g. to avoid the case of including a new CPA that has been already registered either as CDM project activity or as a CPA of another PoA);

All CPAs shall be implemented by the CME, thus ensuring that the operator is aware of and agrees that the ~~water filter and/or~~ high efficiency stove distribution is included in this PoA confirms that no emission reduction benefit from the project shall be claimed by it through any other instrument either as a standalone project or as a CPA to any other PoA. This will be reinforced in each CPA-DD.

(e) Records and documentation control process for each CPA under the PoA;

The monitoring plan for this project is closely derived from the methodologies. A database for the project activity will be maintained continuously. The monitoring plan shall consist of checking a representative sample of all appliances at least once every two years to ensure that they are still operating or are replaced by an equivalent in service appliance.

A POA-level project database will be maintained recording the distribution of each ~~initial water filter and~~ cookstove issued, subsequent replacements, as well as detailed data on the representative sample surveyed for monitoring purposes. The database will be accessible to the project proponent, appropriate partners, and the verification DOE. The database will include at minimum the following:

- Unique identification number
- Installation date
- First and last name
- Contact details of user (where available)
- Baseline cooking fuel source
- Baseline stove type
- Date of replacement of ~~filter and/or~~ stove units
- Monitored parameters

Additionally, the CME will keep:

- CPA-DDs and supporting documentation
- Training records (the PoA training program is described further in section I.7.2)
- Database backups

The database will be available to select a random, representative sample from for monitoring and verification purposes. This sample set will be integrated into the database to include additional monitoring parameters as required or as appropriate.

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

Internal audit of all the records of the distribution, monitoring and education activities will be carried out once a year. During these audits all the data and parameters that need to be monitored as per the monitoring plan will be checked and shortcomings if any will be reported and addresses. The CME will respond to all DOE Forward Action Requests during the validation and verification periods.

SECTION C. Demonstration of additionality of PoA

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There are no laws or regulations in the boundary of the PoA requiring the activities of the PoA. The activities under the PoA are a voluntary, coordinated action by the CME of the PoA.

CPAs implemented under this PoA may be small-scale or micro-scale CPAs.
Small scale CPAs demonstrate additionality according to paragraph 11 of Tool 21, "Demonstration of additionality of small-scale project activities", v13.1 (paragraph 10 shall not be applied in this PoA), ~~In accordance with "Guidelines on the demonstration of additionality of small-scale project activities" in EB68, Annex 27,~~ This paragraph states that "documentation of barriers, as per paragraph 10 ...is not required for the positive list of technologies and project activity types that are defined as

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automatically additional for project sizes up to and including the small-scale CDM thresholds. For the positive list of technologies, the project proponent shall refer to methodological tool "TOOL32: Positive lists of technologies". The criteria that demonstrate small-scale additionality are defined for each CPA, as required by inclusion criteria 17 and 1. ~~The positive list is comprised of "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".~~

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~~The PoA will distribute water filters using AMS-III.AV and cook stoves using AMS-II.G to households within East Africa and each CPA will be required to demonstrate that the technologies distributed will be less than 5% of the relevant small-scale CDM threshold. These criteria are required by inclusion criteria #19 and 25 (see section K). This demonstration for the first CPA is as follows.~~

Following paragraph 124 (m) of the CDM standard for programme of activities; version 02.0, microscale CPAs shall demonstrate additionality according to the Methodological tool "Demonstration of additionality of microscale project activities"; version 09.0. Specifically, CPAs that aim to shall demonstrate additionality following option (a) of paragraph 12 of this tool, which states that "energy efficiency project activities that aim to achieve energy savings at a scale of no more than 20 GWh (60 GWhth) per year are additional if… the geographic location of the project activity is in an LDC/SIDS or SUZ of the host country". This is required by eligibility criterion 17.

~~Project activities utilizing AMS-III.AV must not exceed 60,000 tonnes of CO_2e reductions from the distribution of water purification measures in order to be considered small-scale project activities. In order to meet the positive list requirement documented in EB 68, Annex 27, each unit distributed must generate less than (60,000 * 5%) 3,000 tonnes of CO2e reductions annually. Each filter is expected to generate approximately 0.65 tonnes of CO2e reductions[9]. Therefore, water filters are demonstrated to be on the positive list.~~

~~The small-scale threshold for project activities utilizing AMS-II.G is a maximum of 180 GWh of energy savings. In order to meet the positive list requirement documented in EB 68, Annex 27, each unit distributed must generate energy savings of less than (180 * 5%) 9 GWh annually. Each stove (in the first CPA) will generate approximately 0.019 GWh of energy savings[10]. Therefore, efficient cook stoves are demonstrated to be on the positive list.~~

~~CPAs defined as micro-scale CPAs must meet the additionality standard described in the "Demonstration of additionality of microscale project activities, v9" (this is not required for small-scale CPAs). According to paragraph 12, Energy efficiency project activities that aim to achieve energy savings at a scale of no more than 20 GWh per year are additional if the geographic location of the project activity is in an LDC/SIDS or SUZ of the host country. Similarly, paragraph 13 states that "Type III project activities that aim to achieve emission reductions at a scale of no more than 20 ktCO2e per year… are additional if the geographic location of the project activity is in an LDC/SIDS or SUZ of the host country." The paragraphs above show that each technology meets the relevant size threshold. Rwanda is an LDC[11], and therefore the microscale additionality requirement is satisfied as well.~~

SECTION D. Start date and duration of PoA

D.1. Start date of PoA

>>

~~[9] See emission reduction calculation spreadsheets, provided to auditor~~

~~[10] See emission reduction calculation spreadsheets, provided to auditor~~

~~[11] https://unctad.org/en/Pages/ALDC/Least%20Developed%20Countries/UN-list-of-Least-Developed-Countries.aspx~~

August 2, 2012. This corresponds to the publication of the PoA-DD for the global stakeholder consultation.

D.2. Duration of PoA

>>

28 years

SECTION E. Environmental impacts

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

>>

As the PoA ~~will~~ may be implemented in several countries throughout East Africa, Environmental impacts are assessed at the CPA level. A single EIA can be applied to several CPAs, if the CPAs are in the same region (i.e., country) and utilize the same technology.

E.2. Analysis of environmental impacts

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Environmental impacts are assessed at the CPA level. Unless otherwise required by the host country, a CPA may reference an EIA received from a previous CPA, if the EIA is in the same region and utilizes the same technology.

E.3. Environmental impact assessment

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As the PoA will be implemented in several countries throughout East Africa, Environmental impacts are assessed at the CPA level. A single EIA can be applied to several CPAs, if the CPAs are in the same region (i.e., country) and utilize the same technology.

SECTION F. Local stakeholder consultation

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

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As the PoA will be implemented in several countries throughout East Africa, the local stakeholder consultations shall be conducted at the CPA level. A single LSC can be applied to several CPAs if the CPAs are located in the same country and focus on similar target groups.

F.2. Modalities for local stakeholder consultation

>>

Not applicable

F.3. Summary of comments received

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Not applicable at the PoA level.

F.4. Consideration of comments received

>>

Not applicable at the PoA level.

SECTION G. Approval and authorization

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The CME and project participant is authorized by the host Party through a letter of approval. The host Party does not wish to be involved in the PoA.

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1. Title of generic CPA

>>
CPAXX: Location of CPA

H.2. Reference number of generic CPA

>>
CPA XXX

H.3. Purpose and general description of generic CPA

>>
A typical CPA involves the distribution of ~~water filters and/or~~ high-efficiency cook stoves in an established district in an established ~~province~~ region in Rwanda. Other countries may be added to this POA later. The distribution will be coordinated and managed by DelAgua. ~~Both~~ The technologies reduce the use of, and demand for, biomass for cooking. ~~to cook and/or boil water.~~

Technologies will be directly distributed to end-users at centralized distribution points or at retail locations, and end-users will be educated on the proper use and maintenance of the technologies upon receiving the technology. Ongoing education/monitoring will continue to respond to user feedback and address maintenance concerns. To the extent possible, distribution and ongoing monitoring will be conducted in collaboration with appropriate government agencies or other local partners.

Distribution of ~~water filters is a Type III project type, while~~ improved cookstove distribution qualifies as a Type II~~-~~ project type. If each individual improved cookstove distributed within a CPA achieves energy savings at a scale of no more than 20 GWh per year (60 GWH thermal) and the CPA is located within an LDC, the technology shall qualify as microscale CDM units. ~~If each individual water filter achieves emissions reductions at a scale of no more than 20 $ktCO_2e$ per year and the CPA is located is within an LDC, the technology shall qualify as a microscale CDM unit.~~
Each stove will generate approximately 0.0124 GWh of energy savings[12]. And Rwanda is an LDC. Therefore, the generic CPA qualifies as a microscale project type.

In ~~these~~ this case~~cases~~, the coordinating/managing entity is not required to demonstrate compliance of the CPA with the microscale or small-scale thresholds at the aggregate level of the CPA, and the debundling requirements do not apply. Alternatively, if each individual technology does not meet the microscale guidelines, then the CPA must demonstrate compliance with the small-scale threshold and the debundling requirements.

H.4. Technologies/measures

>>
The Dura high-efficiency, family-sized cook stove is based on the 'rocket stove' concept of operation. A rocket stove increases burning efficiency of firewood by positioning the cooking surface farther away from the combustion point, allowing the volatized gases from the firewood to fully combust. An insulated sub-chimney is used to span this distance between the combustion point and cooking surface. The increased efficiency is because the volatile gasses are given a chance to achieve

complete combustion as they travel up the sub-chimney. The insulation around the sub-chimney—achieved with locally available pumice stone—prevents heat from being lost to the surroundings.

The premise of the high-efficiency stoves is to concentrate the burning material while channeling air flow to create a more complete burn. Theoretically, a complete burn of carbon rich material will also result in little to no smoke. This complete burn utilizes all combustible material creating intense heat and leaving small amounts of residual material. Certification by the Centre for Research in Energy and Energy Conservation (CREEC), a certifying agent recognized by the Rwandan Standards Bureau (RSB), show that the thermal efficiency of the stove is 4~~0~~.9% with pot skirt and 40.9% without pot skirt.[13]

The operational lifetime of the Dura is expected ~~to be 5 years~~to be 5 years~~to be 5 years~~[14], depending~~,~~ on usage. DelAgua will monitor stove conditions and will repair stoves as necessary or replace units that have reached the end of their useful life.

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The baseline scenario is a continuation of current practice. The baseline systems that will be displaced by the project technology are the three stone fire and conventional stoves without improved combustion air supply for flue gas ventilation system. In both the project and baseline systems, biomass is combusted to deliver thermal energy for cooking, generating CO_2 in the process. The energy and mass flows, and the type and level of service, are the same in the baseline and project scenario. However, the project system is more efficient and therefore requires less biomass to deliver the same level of service and reduces CO_2 emissions from combustion.

SECTION I. Application of methodologies and standardized baselines

I.1. References to methodologies and standardized baselines

>>

~~Any combination of the following two methodologies may be applied within a CPA:~~

- ~~AMS-III.AV. Low greenhouse gas emitting water purification systems, Version 04~~
- AMS II.G, Energy efficiency measures in thermal applications of non-renewable biomass, Version 11.1~~07~~

I.2. Applicability of methodologies and standardized baselines

>>

~~As required by CDM guidance, the eligibility criteria shall ensure that all CPAs comply with the applicability conditions of the applied methodologies. The applicability conditions, and corresponding eligibility criterion, are highlighted below.~~

~~The applicability criteria for AMS-III.AV are as follows:~~

~~Applicability condition~~	~~Corresponding Eligibility Criterion~~
~~Prior to the implementation of the project activity, a public distribution network of safe drinking water does not exist within the total project area and safe drinking water (SDW) if any is produced by the consumers by only using point-of-use or point-of entry water purifiers. If during the crediting period SDW is made available in (parts of) a project area through a public distribution network, this methodology cannot be applied anymore to this project area (or part of the project area) from that point in time and the emission reductions pertaining to~~	~~14~~

[13] Certification report provided to DOE

this project area cannot be claimed from that point onwards. This condition should be checked annually during the crediting period. The CPA total project area is defined by the project proponent to be households within a delineated geographical boundary within a country, minus those households that have running water within their households. Surveys will establish the proportion of households that have running water, and are therefore excluded from the total CPA project area.;	
It shall be demonstrated that the application of the project technology/equipment achieves compliance with protective performance target as per "Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO, 2011) or a comparable national standard or guideline.	12
In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there must be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.	15
Prior to the start of the crediting period, it will be assessed whether the CPA will be: (Case 1) implemented in rural or urban areas of countries with proportion of rural or urban population using an improved drinking-water source equal to or less than 60% confirmed by options a) ii: Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university or a) iii: Using survey methods; or (Case 2) implemented in areas not included in Case 1.	16

The applicability criteria for AMS II.G_ –is shown, along with an explanation of how a CPA demonstrates compliance with the criterion. and demonstrated as follows:

Applicability condition	Corresponding Eligibility Criterion
This methodology comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired cook stoves or ovens or dryers and/or energy efficiency improvements in existing biomass fired cook stoves or ovens or dryers. \The efficiency of the project system must be certified by a national standards body or an appropriate certifying agent recognized by the body. Alternatively, manufacturers specifications can be used. Further, stoves must be single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.	12,1321
In the case of cookstoves, the methodology is applicable to the introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 20 per cent. Refer to the requirements indicated in "Data / Parameter table 12" which details the options for testing and certification as well as supporting documentation (e.g. certificate issued by third party or test results) that needs to be presented to the validating DOE	13
The aggregate energy savings of a single project activity shall not exceed the equivalent of 180 GWh thermal per year in fuel input (this is not applicable to microscale CPAs, as described in criterion 23)	15
Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics. Project participants are able to show that non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports, or statistics.	2214

For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology.	Biomass is sourced from non-renewable sources, as demonstrated by fNRB.
If the project device requires a specific fuel for this device (e.g. briquettes, pellets, woodchips), the consumption of the fuel should be monitored during the crediting period.	Project devices use woody biomass only.
The CDM-PDD or CDM-PoA-DD/CPA-DD shall explain the proposed method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g. programme logo).	The proposed distribution mechanism will be described in section A.1 of the CPA-DD. Eligibility criterion #3 discusses the method to avoid double counting.
The CDM-PDD or CDM-PoA-DD/CPA-DD shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices.	2,3
~~The aggregate energy savings of a single project activity shall not exceed the equivalent of 180 GWh thermal per year in fuel input~~	~~23~~
~~The use of this methodology in a project activity under a programme of activities is legitimate if the following leakages are estimated and accounted for, as required on a sample basis using a 90/30 precision for the selection of samples: (a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then Bold is adjusted to account for the quantified leakage; (b) Increase in the use of non-renewable woody biomass outside the project boundary to create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass outside the project boundary then Bold is adjusted to account for the quantified leakage; (c) As an alternative to subparagraphs (a) and (b), Bold can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.~~	~~Bold is multiplied by a net to gross adjustment factor of 0.95 to account for leakage. See parameter LF in section I.6.2.~~
~~To determine the value of the fraction of non-renewable (fNRB) to be applied in a component project activity (CPA) of a POA, use one of the two options as follows: (a) Conduct local own studies to determine the local fNRB value (sub national values); or (b) Use default national values approved by the Board (see footnote 3). The choice of which option to use shall be made ex ante. However, a switch from a national value of fNRB (i.e. option (b)) to sub-national values (i.e. option (a)) is permitted, under the condition that the selected approach is consistently applied to all CPAs.~~	~~The approved default value of .98 is used in all CPAs. See parameter $f_{NRB,y}$ in section I.6.2~~

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~~Monitoring approaches for By,savings (Option 1, 2 or 3 in paragraph 12),13 and values for parameters fNRB (when Option (a) in paragraph 30 is chosen) and the quantity of woody biomass Bold , may be determined either at the CPA level before the inclusion of CPA or at the PoA level before the registration of the PoA-DD.~~	~~The approach to calculating $B_{y,savings}$ is fixed at the CPA level.~~
~~For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type 1 methodology.~~	~~NA (for all CPAs in Rwanda) – as demonstrated by the default f_{NRB} value, biomass consumption in Rwanda is non-renewable~~
The use of this methodology in a project activity under a programme of activities is legitimate if the following leakages are estimated and accounted for, as required on a sample basis using a 90/30 precision for the selection of samples: (a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then $B_{old,i,j}$ is adjusted to account for the quantified leakage; (b) Increase in the use of non-renewable woody biomass outside the project boundary to create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass outside the project boundary then $B_{old,i,j}$ is adjusted to account for the quantified leakage; (c) As an alternative to subparagraphs (a) and (b) $B_{old,i,j}$ can be multiplied by a net to gross adjustment factor of 0.95[15] to account for both leakages, in which case surveys are not required.	CPAs shall estimate leakage using option (c) as described in the sampling plan.
The fraction of non-renewable biomass (fNRB) will be determined at the CPA level. To determine the fNRB value to be applied in a Component Project Activity (CPA) of a POA, use one of the two options as follows: (a) Conduct local studies to determine the local fNRB value (sub national values) for a CPA as per the "TOOL30: Calculation of the fraction of non-renewable biomass"; or (b) Use default national values approved by the Board.	Defined in CPA monitoring plan

[15] Paragraph 39 and paragraph 48 of the methodology allow the use of a net to gross adjustment factor of 0.95 in lieu of conducting a survey to account for leakage emissions. In the case of a CPA opting to apply the adjustment factor, the adjustment factor is only applied once, i.e. either paragraph 39 or paragraph 48 (c) is applied. Also, the adjustment factor does not need to be applied twice for option (a) and (b).

Monitoring approaches for $B_{y,savings,i,j}$[16] and values for parameters fNRB (when Option (a) in paragraph 48c is chosen) and the quantity of woody biomass $B_{old,i,j}$ may be determined either at the CPA level before the inclusion of the CPA or at the PoA level before the registration of the PoA-DD.	Defined in CPA monitoring plan
If the generic CPA consists solely of units that qualify as "microscale CDM units" as defined in the "TOOL19: Demonstration of additionality of microscale project activities", the conditions to ensure that CPAs that will be included meet the small-scale or microscale thresholds and remain within those thresholds throughout the crediting period of the CPAs are not required	1,17

I.3. Application of multiple methodologies

>>

The PoA applies a single methodology.

~~The generic CPA applies a combination of small-scale methodologies, including AMS-II.G and AMS-III.AV. AMSIII.AV assumes a baseline water boiling practice on unimproved stoves that is mitigated by a water filter technology. AMSII.G assumes a baseline cooking fuel consumption on unimproved stoves that is reduced by a high efficiency stove technology. CPAs that utilize both AMS-III.AV and AMS-II.G shall adjust B_{old} in order to eliminate potential cross-effects between these measures. This adjustment shall follow the procedure outlined below.~~

~~Step 1 – Determine baseline wood consumption per capita~~
~~Step 2 – Determine total litres of drinking water consumed per capita~~
~~Step 3 – Calculate the energy required to boil one litre of water (SEC). This calculation follows the process described in AMS-III.AV for the calculation of SEC.~~
~~Step 4 – Calculate energy required to boil drinking water, by multiplying SEC (Step 3) by the total litres of drinking water (step 2). This calculations assumes that all drinking water is boiled in the baseline.~~
~~Step 5 – Calculate the per capita quantity of wood required to boil drinking water, by dividing per capita energy to boil water (step 4) by the NCV of the baseline fuel source.~~
~~Step 6 – Discount the per capita quantity of wood required to boil water by the fraction of the population that does not boil water in the baseline, by multiplying the per capita quantity of wood required to boil water (step 5) by the fraction of the population that boils water in the baseline (as determined by a survey in the project area).~~
~~Step 7 - Subtract per capita quantity of wood required to boil water (step 6) from per capita wood consumption (Step 1).~~

~~Through this calculation, cross effects are eliminated from CPAs implemented under this PoA.~~

~~This calculation is demonstrated for the first CPA, located in Rwanda.~~

~~Step 1 - Determine baseline wood consumption per capita (incl. cooking & water treatment)~~		
	~~500~~	~~Per capita baseline wood consumption (kg), incl water treatment (methodological default; other values may be applied at CPA level)~~
~~Step 2 - Determine Total Litres Drinking Water Consumed per capita in project area~~		

[16] Any one of the four options in paragraphs 29 to 33 may be used for a particular CPA, but there should be no change in the chosen option during the crediting period.

	1.45	litres of drinking water consumed per person per day
	529.25	total litres per year
Step 3 - Calculation of energy required to boil one litre of water		
	4.186	Specific heat of water
	100	Final temperature of water
	20	Initial temperature of water
	2260	Latent heat of water evaporation
	10.00%	Efficiency of water boiling system being replaced
	3574.8	Specific energy consumption (kj/L)
Step 4 - Calculation of energy required to boil water (if all water was boiled)		
	0.00189196	Energy to boil water per year (TJ), if all water is boiled
Step 5 - Calculation of tonnes wood required to boil water (if all water was boiled)		
	0.015	$NCV_{biomass}$ (TJ/tonne)
	126.13086	Total biomass (kg) to boil water per year, if all drinking water is boiled
Step 6 - Adjust for suppressed demand		
	38.40%	Fraction of population that boils water in baseline
	203.23	Average drinking water boiled per person (Litres)
	48.43	Total biomass (kg) consumed in baseline for water treatment
Step 7 - Adjust baseline per-capita wood consumption for cross effects		
	451.57	Per capita biomass consumption, excl water treatment.

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

>>

	Source	GHG	Included?	Justification/Explanation
Baseline	Emissions from fossil fuels utilized combusted for cooking or fossil fuels that would be utilized for obtaining cooking and/or safe drinking water displaced due to project activity.	CO_2	Yes	Major source of emissions
		CH_4	No	Minor source of emissions
		N_2O	No	Minor source of emissions
Project Activity	Emissions from the consumption of biomass for cooking. (Project emissions are 0 for water treatment technologies.	CO_2	Yes	Major source of emissions
		CH_4	No	Minor source of emissions
		N_2O	No	Minor source of emissions

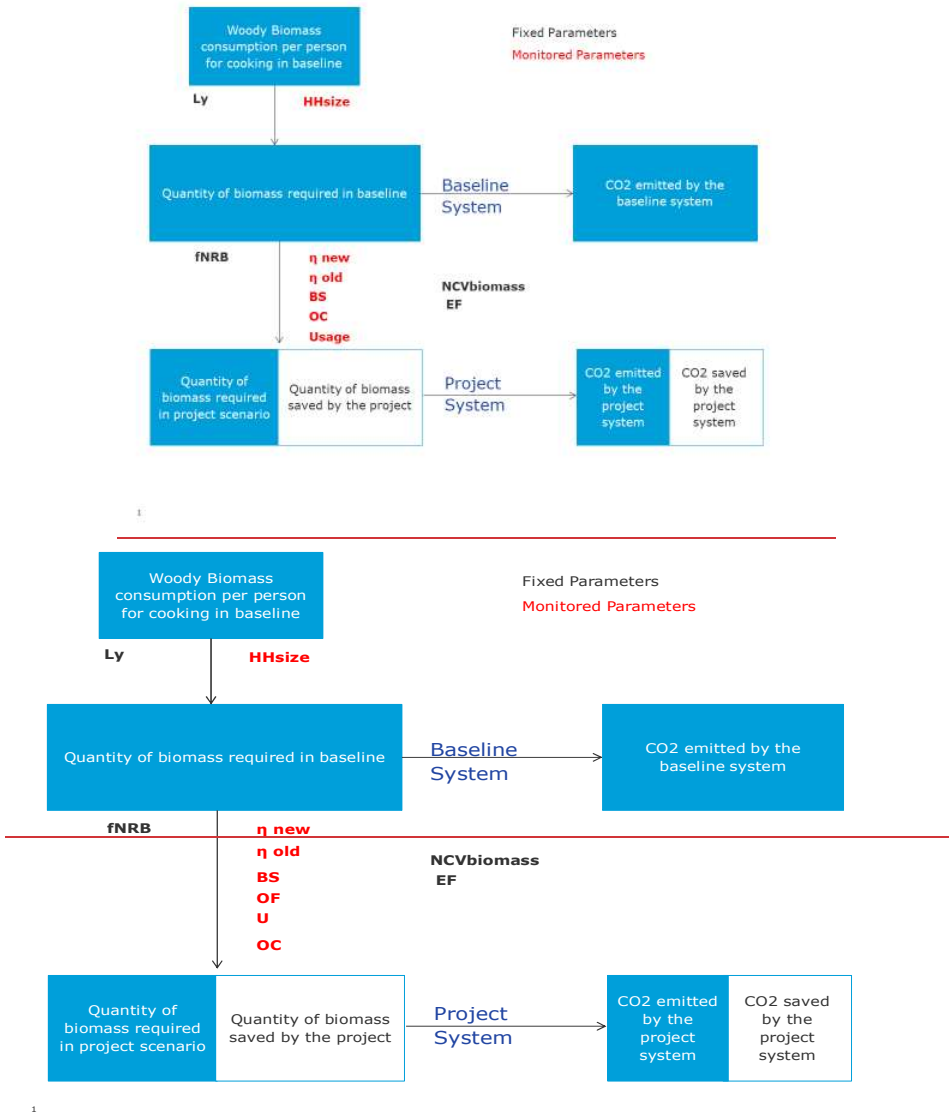

Figure 23: Flow Diagram

I.5. Establishment and description of baseline scenario

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~~According to AMS-III.AV, the baseline scenario is assumed to be the use of either fossil fuel or non-renewable biomass for means of water purification. Each CPA shall describe the baseline fuel in use prior to the project, providing verifiable evidence in the form of 3rd party literature or a survey conducted according to the sampling plan described in section I.7.2 below. For instance, according to data made available by the government of Rwanda, 98% of households use solid fuels for~~

~~cooking.[17] Furthermore, 98% of biomass use in Rwanda is considered non-renewable according to default NRB values. Therefore, the baseline water treatment scenario applied to all CPAs in Rwanda is assumed to be the use of non-renewable biomass on a three-stone stove. CPAs located in other countries will provide similar information~~

AMS-II.G establishes the baseline scenario as the use of fossil fuels for meeting similar thermal energy needs as is delivered by the project technologies. Therefore, this baseline is assumed for this project.

As required by paragraph 288 and 289 of CDM project standard for programmes of activities; version 02.0; the process of determining the baseline scenario has been reassessed taking into account existing national and/or sectoral policies of Rwanda as well as the latest version of applied methodology.
In accordance with the Methodological Tool: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (version 03.0.1):

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies.
The "Intended Nationally Determined Contribution (INDC) for the Republic of Rwanda", recognizes that "biomass is almost wholly relied on for cooking and related uses by both urban and rural households, and that "poor performing cook stoves are still used in most cases leading to inefficiencies in fuel consumption and health effects" [18]. Wood fuel consumption (including charcoal) was estimated at 4.2 Mt/year in 2010 and is expected to exceed 11MT/year by 2030 under the business as usual scenario. Therefore, the current baseline is in line with relevant national and sectoral policies of Rwanda.

Step 1.2: Assess the impact of circumstances
According to the Government of Rwanda, "biomass is almost wholly relied on for cooking and related uses by both urban and rural households"[19]. 92.7% of households in rural areas rely on firewood as a cooking fuel, according to the latest data published in December[20].

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

According to the latest data available from the NISR, 92.7% of rural households rely on firewood as a cooking fuel[21]. Rwanda's INDC confirms that poor performing cookstoves are still used in most places. Hence the current baseline of use of traditional stoves is still valid.

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

All ex ante data/parameters have been updated according to paragraph 291, CDM project standard for programmes of activities; version 02.0.

Step 2.1: Update the current baseline
The latest approved versions of all methodologies/tools have been used to update the baseline emissions for the renewed crediting period

• Emission factors, and default values and benchmarks have been updated to correspond with the latest version of methodology.

~~[17] Republic of Rwanda Demographic and Health Survey, 2010 – published December 2011, ICF International~~

[18] Intended Nationally Determined Contribution (INDC) for The Republic of Rwanda, November 2015

[19] Intended Nationally Determined Contribution (INDC) for The Republic of Rwanda, November 2015

[20] www.statistics.gov.rw/file/7280/download?token=z19q3BdQ (Table 1.b)

[21] www.statistics.gov.rw/file/7280/download?token=z19q3BdQ (Table 1.b)

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• The current baseline emissions consider current default values and emission factors
• As described in step 1.4, all ex-ante data/parameters have been updated.

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

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~~Methodological choices related to AMS-III.AV and AMS-II.G are reviewed below.~~

~~**Methodological choices for AMS III.AV**~~

~~**Baseline emissions for water treatment**~~

~~The emissions are calculated based on the energy demand for boiling water, and when the project activity results in the displacement of NRB, the baseline emissions are corrected for the fraction of the biomass that can demonstrated to be non-renewable. Baseline emissions are calculated for a~~

~~$BE_{y,water\_treatment} = BE_{y,i} * N_{y,i}$ EQUATION (1)~~

~~Where:~~

~~$BE_{y,water\_treatment}$ Baseline emissions during the year y in tCO_2e~~
~~$BE_{y,i}$ Baseline emissions per water filter of type *i, calculated as below*~~
~~$N_{y,i}$ Number of project devices of type i operating in year y, *monitored*~~

~~$BE_{y,i} = QPW_y * SEC * f_{NRB,y} * EF_{projected\_fossilfuel} * 10^{-9} * (1-SDW_{frac}) * X_{BOIL} * BS * \mu_{y,i} /365 * WQ$~~
~~EQUATION (2)~~

~~Where:~~

~~$BE_{y,i}$ Baseline emissions from filters of type *i* during the year *y* in (tCO_2e). *Calculated.*~~
~~QPW_y Quantity of purified water as established in year y (litres), capped at 5.5 lppd. *Monitored*~~
~~SEC Specific energy consumption required to boil one litre of water (kJ/L). *Calculated below.*~~
~~$f_{NRB,y}$ Fraction of woody biomass used in the absence of the project activity in year y that can be established as non renewable as per the relevant provisions of AMS I.E "Switch from Non-Renewable Biomass for Thermal Applications by the User". *Determined at the CPA level*~~
~~$EF_{projected\_fossil\ fuel}$ Emission factor as per AMS-I.E procedures when NRB is displaced or the emission factor of the fossil fuel substituted (tCO_2/TJ). *Determined at the CPA level*~~
~~SDW_{frac} Proportion of CPA population served by public safe drinking water distribution system, *monitored.*~~
~~X_{boil} The proportion of total population for which the common practice of water boiling is or would have been water boiling. *Determined at the CPA level*~~
~~BS Fraction of population for which the baseline fuel displaced is biomass, *monitored.*~~
~~$\mu_{y,i}$ Number of days of utilization of the project device i during year *y*~~
~~*WQ* Fraction of devices that delivery safe drinking water, monitored~~

~~Specific energy consumption required to boil one litre of water is to be calculated as follows:~~

~~$SEC = [WH * (T_f - T_i) + 0.01 * WHE] / \eta_{wb}$ EQUATION (3)~~

~~Where:~~

~~WH — Specific heat of water (kJ/L °C). *The default value of 4.186 kJ/L °C is used.*~~

~~T_f — Final temperature (°C). *The default value of 100 °C5 is used.*~~

~~T_i — Initial temperature of water (°C). *A default value of 20 °C will be used.*~~

~~WHE — Latent heat of water evaporation (kJ/L). *The default value of 2260 kJ/L will be used.*~~

~~η_{wb} — Efficiency of the water boiling systems being replaced. *Determined at the CPA level*~~

~~Project emissions for water treatment (AMS III.AV)~~

~~The operation of the project water purification system does not involve consumption of fossil fuels and/or electricity therefore project emissions are not calculated.~~

~~Leakage emissions for water treatment (AMS III.AV)~~

~~The methodology indicates leakage shall be determined in accordance with AMS I.E. In accordance with that methodology, Leakage is accounted for through the application of a net to gross adjustment factor of 0.95, in which case surveys are not required.~~

~~Emissions reductions for water treatment (AMS III.AV)~~

~~Emissions reductions will be calculated as:~~

~~$ER_{y,water\_treatment} = (BE_{y,i} - PE_{y,i} - L_{y,i}) * N_{y,i}$ — EQUATION (4)~~

~~Where:~~

~~*$ERy,water\_treatment$* Emission reductions in year *y* (t CO2/y)~~

~~*BEy,i* Baseline Emissions per filter in year *y* (t CO2/y)~~

~~*PEy,i* Project emissions per filter in year *y* (t CO2/y)~~

~~*LEy,i* Leakage emissions per filter in year *y* (t CO2/y)~~

~~$N_{y,i}$ Total number of water filters distributed in year *y* (t CO2/y)~~

~~Emission reductions for high-efficiency cook stoves (AMS II.G)~~

This PoA will introduce improved cook stoves to households and SMEs in Rwanda that use non-renewable biomass for cooking, applying AMS-II.G version 11.1.

AMS-II.G defines that baseline as the continued use of fossil fuels to meet similar thermal energy needs. The PoA has been updated to include the current default emission factor for the baseline fossil fuel for the region (73.2 tCO2/TJ for Sub-Sahara Africa).

Furthermore, monitoring will determine:

- the continued usage of the baseline stove after the project stove is distributed,
- the change in project stove efficiency
- frequency of pot-skirt use (if pot skirts are distributed with the stove)
- $B_{y,savings,i,j}$ shall be determined by Option 2 (KPT) or Option 3 (WBT)

Please refer to section below (I.6.3) for the methodological equations being applied.

~~According to the methodology, emission reductions are calculated as:~~

~~I.6.2. $ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y - LEC_y$~~

~~I.6.3. Equation (5)~~

~~Where:~~

~~i~~

~~=~~

~~Indices for the situation where more than one type of project device is introduced to replace the pre-project devices~~

~~j~~

~~=~~

~~Indices for the situation where there is more than one batch of project device~~

~~ER_y~~

~~=~~

~~Emission reductions during year y in t CO2e~~

~~$ER_{y,i,j}$~~

~~=~~

~~Emission reductions by project device of type i and batch j during year y in t CO2e~~

~~LECy~~

~~=~~

~~Leakage emissions from charcoal production in year y~~

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$$ER_{y,i,j} = \left(B_{y,savings,i,j,ce} \times N_{y,i,j,ce} \times LF\right) \times \frac{\mu_{y,i,j}}{365} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\ fuel}$$

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

~~Equation Equation 6~~

~~Where:~~

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~~ce~~

~~=~~

~~Index to identify whether cross-effects is accounted for (ce= 1 if cross-effects is accounted for; ce=0 otherwise).~~

$B_{y,savings,i,j}$ ~~$B_{y,savings,i,j,ce}$~~

~~=~~

~~Quantity of woody biomass that is saved in tonnes per cook stove device of type *i* and batch *j* during year *y*, in each ce scenario..~~

$f_{NRB,y}$

~~=~~

~~Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})~~

$NCV_{biomass}$

~~=~~

~~Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried')~~

$EF_{projected\_fossilfuel}$

=

Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 t CO_2/TJ

$N_{y,i,j}$–$N_{y,i,j,ce}$

=

Number of project devices of type i and batch j operating during year y, in in each ce scenario.

μ_y

=

Adjustment to account for any continued use of pre-project devices during the year *y* when applying equations 7 and 9 (fraction). Use 1.0 in other cases.

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$\mu_{y,i,j}$

=

Number of days of utilization of the project device i and batch j during the year y.

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Note that equation 2 in AMS-II.G(v7), which corresponds to equation 6 above, does not include the ce parameter. As cookstoves and water filters may be distributed/in-operation together as a result of this program, this parameter was added to the calculations in this PoA to ensure that emission reductions are appropriately adjusted to account for cross-effects

$B_{y,savings,i,j,ce}$ due to implementation of efficient thermal devices is estimated as per the following options:

Option 1: kitchen performance test (KPT):

$B_{y,savings,i,j} = B_{old,i,j} - B_{new,KPT,i,j}$ $\mathbf{B_{y,savings,i,j,ce} = B_{old,i,j,ce} - B_{new,KPT,i,j,ce}}$

EQUATION (3) (7)

~~Where:~~

$B_{old,i,j}$ $B_{old,i,j,ce}$

~~=~~

~~Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type *i and* batch *j*, accounting for cross effects~~

$B_{new,KPT,i,j}$ $B_{new,KPT,i,j,ce}$ $B_{new,KPT,i,j,ce}$

~~=~~

~~Annual quantity of woody biomass used in tonnes per project device of type *i* and batch *j*, measured as per the KPT protocol, for the initial efficiency determined in the year of its commissioning, accounting for cross effects.~~

~~This calculation assumes that there is only one device per household. Considering the KPT is used to estimate the consumption per household, an adjusted formula shall be used in the PDD in case more than one device is used to serve n number of persons.~~

~~Option 2: water boiling test (WBT):~~

~~CPAs can utilize one of the following equations to determine $B_{ysavings,i,j,ce}$ if water boiling tests are used:~~

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

~~EQUATION (4)~~

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

~~EQUATION (5)~~

~~Where:~~

$B_{y=1,new,i,j,survey}$ $B_{y=1,new,i,j,survey,ce}$

~~=~~

~~Quantity of woody biomass used by project devices in tonnes per device of type *i* and batch *j*, accounting for cross-effects.~~

~~The loss in efficiency of project devices shall be accounted for as per AMS-II.G(v7), as described in the parameter box for $\eta_{new,i,j}$ (see Section I.7.1 below).~~

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~~I.6.4.~~I.6.2. Data and parameters fixed ex ante

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

Data / Parameter:	$B_{old,p}$ ~~$B_{old,i,j}$~~
Data Unit	tonnes/person/year ~~t /year~~
Description	Annual quantity of woody biomass ~~used in pre project scenario, per device.~~ that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices
Source of data	~~This parameter shall be determined ex-ante using one of the following options:~~ ~~1. A default value of 0.5 tonnes/capita per year may be used to derive this parameter. Number of persons served per device shall be monitored (see note #2 in additional comments)~~ ~~2. Based on the historical data or a sample survey conducted as per the latest version of "sampling and surveys for CDM project activities and programme of activities", to determine the average annual consumption of woody biomass per device (tonnes/year). If the monitoring period is shorter or longer than one year, the result may be extrapolated for the monitoring period.~~ Where applicable a value from a standardised baseline may be used as an alternative to the default value provided
Value(s) applied	Set at CPA level. ~~Set at CPA level~~ ~~0.5 tonnes per capita. Default value will be multiplied by $HH_{size,}$ to determine total biomass consumption in the pre-project scenario (see note 2 under additional comments).~~
Choice of data or Measurement methods and procedures	A default value of 0.5 tonnes/capita per year[22] may be used. This option is limited to household project devices (not eligible for oven and dryers) ~~Reference to 3rd party literature, or survey conducted according to the sampling plan outlined in section I.7.2, or a default value of 500 kg woody biomass per capita per year may be used.~~
Purpose of data	Calculation of emission reductions.

[22] Refer to "Annex 5 - Information note on the rationale for default factors used in AMS-I.E. and AMS-II.G." of the SSC WG 42 meeting report for the derivation of the default.

Additional comment	~~1. If a HH receives both water filters and cookstove, and the filter is found to be in operation, $B_{old,i,j}$ is reduced to remove biomass consumption that would have been for water treatment purposes. This adjustment is described in section I.3.~~ ~~2. According to the methodology Bold is determined ex-ante, based on an ex-ante value for the number of persons that utilize each device (represented by the parameter HHsize). . However, the EB-approved cross-effects calculations used under this PoA allows for a monitored value of HHsize. Combining a monitored value of HHsize for the purpose of calculating cross effects, with a fixed value of HHsize for the purpose of calculating Bold, can result in overstated emission reductions, if the monitored value is less than the ex-ante value. As the cross-effects calculation (based on monitoring HHsize) was approved by the EB, and to avoid over-estimating emission reductions, the PoA updates Bold based on monitored values of household size.~~ ~~3. Where charcoal is used as the fuel by baseline devices, the quantity of woody biomass shall be determined by using a default wood to charcoal conversion factor of 6 kg of firewood (wet basis) per kg of charcoal (dry basis).~~ -

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Data / Parameter:	$N_{p,HH}$
Data Unit	Number
Description	Average number of persons served per household prior to project implementation
Source of data	Established ex ante prior to project implementation based on records of households served by the project
Value(s) applied	Set at CPA level.
Choice of data or Measurement methods and procedures	Per AMS-II.G, v11.1.
Purpose of data	Calculation of baseline emissions.
Additional comment	-

Data / Parameter:	$B_{old,HH}$
Data Unit	tonnes/household/year
Description	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices
Source of data	This parameter shall be determined ex ante
Value(s) applied	Set at CPA level.
Choice of data or Measurement methods and procedures	Use one of the following options: 1. $B_{old,p}$ times $N_{p,HH}$ or; 2. Based on the historical data or a sample survey conducted as per the latest version of "sampling and surveys for CDM project activities and programme of activities". If the monitoring period is shorter or longer than one year, the result may be extrapolated for the monitoring period
Purpose of data	Calculation of baseline emissions.

Additional comment	The value may be derived, based on the historical data or a sample survey conducted as per the latest version of "sampling and surveys for CDM project activities and programme of activities". Paragraph 23 of "General guidelines for SSC CDM methodologies (version 22.13)" provides guidance on the use of data including historic data to derive parameter values. Values used in other schemes (e.g. registered Gold Standard carbon offset projects) from the same region are acceptable when it is demonstrated to be suitable for use as per the procedures indicated in the above general guidelines

Data / Parameter:	$B_{old,i,j}$
Data Unit	tonnes/year
Description	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type *i* and batch *j*
Source of data	This parameter shall be determined ex ante
Value(s) applied	Set at CPA level.
Choice of data or Measurement methods and procedures	$B_{old,HH}$ divided by $N_{d,HH}$
Purpose of data	Calculation of baseline emissions
Additional comment	$B_{old,i,j}$ equals $B_{old,HH}$ when only one project device per household is distributed. For $N_{d,HH}$, please refer to Data / Parameter table 22

Data / Parameter:	$f_{NRB,y}$
Data Unit	%
Description	Fraction of woody biomass saved by the project activity during year *y* that can be established as non-renewable biomass
Source of data	~~Default values are used as published in EB 67 Annex 22 "Default Values for Fraction of Non-Renewable Biomass for Least-Developed Countries and Small Island Developing States".~~ Default value, as specified in AMS-II.G
Value(s) applied	The default national value of fNRB (option B in AMS-II.G) shall be used. As no national value exists for Rwanda, the global default value of 0.3 shall be used. ~~Set at CPA level~~ ~~For CPAs in Rwanda: 0.98~~ ~~Other values will be applied if additional countries are added to the PoA~~
Choice of data or Measurement methods and procedures	Global default~~Default value from CDM guidance~~
Purpose of data	Calculation of baseline emissions

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Additional comment	- If a national value is approved by the Board, CME may request a post-registration change to use that national value. - In the absence of a national value, the default globally applicable fNRB value of 0.3 may be treated as national value and therefore, it is possible to change from the default value used at the time of registration to the local value. A PRC will be required for this.-

Data / Parameter:	$EF_{projected\_fossilfuel}$
Data Unit	tCO_2/TJ
Description	Emission factor for the projected fossil fuel consumption in the baseline, when NRB is displaced.
Source of data	AMS-II.G ~~& AMS-III.AV~~
Value(s) applied	73.2 tCO_2/TJ ~~81.6 tCO_2/TJ~~
Choice of data or Measurement methods and procedures	Methodology default value for Sub-Saharan Africa
Purpose of data	~~Calculation of baseline emissions for AMS-III.AV~~ Calculation of emission reductions from AMS-II.G
Additional comment	-

Data / Parameter:	LF
Data Unit	Fraction
Description	Leakage factor applied to account for increase in NRB use outside the project boundary
Source of data	Default value
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	Default value allowed by ~~AMS-III.AV &~~ AMS-II.G
Purpose of data	Calculation of leakage
Additional comment	-

Data / Parameter:	$NCV_{biomass}$
Data unit:	TJ/tonne
Description:	Net calorific value of the non-renewable woody biomass used in project devices
Source of data:	IPCC
Value(s) applied	0.0156 TJ/tonne
Choice of data or Measurement methods and procedures	IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried' may be used if fuel used in project device is also woody biomass.
Purpose of data	Calculation of emission reductions from AMS-II.G
Additional comment	-

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~~I.6.5.~~I.6.3. Modalities for ex ante calculation of emission reductions

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According to the methodology, emission reductions are calculated as:

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$$ Equation (1)

Where:

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

Equation 2

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

Where:

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per cook stove device of type *i* and batch *j* during year *y*.
$f_{NRB,y}$	=	Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})
$NCV_{biomass}$	=	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried')
$EF_{projected\_fossilfuel}$	=	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers.
$N_{y,i,j}$	=	Number of project devices of type i and batch j operating during year y,.
μ_y	=	Adjustment to account for any continued use of pre-project devices during the year *y* when applying equations 7 and 9 (fraction). Use 1.0 in other cases.

$B_{y,savings,i,j}$ due to implementation of efficient thermal devices is estimated as per the following options:

Option 2: kitchen performance test (KPT):

$$B_{y,savings,i,j} = B_{old,i,j} - B_{new,KPT,i,j} \quad \text{EQUATION (3)}$$

Where:

$B_{old,i,j}$ = Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type *i and* batch *j*

$B_{new,KPT,i,j}$ = Annual quantity of woody biomass used in tonnes per project device of type *i* and batch *j*, measured as per the KPT protocol, for the initial efficiency determined in the year of its commissioning.

This calculation assumes that there is only one device per household. Considering the KPT is used to estimate the consumption per household, an adjusted formula shall be used in the PDD in case more than one device is used to serve n number of persons.

Option 3: water boiling test (WBT):

CPAs can utilize one of the following equations to determine $B_{ysavings,i,j}$ if water boiling tests are used:

$$B_{y,savings,i,j} = B_{old,i,j} \times (1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}) \quad \text{EQUATION (4)}$$

$$B_{y,savings,i,j} = B_{y=1,new,i,j,survey} \times (\frac{\eta_{new,i,j}}{\eta_{old,i,j}} - 1) \quad \text{EQUATION (5)}$$

Where:

$B_{y=1,new,i,j,survey}$ = Quantity of woody biomass used by project devices in tonnes per device of type *i* and batch *j*

The loss in efficiency of project devices shall be accounted for as per AMS-II.G, as described in the parameter box for $\eta_{new,i,j}$ (see Section I.7.1 below).

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~~Variable~~	~~Unit~~	~~Value~~
~~Bold,PP~~	~~kg / PP / year~~	~~876.00~~
~~Hhsize~~	~~Average HH size~~	~~4.50~~
~~B old~~	~~tonnes/yr~~	~~3.94~~
~~η new-skirt~~	~~Fraction~~	~~45%~~
~~η new-noskirt~~	~~Fraction~~	~~41%~~
~~% usage skirt~~	~~Fraction~~	~~90%~~
~~% usage - no skirt~~	~~Fraction~~	~~10%~~

~~η new~~	~~Fraction~~	~~45%~~
~~nold~~	~~Fraction~~	~~10%~~
~~B savings~~	~~tonnes/yr~~	~~3.04~~
~~Ndistributed~~	~~Units~~	~~14,239~~
~~Operational Check - Stoves~~	~~Fraction (monitored)~~	~~99%~~
~~LF~~	~~Leakage fraction~~	~~95%~~
~~Ny,i,j,ce~~	~~units~~	~~13391.7795~~
~~# Days Deployed~~	~~-~~	~~365~~
~~% usage project stove~~	~~Fraction~~	~~0.85~~
~~uy,i,j~~	~~Days~~	~~310.25~~
~~fNRB~~	~~Fraction~~	~~98%~~
~~NCVbiomass~~	~~TJ/tonne~~	~~0.015~~
~~Efprojected_fossilfuel~~	~~CO2/TJ~~	~~81.6~~
~~BS~~	~~Fraction~~	~~98%~~
~~Ery,i,j~~	~~tCO2~~	~~40,818~~

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

~~Parameters common to III.AV and II.G~~

Data / Parameter	~~η_{wb} ;~~ $\eta_{old,i,j}$
Data Unit	(i) Default 0.1 or 0.2 (please see details below); ~~(i)~~(ii) Establish prior to start of implementation based on survey ~~%~~
Description	Efficiency of pre - project device. If the device is a three stone fire using firewood (not charcoal) , or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney, a default value of .1 is used as per the applied methodology; for other types of devices, a default value of 0.2 is used. Use weighted average values (taking the amount of woody biomass consumed by each device as the weighting factor) if more than one type of device is being replaced
Source of data	Default value for stove efficiency combined with surveys to determine the type of baseline device used in households and the amount of woody biomass consumed by each device.
Value(s) applied	Monitored at CPA level~~-~~
Measurement methods and procedures	~~Sampling shall be conducted in accordance with the sampling plan outlined in section I.7.2.~~
Monitoring frequency	Fixed for each individual household when included in the project activity database.
QA/QC procedures	
Purpose of data	Calculation of baseline and project emissions.
Additional comments	-

Data / Parameter:	μ_y

Data unit:	Fraction
Description:	Adjustment to account for any continued use of pre-project devices during the year y
Source of data:	When applying equations 7, it is a fraction based on monitoring results. In other cases (i.e. applying equations 6 and 8), use 1.0
Value(s) applied	Monitored at CPA level
Measurement methods and procedures	This parameter should be monitored using one of the following methods: 1. If the pre-project devices are decommissioned and no longer used, as determined by the monitoring survey its value is 1.0. If both the project devices and pre-project devices are used together, measurement campaigns shall be undertaken using data loggers such as stove utilization monitors (SUMs) which can log the operation of all devices (recording the situation of the device being used or not during any day 'd' of the measurement campaign) in order to determine the average device utilization intensity (to establish the relative share of the usage of the devices). The measurement campaign shall be conducted in at least 10 randomly selected participant households of the project activity or the component project activity (CPA) for at least 90 days during the year y. If seasonal variation is observed, the average value determined through the campaign shall be annualised taking into account seasonal variation of device utilization. 2. Alternatively, surveys may be conducted if the use of data loggers to record the continued operation of baseline devices is demonstrated to be not practical, for example when the baseline device is the three-stone fire. The surveys should be designed to capture the cooking habits and stove usage of households in the region, including quantification of use of baseline devices, by formulating questions and/or collecting evidences to determine the frequency of usage of both the project devices and baseline devices. For example, if there were 3 pre-project devices per household and it was determined during the survey that use of one of them continues during the crediting period then a conservative adjustment factor of 0.66 is applied for the relevant monitoring period. Another example would be the case where there was only one pre-project device per household and its use during the project period continues along with the project stove to meet 25% of the cooking needs of the household in which case the adjustment factor will be 0.75. Where a more precise data is available i.e. the thermal capacity of the project and pre-project devices and respective utilization hours, a weighted average adjustment factor may be used
Monitoring frequency:	At least once every two years (biennial)
QA/QC procedures:	-
Purpose of data	Calculation of baseline and project emissions
Any comment:	- If equation (8) under option 3 (WBT) is used combined with direct measurement of Biomass new, then μ_y may be assumed as 1.0. - When the data loggers are used, the days when only project devices or only pre-project devices are used will be attributed accordingly. The days where both devices have been used, if the data loggers are able to detect and record the time each device has been used (e.g. in hours), the share in the total duration of utilization will be used to attribute a fraction of this day to one or to the other device. Alternatively, if the data loggers are not able to determine the duration of the utilization, but only the situation of the device being on or off (i.e. used or not used during that day), the share of 50:50 may be used

Data / Parameter	$\mu_{y,i,j}$
Unit	Days
Description	Number of days of utilization of the project device *i* and batch *j* during the year *y*
Source of data	Project database
Value(s) applied	100%
Measurement methods and procedures	The number of days that a filter is deployed will be calculated directly from the project database, as the average operating period of all similar technologies. For stoves, the following procedures shall be followed: 1. If the pre-project devices are decommissioned and no longer used, its value is 365 days. If both the project devices and pre-project devices are used together, measurement campaigns shall be undertaken using data loggers such as stove utilization monitors (SUMs) which can log the operation of all devices (recording the situation of the device being used or not during any day 'd' of the measurement campaign) in order to determine the average device utilization intensity (to establish the relative share of the usage of the devices). The measurement campaign shall be conducted in at least 10 randomly selected participant households of the project activity or the component project activity (CPA) for at least 90 days during the year y. If seasonal variation is observed, the average value determined through the campaign shall be annualised taking into account seasonal variation of device utilization. 2. If a measurement campaign using data loggers is not feasible, the number of days that a stove is deployed will be calculated directly from the project database, as the average operating period of stoves of batch i and type j. The average deployment time is then discounted by continued usage of the baseline stove. a. Surveys designed to capture the cooking habits and stove usage of households in the region shall be conducted Households will be asked as to their frequency of use of the improved stove versus the baseline stove, and the baseline fuel consumption will be adjusted on the CPA household level to account for the average continued use of the baseline stove. For example, household surveys in a CPA may report a total average use of the improved stove 4 times per week, and the baseline stove 2 times per week, for a total of 6 stove uses per week, or 4/6 = 66% use of improved stove and 34% use of baseline stove. In this case, deployment days would be adjusted by 66%.
Monitoring frequency	Annually
QA/QC procedures	N/A
Purpose of data	Calculation of baseline emissions.

~~Additional comments~~	~~- If equation (6) under option 3 (WBT) is used combined with direct measured of Biomass new, then $\mu_{y,i,j}$ may be assumed as 365 days~~ ~~- when the data loggers are used, the days when only project devices or only pre-project devices are used will be attributed accordingly. The days where both devices have been used, if the data loggers are able to detect and record the time each device has been used (e.g. in hours), the share in the total duration of utilization will be used to attribute a fraction of this day to one or to the other device. Alternatively, if the data loggers are not able to determine the duration of the utilization, but only the situation of the device being on or off (i.e. used or not used during that day), the share of 50:50 may be used.~~

Data / Parameter	$N_{y,i,j}$
Data Unit	Units
Description	Number of project devices of type i and batch j operating during year y
Source of data	~~Project Database~~Monitoring
Value(s) applied	Monitored at CPA level~~35,000~~
Measurement methods and procedures	Measured directly or based on a representative sample. . A discount shall be applied based on the percentage of devices operational as determined by the sample survey e.g. if survey shows that 10% of the devices is non-operating, an adjustment factor of 0.9 shall be applied to number of project devices commissioned in a particular batch. Separate samples shall be taken for each batch.
Monitoring frequency	At least once every two years (biennial)
QA/QC procedures	N/A
Purpose of data	Calculation of baseline and project emissions.
Additional comments	-

~~**Data / Parameter**~~	~~HH_{size}~~
~~Unit~~	~~# of people~~
~~Description~~	~~Number of persons that utilize each of the functional project appliances~~
~~Source of data~~	~~Household surveys~~
~~Value(s) applied~~	~~5.41~~ ~~Based on survey conducted for pilot project.~~
~~Measurement methods and procedures~~	~~Self-reported household surveys, conducted in accordance with the sampling plan outlined in section I.7.2.~~
~~Monitoring frequency~~	~~Ex-ante (prior to CPA inclusion)~~ ~~Annually following CPA inclusion (see additional comments).~~
~~QA/QC procedures~~	~~Please reference section I.7.2 for the detailed sampling plan.~~
~~Purpose of data~~	~~Calculation of baseline emissions.~~
~~Additional comments~~	~~For AMS-II.G, this parameter is multiplied by the average per capita quantity of biomass used in the absence of the project activity to determine $B_{old,i,j}$.~~ ~~For AMS-III.AV, the ex-ante value of HHsize will be multiplied by the expected number of households targeted under the CPA to determine the population serviced by the project equipment (paragraph 18(a) in AMS-III.AV). Following CPA inclusion, this parameter is required to be monitored biennially, and only for Case 2 populations. However, this parameter is necessary to adjust biomass consumption for cross-effects, as described in Section I.3. Therefore, this parameter is monitored for all CPAs on an annual basis. As this is conservative relative to the methodological requirements, it is deemed acceptable.~~ ~~The total quantity of purified water (QPWy) shall be divided by HH_{size}, to determine $QPW_{PP,}$, which is used to adjust biomass consumption to account for cross-effects as described in Section I.3.~~

Data / Parameter	Baseline System (BS)
Unit	Fraction
Description	Fraction of population for which the baseline fuel being replaced is biomass.
Source of data	Household surveys
Value(s) applied	100% Based on survey conducted for pilot project.
Measurement methods and procedures	The baseline fuel will be recorded for all end-users that receive project technologies during the initial distribution. No sampling is required.
Monitoring frequency	Value is fixed during initial distribution for the CPA.
QA/QC procedures	Baseline fuel will be recorded at initial distribution, and then confirmed during first household visit.
Purpose of data	Calculation of baseline emissions
Additional comments	Emission reductions shall be discounted by the fraction of the population that does not use biomass.

~~Parameters used exclusively for III.AV~~

Data / Parameter	QPW_y
Unit	Litres
Description	Quantity of purified water in year y
Source of data	Household survey
Value(s) applied	Rwanda: 2,863 litres/year, assuming 1.45 litres/person/day[23] and 5.41 persons per household (see HH_{size} parameter)
Measurement methods and procedures	Self-reported surveys will be administered, according to the sampling plan discussed in section I.7.2. For this baseline value, the sample size for the survey conducted is determined as follows: The expected per capita drinking water consumption in Rwanda is expected to range between a lower bound of 0, and an upper bound of 5 liters per person per day (table 9 of reference)[24]. The mean consumption is estimated as the mean of this range, or 2.5 liters per person per day. The standard deviation of this mean is not provided in the reference, and therefore, referencing point 10 in EB 67, Annex 6, "Best Practice Examples Focusing on Sample Size and Reliability Calculations", the standard deviation is estimated as the range in values divided by 4. Therefore, the expected standard deviation is 5/4 = 1.25. Therefore: V = (SD/mean)^2 V = (1.25/2.5)^2 = 0.25 The sampling will be conducted on a per-country basis. The first program in Rwanda is estimated to serve 600,000 households. Therefore, N = 600,000. $n \geq (1.645^2 * N * V) / ((N-1) * 0.1^2 + 1.645^2 * V))$ $n \geq (1.645^2 * 600000 * 0.25) / ((600000-1) * 0.1^2 + 1.645^2 * 0.25)) = 67.65$ DelAgua Health conducted a baseline survey[25] of 803 households, of which 531 were valid, and determined that the water consumption is 1.45 litres per person per day with a standard deviation of 1.44. Since 531 > 67.65, this survey met the 10% precision requirements. The standard error of the mean is then calculated: SE = sqrt((1-f)*(s^2/n)) SE = sqrt((1-531/600000)*(1.44^2/531)) = 0.06246 Then the t-value is calculated using the TINV function in Microsoft Excel (TINV(0.10,sample size minus 1)), assuming the sample size of 531. t-value: 1.647733 Precision is estimated as t-value x standard error of the mean: 0.06246 x 1.647733 = 0.1029 Then as a ratio of this relative to the mean value is: .1029/1.45 = 0.07098 So the relative precision is 7.09%, within the required specification of 10%.
Monitoring frequency	Ex-ante (prior to CPA inclusion) Following CPA inclusion, monitored annually

QA/QC procedures	Please reference section I.7.2 for the detailed sampling plan
Purpose of data	Calculation of baseline emissions
Additional comments	As stated in AMS-III.AV, this value shall not exceed the equivalent of 5.5 litres/person/day. QPWy shall be divided by the total number of persons that are supplied with purified water (see monitored parameter HH_{size}), to determine $QPW_{PP,}$ which is used to adjust biomass consumption to account for cross-effects as described in Section I.3.

Data / Parameter	WQ (Water Quality Monitoring)
Unit	Fraction
Description	Fraction of water treatment units that are in compliance with the water quality requirements of the methodology.
Source of data	Lab testing or official notification
Value(s) applied	1.0 In the case of the LifeStraw® Family, the manufacturer guarantees compliance with EPA standards for microbiological contamination. As designed and produced, the LifeStraw® Family uses size exclusion to ensure that microbiological contamination is not present in treated water. As the filter clogs, the flowrate is reduced, so that a filter at its end-of-life cannot pass water that is untreated. Therefore, a value of 1.0 is used for ex-ante estimates
Measurement methods and procedures	Demonstrated based on laboratory testing or official notifications (for example notifications from the national authority on health) that the application of the project technology/equipment achieves compliance either with: (i) at a minimum the performance target as per "Evaluating household water treatment options: Health based targets and microbiological performance specifications" (WHO, 2011); or (ii) an applicable national standard or guideline
Monitoring frequency	Annual
QA/QC procedures	Monitoring will be conducted according to the sampling plan described in Section I.7.2.
Purpose of data	Calculation of baseline emissions
Additional comments	Annual emission reductions shall be discounted by water quality fraction. Parameter value will be considered 0 in case monitoring results are not available.

[23] DelAgua Health Pre-Pilot Follow up Survey, July 11, 2012

[24] P. Gleick, Basic Water Requirements for Human Activities: Meeting Basic Needs, Water International v. 21, pp. 83-92, 1996

[25] DelAgua Baseline Survey, June 14, 2012

~~Data / Parameter~~	~~SDW_{frac}~~
~~Unit~~	~~Fraction~~
~~Description~~	~~Proportion of CPA population served by a public distribution network of safe drinking water. The CPA total project area is defined by the project proponent to be households within a delineated geographical boundary within a country, minus those households that have running water within their households. Surveys will establish the proportion of households that have running water, and are therefore excluded from the total CPA project area.~~
~~Source of data~~	~~Government reports or surveys will be used to determine if there has been any expansion of government maintained safe drinking water distribution systems providing treated, piped water to households. Household level surveys will ask households if they have running water in their household. Households that reported in the affirmative will be excluded from the CER calculations.~~
~~Value(s) applied~~	~~0%~~
~~Measurement methods and procedures~~	~~If surveys are used, self-reported surveys will be administered in accordance with the sampling plan described in Section I.7.2~~
~~Monitoring frequency~~	~~This parameter will be determined prior to inclusion, and annually thereafter.~~
~~QA/QC procedures~~	~~If surveys are conducted, they will follow the sampling plan described in Section I.7.2.~~
~~Purpose of data~~	~~Calculation of baseline emissions~~
~~Additional comments~~	~~In case the SDW is made available through the public distribution network, no claim for emission reductions can be made for that proportion of the CPA area.~~

~~Parameters used exclusively for II.G~~

Data / Parameter	**$\eta_{new,i,j}$**
Data Unit	Fraction
Description	Efficiency of the device of each type i and batch j implemented as part of the project activity.
Source of data	Certification by the Centre for Research in Energy and Energy Conservation (CREEC) lab. CREEC is a certifying agent recognized by the Rwandan Standards Bureau (RSB).
Value(s) applied	44.9% with pot skirt[26] 40.9% without pot skirt[27]
Measurement methods and procedures	Efficiency shall be measured/estimated as per the following: 1. The efficiency of the project devices shall be based on certification by a national standards body or an appropriate certifying agent recognized by that body. 2. Alternatively, manufacturer specifications on efficiency based on water boiling test (WBT) may be used. The WBT shall be carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the WBT Protocol[28,29] or ISO 19867-1 listed by Clean Cooking Alliance (See https://www.cleancookingalliance.org/technology-and-fuels/testing/protocols.html)).

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[26] Certification report (based on certification by a national standards body or an appropriate certifying agent recognized by that body) provided to DOE

[27] Certification report (based on certification by a national standards body or an appropriate certifying agent recognized by that body) provided to DOE

[28] PP the first two phases of the stove tests: cold-start high-power phase and hot-start high-power phase (not including the simmer phase) for calculation of the high-power thermal efficiency.

[29] The guidance provided in the WBT protocol may be followed for calibration of testing equipment.

The sampling test of stoves by such certification bodies/agents or manufacturers shall be conducted following a 90/10 precision in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities".

3. However, the following simplified approach may be used, when the efficient cookstoves are produced by a manufacturer with a recognized management system in place (e.g. ISO certification) to ensure that the individual equipment produced do not vary beyond the range of acceptance limits (e.g. characteristics such as materials, critical dimensions):
    a. Conduct a sample test on three cookstoves with three tests conducted for each stove. The test can be carried out by project proponents by themselves or stove manufacturers;
    b. If the standard deviation of the nine test results indicated above is very small and 90/10 precision requirement is met (in this case, the value of the t-distribution for 90 per cent confidence shall be used instead of Z value), the efficiency determined is acceptable, otherwise more sample tests would be required until 90/10 precision is met.
4. For project activities that implement cookstoves with saucepan capacities both greater than 30 L as well as smaller than 30 L, the most conservative value among the results of efficiency tests conducted (i.e. the least efficiency determined) on cookstoves of sizes equal to or smaller than 30 L may be used for stoves that are larger than 30 L in lieu of actual testing of the efficiency of stoves that are above 30 L capacity. The simplified approach above may also be used to comply with eligibility requirements under paragraph 3 and can be used only if the following conditions are met:
    a. Stoves that can hold saucepans that are larger than 30 L are from the same manufacturer[30] and of similar design (e.g. with respect to construction materials including insulation material, placement of grate, cooking vessels and if applicable chimney) as compared to the stoves that are smaller than 30 L;
    b. Project proponents should demonstrate that comparable repair and maintenance practices are undertaken on all project stoves, irrespective of the size

~~Alternatively, manufacturer specifications on efficiency based on water boiling test (WBT) may be used. The sampling test of stoves by such certification bodies/agents or manufacturers shall be conducted following a 90/10 precision in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities", if the results are applied to small-scale CPAs. If the results will be applied to micro-scale CPAs, 95/10 confidence/precision shall be used.~~

~~However, the following simplified approach may be used, when the efficient cook-stoves are produced by a manufacturer with a good quality management system in place to ensure that the individual equipment produced do not vary beyond the range of acceptance limits (e.g. characteristics such as materials, critical dimensions):~~

~~Conduct a sample test on three cook stoves with three tests conducted for each stove;~~

~~For small scale CPAs, if the standard deviation of the nine test results indicated above is very small and 90/10 precision* requirement is met (in this case, the value of the t-distribution for 90 per cent confidence shall be used instead of Z value), the efficiency determined is acceptable, otherwise more sample tests would be required until 90/10 precision* is~~

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[30] For in-situ constructed stoves, show that the prefabricated components are sourced from the same supplier.

	~~met. Microscale CPAs shall follow the same guidance, but will apply 95/10 confidence precision instead of 90/10 confidence/precision.~~
Monitoring frequency	(i) Recorded at the time of commissioning/distribution; (ii) Adjusted for the loss of efficiency as paragraph 37 (of AMS-II.G) ~~Recorded at the time of commissioning/distribution~~ ~~The value shall be adjusted at the start of each operational year to account for loss of efficiency. See additional comments below.~~
QA/QC procedures	Please reference section I.7.2 for the detailed sampling plan
Purpose of data	Calculation of emission reductions
Additional comments	~~The loss in efficiency of the project devices i in each batch j due to aging shall be accounted during the monitoring period y according to one of the options below.~~ The CPA Implementer may choose any option below to account for the loss in efficiency; the option should be identified and fixed ex-ante in the CPA at the time of inclusion. 1. A default schedule of linear decrease in efficiency up to the terminal efficiency assumed as 20 per cent shall be applied through the life span of the project device. 2. Manufacturer of project devices shall confirm with technical justification based on certification by a national standards body or an appropriate certifying agent recognized by that body that no decrease in efficiency of project device is envisaged during the crediting period ; or 3. Determine the rate of efficiency drop for a representative sample of the first batch of project device i in year y and assume that same rate of loss in efficiency applies to all other batches. In other words, it may be assumed that the degradation of efficiency measured in a representative sample of the first batch of project devices i apply to all subsequent batches. The efficiency of the project devices in the first batch has to be monitored annually through representative samples and this rate of loss in efficiency may be applied correspondingly to all batches. 4. Determine the loss in efficiency annually from a representative sample of each batch and use the actual loss rate that is measured. If a pot-skirt is distributed with the project stove, the parameter will be calculated as a weighted average of the efficiency of a skirted stove and an unskirted stove. Surveys shall be conducted to determine the number of cooking events that occur with and without a pot skirt. These surveys shall be administered in accordance with the sampling plan outlined in section I.7.2 If the efficiency of a device falls below 20%, or the device operational lifetime exceeds the expected lifetime determined by the manufacturer, it shall be considered to have reached the end of its operational lifetime. Such stoves will be excluded from the project activity so that no credits are claimed Stoves that are not operational may be replaced, so that crediting can continue on the replacement stoves.

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Data / Parameter	Life Span
Data Unit	Number of Years
Description	The operating lifetime of the project device. The life span should be reported in cases where the PPs are opting to account the efficiency loss as paragraph ~~21a~~ 37 of of AMS-II.G..
Source of data	Manufacturer (certified by a national standards body or an appropriate certifying agent recognized by that body)~~Manufacturer specifications~~
Value(s) applied	5 years, based on manufacturer expectations, as communicated to DelAgua. This expectation will be certified by a national standards body prior to use in a CPA
Measurement methods and procedures	-
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution~~Value shall be fixed and recorded at the time of commissioning/distribution.~~
QA/QC procedures	-
Purpose of data	Calculation of emission reductions.
Additional comments	The manufacturer specifications state that the life span of the stove is 6-7 years. However, the PP conservatively set life span at 5 years. This parameter is not required if paragraph 37~~21a~~ of AMS-II.G is not being used to determine efficiency loss. If the life span of devices is less than the crediting period it shall be demonstrated that the devices shall be replaced after the life span has ended. In such cases, if it cannot be demonstrated that the project devices will be replaced with new devices, no emission reductions can be claimed beyond the life span of the project devices.

~~Data / Parameter~~	~~$NCV_{biomass}$~~
~~Data Unit~~	~~TJ/tonne~~
~~Description~~	~~Net calorific value of the non-renewable woody biomass, briquettes or charcoal used in project devices~~
~~Source of data~~	~~IPCC default value for wood fuel~~
~~Value(s) applied~~	~~IPCC default for wood fuel, 0.015 TJ/tonne, based on the gross weight of the wood that is 'air-dried' can be used if fuel used in project device is also woody biomass.~~ ~~If briquette or charcoal is used as project fuel NCV shall be measured annually.~~
~~Measurement methods and procedures~~	~~Default value specified in methodology if woody biomass is used in the device.~~ ~~Alternatively, NCV shall be measured if briquette or charcoal is used.~~
~~Monitoring frequency~~	~~Annually, if briquette or charcoal is used.~~
~~QA/QC procedures~~	~~-~~
~~Purpose of data~~	~~Calculation of emission reductions.~~
~~Additional comments~~	

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Data / Parameter	LEC_y
Data Unit	Tonnes/yr
Description	Leakage emissions from charcoal or briquette production, in year y
Source of data	Leakage estimates will be obtained by 3rd party survey, self-administered survey, default value or literature review.
Value(s) applied	0
Measurement methods and procedures	If surveys are utilized, they shall be conducted according to the sampling plan in section I.7.2
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	Calculation of leakage emissions
Additional comments	A default value of 0.030 t CH4/t charcoal may be used in accordance with "AMS-III.BG: Emission reduction through sustainable charcoal production and consumption". This parameter is only required if CPAs are switching from baseline devices using firewood to efficient project devices using charcoal, or switching from firewood to briquette.

Data / Parameter	$B_{new\text{-}KPT,,i,j,ee}$
Data Unit	Tonnest/year
Description	Annual quantity of woody biomass used in tonnes per project device of type *i* and batch *j*
Source of data	Sample Survey (KPT)
Value(s) applied	-
Measurement methods and procedures	Measured as per the KPT protocol. The KPT shall be carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the KPT Protocol listed by Clean Cooking Alliance (See https://www.cleancookingalliance.org/technology-and-fuels/testing/protocols.html)).; for the initial efficiency in the year of its commissioning. The KPT shall be carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the KPT procedures specified by the partnership for clean indoor air (PCIA) The days selected for measurement of fuel consumption shall take into account seasonal/weekly variations in fuel consumption, or else the data from the measurement campaign shall be extrapolated in order to take into account the seasonal pattern
Monitoring frequency	Annual monitoring of the quantity of woody biomass used in tonnes per project device of type *i* and batch *j*Annually
QA/QC procedures	-
Purpose of data	Calculation of emission reductions
Additional comments	This parameter is only monitored if By,savings,i,j,ee is calculated by kitchen performance test Where charcoal is used as the fuel by project devices, the quantity of woody biomass shall be determined by using a default wood to charcoal conversion factor of 6 kg of firewood (wet basis) per kg of charcoal (dry basis).

Data / Parameter	$B_{y=1,new,l,j,survey,}$~~ce~~
Data Unit	Tonnes~~t/year~~
Description	Quantity of woody biomass used by project devices in tonnes per device of type *i*~~Annual quantity of woody biomass used in tonnes per project device of type *i* and batch *j*~~
Source of data	Sample survey of end user or direct measurement at each end user locations~~Survey~~
Value(s) applied	-
Measurement methods and procedures	Determined in the first year of the introduction of the devices (e.g. during the first year of the crediting period, y=1) through measurement campaigns at representative households and/or sample survey. Please reference section I.7.2 for the detailed sampling plan for sampling procedure Sample surveys to estimate this parameter, that are solely based on questionnaires or interviews (i.e. that do not implement measurement campaigns) may only be used if the following conditions are satisfied: Pre-project devices have been completely decommissioned and only efficient project device(s) are exclusively used in the project households; If multiple devices are used in the project, it is possible from the results of the survey questions to clearly differentiate the quantity of woody biomass being used by each device. In other words, if more than one device, or another device that consumes woody biomass, are in use in project households, then the sample survey needs to distinguish the quantity of biomass used by the project device and the other devices that use biomass.
Monitoring frequency	First year of installation
QA/QC procedures	Please reference section I.7.2 for the detailed sampling plan
Purpose of data	Calculation of emission reductions
Additional comments	This parameter is only monitored if $B_{y,savings,i,j,}$~~ce~~ is calculated according to option 2 in section I.6.1 ~~Where charcoal is used as the fuel by project devices, the quantity of woody biomass shall be determined by using a default wood to charcoal conversion factor of 6 kg of firewood (wet basis) per kg of charcoal (dry basis).~~

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Data / Parameter	Date of commissioning of batch j
Data Unit	Date
Description	To establish the date of commissioning, the Project Participant may opt to group the devices in “batches” and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch.
Source of data	Internal records
Value(s) applied	
Measurement methods and procedures	Recorded during distribution of last device in batch
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution of the last project device in the batch
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comments	To be reported in the monitoring report ~~Relevant for cookstove technologies only (not water filters)~~

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Data / Parameter	Date of commissioning of project stove device i
Data Unit	Date
Description	Actual date of commissioning of the project device.
Source of data	Internal records
Value(s) applied	
Measurement methods and procedures	Recorded during distribution of each device
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comments	~~To be reported in the monitoring report~~

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Data / Parameter:	$N_{d,HH}$
Data unit:	Number
Description:	Number of project devices distributed per household
Source of data:	Internal records
Measurement procedures (if any):	-
Monitoring frequency:	Recorded at the time of commissioning/distribution of project devices
QA/QC procedures:	-
Any comment:	The results of ex post usage/monitoring survey should not be used to determine the value.

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I.7.2. Sampling plan

>>

The monitoring plan for this project is closely derived from the methodologies. A database for the project activity will be maintained by the CME. The monitoring plan shall consist of checking a representative sample of all appliances at least once every two years to ensure that they are still operating or are replaced by an equivalent in service appliance.

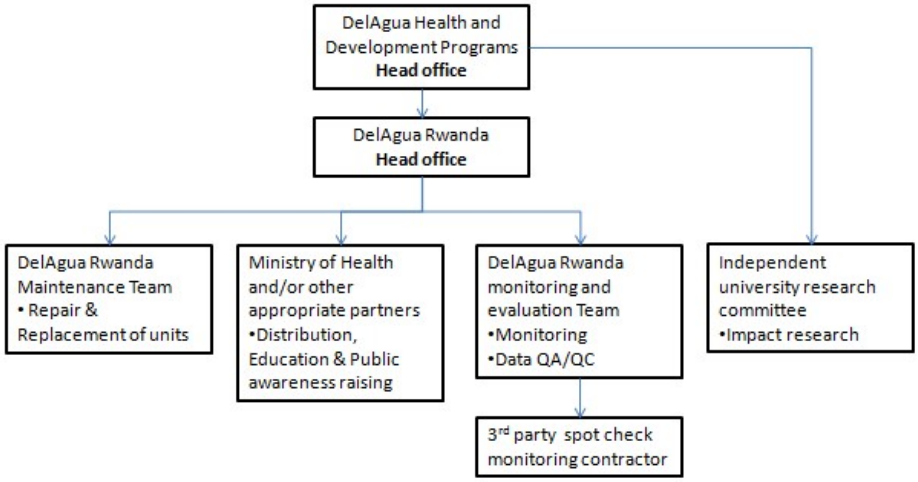
A project database will be populated during the distribution or sale of each initial ~~, filter or~~ cookstove issued, and will be updated based on subsequent replacements, as well as detailed data on the representative sample surveyed for monitoring purposes. The database will be accessible to the project proponent, appropriate partners, and the verification DOE. The database will include at minimum the following:

- Unique CPA identification number
- Installation date
- Family name
- Contact details of user (when available)
- Socioeconomic level (if households or communities are targeted), or type of establishment (if SMEs are targeted)
- Baseline cooking fuel source
- Baseline stove type
- Date of replacement of ~~filter or~~ cook stove units
- Monitored parameters

The database will be available to select a random, representative sample from for monitoring and verification purposes. This sample set will be integrated into the database to include additional monitoring parameters as required or as appropriate.

~~The monitoring survey will establish, based on a sample, the time to end of life of the filters distributed, based on the rated capacity divided by the average number of people in the household, divided by the average volume of water consumed per person per day. In this way, the PP will establish the need to replace filter units in CPA regions. The monitoring survey also includes establishing usage rates and performance of the filter units. Likewise,~~ ~~m~~Monitoring surveys will include examination of the cookstove installations and verification that they are in an operational condition. Units that have been damaged or aged beyond expected operational condition will be replaced. Therefore, should some ~~filter or~~ stove units not be replaced appropriately, this will be accounted for and appropriately deducted from emission reduction claims.

The planned organization structure of the CME is detailed below:



1. Responsibility

The main roles and responsibilities of the parties involved is as described below:

CME.- PoA Managing Entity

- Acts as the PoA managing entity
- Development of small-scale Programme of Activities Design Document (SSC-PoA-DD)
- Registration of the SSC-PoA with UNFCCC CDM Executive Board
- Inclusion of SSC-CPAs to the SSC-PoA upon satisfaction of the eligibility criteria stipulated in the SSC-PoA-DD
- Authorized entity for any official communication with the CDM-EB, DOE and host DNA for the PoA
- Manage and archive the database for all CPAs.
- Training of CPA Implementers
- QA/QC of database during distribution & data collection
- Maintain local repair/replacement facilities

CPA Implementer

- Education and public awareness raising during initial distribution as well as periodic education campaigns.
- Data collection during distribution & delivery of data to CME database
- QA/QC of data collection
- Conduct ongoing monitoring, as required to ascertain monitored parameters.

Note that the CME will be a CPA Implementer and/or contract with other entities to implement CPAs.

2. Quality Assurance and Quality Control

Spot checks of the database are conducted during the baseline surveys, distribution, and monitoring activities.

Distributors are trained in the proper installation, use, and maintenance of the devices, and are provided with training sufficient to introduce recipient households to the proper operation and maintenance of the devices, as well as contact information for the CME. Supervisors receive similar training, as well as supervisory training in monitoring of distributor's activities. Supervisors are responsible for approximately 10 distributors. During the campaign, DelAgua staff will spot-check distributor quality, by revisiting 2 households per distributor, to verify that the ~~filter and/or~~ stoves are in place, and that the recipient can show proper operation of the units. The results of this spot check are recorded electronically and compared against the initial distribution logs.

The data collected in the database is verified and controlled in the following way:

1. Surveys are conducted by staff trained by the CME.
2. Supervisors are separately trained by the CME to spot-check surveyor results.
3. All ex-ante and monitored data parameters are collected on smart-phone based surveys and are uniform across all surveyors for any given survey activity.
4. Unknown to the surveyors, the database analysis includes verification of "valid" surveys including by a.) verifying household consent is received and b.) that the survey duration, as recorded by Internet time, is no shorter or longer than a reasonable value. For example, the baseline surveys for Rwanda were validated against a minimum of 20 minutes and a maximum of 120 minutes.
5. Data validation is conducted on the database to ensure that values are numerically consistent, i.e. multiple choice values add up to 100% of respondents.

3. Training and maintenance procedures:

The CME shall be responsible for training any contractors used during distribution, education and monitoring activities. The CME will ensure training of all on-site staff with respect to adherence to the Monitoring Plan of the project activity. Records of the training will be kept.

Internal audit of all the records of the distribution, monitoring and education activities will be carried out once a year. During these audits all the data and parameters that need to be monitored as per the monitoring plan will be checked and shortcomings if any will be reported and addresses.

4. Calculation of emission reductions:

Emission reductions will be calculated using the results of the most recent survey data. The surveys and tests will provide updated values for water and wood usage factors, always specific to a CPA. The updated parameters adjust all emission reduction results for the year monitored.

5. Sampling Plan:

The sampling plan for the monitored parameters is elaborated below, according to the requirements of the "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities". In addition to monitoring CPA parameters, this sampling plan shall be used by the DOE during verification.

The following parameters identified in section I.7.1 shall apply this sampling plan:

- **The loss in efficiency of the project device ($n_{new,i,j}$)**
- μ_y (if the user of data logger is not practical)
- $B_{y=1,new,l,j,survey}$ (if applicable)
- $B_{new-KPT,i,j}$ (if applicable)
-

Sampling Design:

a. Objectives and Reliability Requirement

The objective for each parameter is defined in the tables presented in section I.7.1 under "Data / Parameter". If sampling plans are elaborated for each CPA individually, the results

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will meet 90/10 confidence/precision for small-scale CPAs, or 95/10 confidence/precision for CPAs solely composed of microscale CDM units. If a sampling plan will cover more than one CPA, then results for each parameter shall meet 95/10 confidence/precision.

b. Target Population & Sampling Frame

The target population is the end-users who receive project technologies under a CPA within the PoA that share the following characteristics:

- Region (country)
- ~~Combination of project technology. Possible combinations include:~~
  - ~~1. Stove only~~
  - ~~2. Filter only~~
  - ~~3. Stove and filter~~
- Model of project technology
- Operational Lifetime – technologies with similar operational lifetimes are defined as those distributed up to 12-months (or less) after the first distribution date in the sampling frame. Shorter periods than 12-months may also be used.
- Target group – Target group shall be separated into Household and SMEs.
  1. Households shall be further separated by distribution type (free distribution, retail sale), or socioeconomic level.
  2. SMEs shall be further separated into type of establishment, such as restaurant, school, etc.

The sampling frame is the portion of the PoA database that share the above characteristics.

c. Sampling Method

Simple random sampling will be applied to each sampling frame for ongoing monitoring.

d. Sample Size

In accordance with the *Standard for sampling and surveys for CDM project activities and programme of activities*, the sample size will be chosen to meet the required reliability (90/10 confidence/precision if the sampling plan covers a single small-scale CPA, or 95/10 confidence/precision for single CPAs solely composed of microscale CDM units, or 95/10 confidence/precision if the sampling plan covers a group of CPAs. Simple random sampling is used to determine the proportional and/or mean value parameters of interest. Sample size is in part driven by the expected value of the parameter, which is determined using the project participants' or the coordinating/managing entity's knowledge and experience. ~~The expected value of the parameter is indicated in section I.7.1 "Value(s) applied".~~ Expected variance (or standard deviation) for that measure in the sample, based on the results from similar studies including other similar CDM project activities, previous monitoring periods, pilot studies, or from the project planner's own knowledge of the data.

The equations used to determine the required sample size for simple random sampling are:

Sample size

$$n \geq (1.645^2 * N * V) / ((N-1) * 0.1^2 + 1.645^2 * V))$$

Where if the parameter of interest is a proportional value:

$$V = (p * (1 - p)) / p^2$$

$$V = (SD/mean)^2$$

And if the parameter of interest is a mean value:

n	Sample size
N	Total number of households (640,000)

p	Our expected proportional or mean value
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

In cases where survey results indicate that 90/10 (or 95/10) precision is not achieved, the lower bound of a 90% confidence interval of the parameter value may be chosen as an alternative to repeating the survey efforts to achieve a 90/10 (or 95/10) precision.

If the sample size calculation returns a value of less than 30 samples, a minimum sample size of 30 shall be chosen when the parameter of interest is a proportion. If the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t distribution shall be used if the resulting sample size is less than 30.

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~~The simple random sampling process is shown below applied to determining the household size parameter in Rwanda.~~

~~The expected mean household size in Rwanda is 4.5[31]. The standard deviation of this mean is not provided in the reference, and therefore, the standard deviation is estimated as the range in values divided by 4, in accordance with point 10 in EB 67, Annex 6, "Best Practice Examples Focusing on Sample Size and Reliability Calculations",. A conservative upper bound range is estimated as 10, as the project proponent will treat households greater than 11 people as separate households that will receive more than one device, and the minimum household size is 1. Therefore, the expected standard deviation is 10/4 = 2.5.~~

~~Therefore:~~

~~V = (SD/mean)^2~~
~~V = (2.5/4.5)^2 = 0.308642~~

~~The sampling will be conducted on a per-country basis. The first program in Rwanda is estimated to serve 600,000 households. Therefore, N = 600,000.~~

~~$n \geq (1.645^2 * N * V) / ((N-1) * 0.1^2 + 1.645^2 * V))$~~

~~$n \geq (1.645^2 * 600000 * 0.308642) / ((600000-1) * 0.1^2 + 1.645^2 * 0.308642)) = 83.5$~~

e. Sampling Frame

The sampling frame is the portion of the population that shares the key characteristics described above in section b, and is selected from the PoA level database. Samples will be selected using a random number generator. Records of the sampling frame will be maintained for a period of 2 years after the lifetime of the PoA.

The following parameters shall be sampled:

Data:

f. Field Measurements

g. Parameters that are measured via sampling are identified in section I.7.1 above. All sampled parameters are measured via in-person survey. Surveyed parameters are identified in Section I.7.1, as well as frequency. Unless otherwise identified in Section I.7.1, the measurement method shall be self-reported surveys.

[31] ~~Republic of Rwanda Demographic and Health Survey, 2010 – published December 2011, ICF International (page 12)~~

h. QA/QC
See QA/QC procedures and training procedures outlined above.
Data will be downloaded from the PoA database, and assessed for outliers. Outliers include datapoints that are more than 1.5 times the inner quartile range. Outliers will be removed from the dataset, unless a root cause analysis is conducted and the datapoint can be justified.
i. Analysis
j. Once outliers have been removed, the mean/proportion value will be calculated, and it will be determined if the results meet the required reliability. If they do not, additional surveys will be conducted until the required reliability is achieved. Once all results meet the required reliability, they will be used to calculate emission reductions, as outlined in section I.6.1.

Implementation
a. Implementation Plan
All personnel conducting surveys will receive the training outlined above. Records of all trainings will be kept for 2 years beyond the lifetime of the PoA.
On-going monitoring shall be conducted for each parameter according to the frequency identified above.

I.7.3. Other elements of monitoring plan

>>
Not applicable.

SECTION J. Crediting period type and duration

>>
Crediting periods shall be 7 years, renewable twice, for a potential total period of 21 years.

SECTION K. Eligibility criteria for inclusion of CPAs

>>

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
1	Geographical Boundary	Each CPA will be referenced by a unique host government recognized boundary (such as districts, sectors, cells, villages, etc) within Rwanda. Reference to UN LDC List.	The boundary will be stated in the CPA DD and checked by the DOE. Rwanda is an LDC[32].
2	Avoid Double Counting of CPAs	All CPA Implementers shall sign a declaration confirming that emission reductions from the ICS distributed under the CPA are assigned to the PoA.~~All CPAs will be owned/operated/managed by the CME, ensuring that the operator is aware of and agrees that the CPA is included in the PoA and that all emission reduction benefits are exclusively assigned to this PoA.~~	Executed attestation from each CPA Implementer ~~Statement by CPA Implementer in each CPA-DD.~~

[32] https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

3	Avoid Double Counting of Technology	Each technology distributed by a CPA will contain a unique identification number	Unique barcodes attached to each technology will be traceable through the CME database and will identify ~~which measure, CPA, and POA it is attached to, and the date of installation~~the location of the household. All project participants shall sign an attestation stating that all emission reductions from the ICS distributed under any CPA are exclusively assigned to the PoA
4	Performance Specification	All technologies distributed shall receive approval from the host country government, if required, and will comply with ~~criterion #12 (for water filters) and/or~~ criterion #~~21~~13~~(for cookstoves)~~.	Approval letter from appropriate government agency, if necessary.
5	Start Date	Each CPA must confirm that its start date is not prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation. The date of webhosting of the CDM-PoA-DD is no later than August 2, 2012.	Section C.1 of the CPA-DD shall contain a statement that no technologies were distributed prior to the commencement of validation for the PoA.
6	Additionality – Target Group	End-users receiving project technologies are households or communities or Small and Medium Enterprises (SMEs). ~~CPA shall define the metric for determining the socio-economic status of the end-user, if HH or communities are targeted, or will define the type of SME targeted.~~	~~Section A.1 of the CPA-DD shall provide the following:~~ ~~– reference to national or international standards for determination of socio-economic status, if HH or community is targeted.~~ ~~– statement as to type of establishments targeted, if SMEs are targeted.~~ Manufacturers specifications or literature demonstrating the target group for the technology, will be provided to support the statement in section A.3.

7	LSC	An LSC must be conducted that is appropriate for the region and target group of the CPA, and that meets host country and CDM requirements.	LSC report Unless otherwise required by the host country, a CPA may reference an LSC from a previous CPA, if the LSC is from the same region and includes the target group.
8	EIA	Each CPA must reference an Environmental Impact Assessment approval that is appropriate for the region and technology, or cite relevant regulations that exempts the project proponent from conducting an EIA.	EIA approval or waiver, or relevant national regulation demonstrating that an EIA is not required.] Unless otherwise required by the host country, a CPA may reference an EIA received from a previous CPA, if the EIA is in the same region and utilizes the same technology.
9	ODA	The CME shall confirm that there is no public funding from Annex I parties. If funding is received from an Annex I party, the donor shall provide confirmation that this funding is not a diversion of official development assistance (ODA).	Statement by CME in CPA-DD that there is no public funding from an Annex I party, or confirmation from Annex I donor that funding is not a diversion of ODA.
10	Distribution Method	Project technologies are directly distributed to end-users	The CPA-DD specifies the distribution method in section A.1.
11	Sampling Requirements	Each CPA must follow the sampling guidelines as described in section I.7.2.	Monitoring plan.
~~Criteria specific to AMS-III.AV~~			
~~12~~	~~AMS-III.AV Applicability Condition~~	~~Zero energy water purifiers are distributed that achieve water quality that meets the "protective" performance target specified by WHO (2011).~~	~~Third party evaluation of filter technology and/or manufacturer attestation and/or certification by host government authority.~~
~~13~~	~~AMS-III.AV Applicability Condition~~	~~Project technologies are point-of-use of point-of-entry treatment systems.~~	~~Manufacturer specifications or product information sheets.~~

14	AMS-III.AV Applicability Condition	Prior to implementation of the project activity, a public distribution network of safe drinking water does not exist within the CPA region, and any SDW is produced by consumers using POU or POE water purifiers. The CPA total project area is defined by the project proponent to be households within a delineated geographical boundary within a country, minus those households that have running water within their households. Surveys will establish the proportion of households that have running water, and are therefore excluded from the total CPA project area.	Government reports and/or surveys will be provided, demonstrating that a public distribution network of safe drinking water does not exist in the CPA region.

15	AMS-III.AV Applicability Condition	In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there must be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.	3. Each water filter that is distributed is logged in an electronic database that records the time and date of distribution, the name of the recipient, the number of people in their family, the location of the house by village, district and/or GPS coordinates, and a picture of each recipient. 4. Each distribution of the water filter will be accompanied by an education campaign, describing how the unit is used, maintained, and how to identify if a repair or replacement is needed, and how to obtain such repair/replacement. 5. When a repair or replacement is needed, the water filter recipient will bring their old filter to a local repair/replacement facility managed by DelAgua. In order to receive a new or repaired filter, the recipient must provide their old unit. 6. A new or repaired filter is issued to the recipient, and their contact information and date of re-issuance is recorded in the same electronic database. The old filter is either repaired, recycled, or disposed of safely, such that it will not be burned or pollute locally.

16	AMS-III.AV Applicability Condition	At the beginning of each crediting period, it will be assessed whether the CPA will be (Case 1) implemented in rural areas of countries with proportion of rural population using an improved drinking water source equal to or less than 60% confirmed by option a) ii: Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university; or (Case 2) implemented in areas not included in Case 1.	1. The definition of an improved drinking water source shall be defined based on relevant government standards, or the JMP definition. Each CPA shall reference official data such as publicly available statistical data from a government agency, or an independently commissioned study by an international organization or university, or a survey commissioned by the CME. The results must meet 90/10 confidence/precision if for a small-scale CPA, or 95/10 for micro-scale CPAs.
17	SSC Limit	CPAs, consisting solely of microscale units, as defined by paragraph 124(m) of CDM PS PoA Version 2, can have aggregate energy savings below, equal to, or above the Type II threshold without penalty. Alternatively, a CPA shall demonstrate that it will remain under the Type III SSC threshold of 60,000 tCO_2e per year.	Emission reduction estimates following the calculations described in section I.6.3 of the PoA-DD.
18	Debundling Check	CPAs consisting solely of microscale units, as defined by paragraph 124(m) of CDM PS PoA Version, are exempt from the debundling check. Other CPAs will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.	Calculation using debundling equations provided below.
19	Additionality – Size Threshold	Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds)	Ex-ante estimates shall be provided following the procedure outline in section I.6.1 of the PoA-DD, with parameter values that are appropriate for the CPA region.
Criteria specific to AMS-II.G			

~~20~~12	Applicability Condition – AMS-II.G	Appliances displace use of non-renewable biomass.	1. Reference to surveys or government statistics showing that biomass is consumed in the baseline. 2. f_{NRB} value shows that biomass consumption is considered non-renewable.
13~~2~~1	Applicability Condition – AMS-II.G	Project technologies include single pot or multi pot portable or in-situ cook stoves with specified thermal efficiency of at least 20%.	Third party reports or manufacturer specifications.
~~22~~14	Applicability Condition – AMS-II.G	NRB has been used since 31 December 1989.	Reference to 3rd party literature demonstrating that NRB has been used since 31 December 1989.
~~23~~15	SSC Limit	CPAs consisting solely of microscale units, as defined by paragraph 124(m) of CDM PS PoA Version 2, can have aggregate energy savings below, equal to, or above the Type II threshold without penalty. Alternatively, a CPA shall demonstrate that it will remain under the Type II SSC energy savings threshold of 180 GWh per year.	If necessary, manufacturing specifications, demonstrating product efficiency, and ex-ante emissions reduction calculations according to the calculations described in section I.6.3 of the PoA-DD.
~~24~~16	Debundling Check	CPAs consisting solely of microscale units, as defined by paragraph 124(m) of CDM PS PoA Version, are exempt from the debundling check. Other CPAs will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.	If necessary, manufacturing specifications, demonstrating product efficiency improvement, and ex-ante debundling calculations following the procedure described in Section I.7.3 of the PoA-DD

25~~1~~7	Additionality ~~– Size Threshold~~	A microscale CPA is additional if it is implemented within Rwanda and the ICS does not exceed 60 GWhth energy savings per year in accordance with paragraph 12 (a) of Tool 19; version 09. Small-scale CPAs shall demonstrate additionality according to paragraph 11 in Tool 21. ~~Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds)~~	Ex-ante estimates shall be provided following the procedure outline in section I.6.1 of the PoA-DD, with parameter values that are appropriate for the CPA region.
26~~1~~8	Technology	The expected life span of each type of project device shall be stated in the CPA-DD	The expected life span shall be stated ~~Section 5.1 of the CPA-DD, based on statement from manufacturer. The actual lifespan shall be determined by monitoring efficiency. As stated in parameter $\eta_{new,i,j}$;~~in (section I.7.1.~~), if the efficiency of the device drops below 20%, the stoves are considered to have reached the end of their operational lifetime and will be removed from the project (so that no emission reductions will be claimed from stoves that are not operational). Stoves that are not operational may be replaced, so that crediting can continue.~~
~~27~~	~~Methodological Requirement – AMS-II.G~~	~~If CPAs involve a switch from baseline device using firewood to efficient project device using charcoal or switching from firewood to efficient project device using briquette shall take into account the leakage effects related to the charcoal or briquette production.~~	~~If applicable, CPAs shall describe how leakage effects from charcoal or briquette production are quantified. A default value of 0.030 t CH4/t charcoal may be used in accordance with AMS-III.G, as described in parameter LEC_y in section I.7.1.~~
~~20~~	~~Methodological Requirement – AMS-II.G~~	~~If the project device requires a specific fuel for this device (e.g. briquettes, pellets, woodchips), the consumption of the fuel should be monitored during the crediting period.~~	~~If applicable, the CPA-DD monitoring plan shall use Option 2 to measure $B_{y,savings,i,j}$.~~

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

Coordinating/managing entity and/or project participants	☒ Coordinating/managing entity ☒ Project participant
Organization name	DelAgua Health Rwanda Limited
Country	Rwanda
Address	KG 33 Avenue, Plot 1618, ADARWA Building Bloc I , 2nd floor Gisozi, Gasabo, Kigali, Rwanda
Telephone	+1 971-235-7835
Fax	
E-mail	Kyle.silon@delagua.org
Website	www.delagua.org
Contact person	Kyle Silon

Appendix 2. Affirmation regarding public funding

N/A

Appendix 3. Applicability of methodologies and standardized baselines

N/A

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

N/A

Appendix 5. Further background information on monitoring plan

N/A

Appendix 6. Summary report of comments received from local stakeholders

N/A

Appendix 7. Summary of post-registration changes

Version 3.0 includes several permanent post-registration changes. First, version 3.0 of the PoA-DD includes an upgrade from AMS-II.G v05 to AMS-II.G v07, which allows for a simplification of the monitoring plan. A combination of a collapse in CER sale prices and increasing implementation costs has led to cashflow crises. This simplification will reduce operating costs, and is necessary in order for DelAgua to continue operating CPAs under this PoA. Prior to 2014, DelAgua received significant investments from an asset management company, and these investments were used to operate our project for two years. During these two years, the project has achieved several key milestones, including:

- Distribution of filters and cookstoves to over 100,000 Ubudehe 1&2 households (Rwanda's Ubedehe system classifies households according to socioeconomic status; Ubudehe 1& 2 are considered the least fortunate).
- Two successful CDM verifications, confirming the environmental impact of our project.
- DelAgua sponsored the largest and most rigorous health study ever conducted in the environmental health field. The study was conducted by leading health impact evaluation experts, including the London School of Hygiene and Tropical Medicine, Emory University, Oregon Health Science University, and Portland State University. The study found that our Phase 1 distribution (which included 2500 households) reduced diarrhoea in children under 5 by 46%, reduced cookstove emission exposure among children by 27%, and reduced household air pollution for families cooking outdoors by 73%. If these same results are sustained in Phase 2 (which included 100,000 households), the programme is expected to save more than 30 children's lives a year, and avert over 2,500 disability-adjusted life-years (DALYs) annually.

Delagua is now dependent on carbon revenues to continue operation. Yet the purchase price of CERs has fallen to very low levels and remains there, and DelAgua's costs of operation have continued to increase with inflation in Rwanda. This puts an unsustainable strain on our cash flow. The simplifications provided by AMS-II.G, v07, which are available to any other new project in Rwanda, are extremely helpful in keeping DelAgua's project cashflow positive, so that our project can continue to reduce emissions and deliver health improvements to the least fortunate in Rwanda.

The specific simplifications that are advantageous for our project are as follows:

1. A simplified approach to determination of project stove efficiency can be applied if the manufacturer has a good quality management system. This revision reduces the cost associated with conducting WBTs, easing monitoring implementation.
2. WBTs that are conducted by a national standards body, or an appropriate certifying agent recognized by that body, do not have to meet reliability requirements. This reduces the cost of obtaining certification from a national standards body, while ensuring that a credible entity certifies stove performance.
3. Version 7 allows B_{old} to be set by a default value, eliminating the need for costly surveys and time-intensive literature reviews (as required under version 5). DelAgua conducted an extensive review of woodfuel consumption estimates in Rwanda, including 3rd-party literature and values used by other carbon projects in Rwanda. The results of our research are summarized below:

Reference	Bold/per person
1	377.6

(DelAgua Value)	
2	409
3	529.2
4	616
5	640
6	640
7	670
8	700
Average	572.725
Median	628

While the default value for Bold is an increase compared to our current value, it is significantly less than the median of available Bold values. Therefore, the conservativeness of our emission reduction estimates is maintained.

4. Version 7 allows for the use of data loggers to log stove operation. The CME has been testing the use of data loggers on both project stoves, and also on baseline stoves (including 3-stone fires). We believe we can secure additional funding to expand the use of data loggers under our project, resulting in a net reduction in our monitoring costs, while promoting more accurate data, as compared to self-reported surveys of end-users that we currently conduct.

Further, the CME has accounted for all revisions to the methodology. As described in the Document Information section of AMS-II.G, several changes have been made to the methodology since version 5 in the approved PoA-DD. These changes, as well as where they are accounted for in this post-registration change, are below:

- Revision to simplify baseline emission equation (implemented in v7)
    1. The emission reduction calculations in section B.6.1 have been revised to follow the simplified equations.
- Revision to determination of efficiency (implemented in v7)
    1. The decline in efficiency as required in version 7 is accounted for in parameter $\eta_{new,i,ajy}$ in section D.7.1
- Revision to monitoring parameters (implemented in v7)
    1. The following parameters have been added to/revised in the monitoring plan:
        1. η_{wb} ; η_{old} has been moved to a monitored parameter. In addition, the parameter is based on a weighted average if more than one type of device is
        2. $NCV_{biomass}$ has been moved to a monitored parameter, in case charcoal or briquettes are used.
        3. Bold has been revised to account for the default baseline woodfuel consumption value.
        4. $\mu_{y,i,j}$ has been revised to allow for the use of data loggers, and to clarify that the parameter is discounted by continued usage of the baseline stove.
            1. Accordingly, the parameter U (fraction of cooking that continues to be done on baseline stoves) was removed from the emission reduction calculations, and the parameter box was removed from the monitoring plan.
        5. $N_{y,i,j}$ was clarified to be discounted by the number of devices that are non-operating.

1. The Operational Check (OCy,i) parameter was removed from the emission reduction calculations, and the parameter box was removed from the monitoring plan.

6. η_{new} was revised to account for the updated guidelines on measuring efficiency decline, and the simplified approach to determining thermal efficiency in project devices.
7. Leakage emissions from charcoal or briquette production was added as a monitored parameter for CPAs that involve switching from baseline devices using firewood to project devices using charcoal or briquette
8. $B_{new\text{-}KPT,,i,j}$ and $B_{y=1,new,l,j,survey\text{-}ee}$ were added a monitored parameter, if Bold is calculated according to option 1 in section B.6.1.
9. The Date of commissioning of batch j and the Date of commissioning of project stove device l were added as monitored parameters in section B.6.1
10. The LifeSpan of the project device as added as a monitored parameter. According to AMS-II.G v07, this parameter must be fixed at the time of commissioning/distribution. All CPAs included after this PRC (under PoA version 3.0) follow this requirement. However, this is not possible for CPAs that were previously included under PoA version 2.4 and subsequently updated to version 3.0 during this PRC, as stoves have already been distributed. Therefore, these CPAs shall fix/record this parameter prior to the first verification under PoA version 3.0.

Second, the calculation of emission reductions from water filters has been revised so that the parameters match with the updated AMS-II.G. The calculation of emission reductions for both water filters and cookstoves under the previous version of the PoA included the parameters Operational Check (the percent of technologies that were operational) and Operational Fraction (the fraction of the monitoring period that technologies have been in operation). In the upgrade to AMS-II.G v07, these parameters are incorporated into $N_{y,i,j}$ (which is the number of technologies distributed discounted by the number of devices that are non-operating), and $\mu_{y,i,j}$ (the number of days of utilization of the project device *i* and batch *j* during the year *y*). To maintain consistency in parameter definitions, Operational Check and Operational Fraction parameters were replaced by $N_{y,i,j}$ and $\mu_{y,i,j}$ in the filter calculations as well.

Third, a clarification was added to the parameter Xboil, to state the value for Case 1 and Case 2 CPAs (version 2.4 only stated the value for Case 2). As described in the AMS-II.V, Xboil is a discount applied to Case 2 CPAs, and is not considered for Case 1 CPAs. Therefore, its value is 100% for Case 1 CPAs.

Finally, we have clarified the application of emission reduction calculations and parameter values to account for cross-effects when some project households have only stoves and other project households have stoves and filters. These are based on lessons learned from two years of operations, and will streamline future verifications.

DelAgua aspires to continue to bring life-changing household products to the poorest people in Rwanda, and these revisions will support our efforts to meet that goal. .

Version 4.4 of the PoA-DD includes the following permanent post-registration changes:

1. Changes to the registered monitoring plan
    - Correction to water quality monitoring & update to parameter

The previous version of the PoA allowed water quality to be confirmed through manufacturer certificates of compliance. However, AMS-III.AV requires water quality to be monitored on a sample basis via lab testing. The water quality parameter has therefore been revised to require annual monitoring by lab testing or official notification. This will ensure that water filters are delivering safe drinking water, and discount emission reductions accordingly if not.
Further, the parameter value will be considered 0 in case monitoring results are not available Given the cost of monitoring water quality, and depressed credit prices, the CME may elect set the parameter value to 0 to avoid the expense

- Update to Equation 2 (emission reductions from water filters)
  Following on the correction to water quality monitoring discussed above, the calculation of emission reductions from water filters is discounted by WQ. This ensures a conservative estimate, as emission reductions are only claimed on the fraction of water filters that deliver safe drinking water.
- Change to sampling plan
  The previous version of the sampling plan required the sampling frame to be differentiated by socioeconomic level, if the target group is a household. It was anticipated that household Ubedehe level could be used to this end. However, the ubedehe list is only updated every 4 years. Household wealth shifts significantly between list updates, and therefore the ubedehe level is an imperfect means for grouping households by wealth. Therefore, the sampling frame has been updated to differentiate households by either the ubedehe level, or the means by which households acquired the stove (free distribution, or retail sales).
  Further, the sampling plan previously stated the sampling frame include technologies with the same Installation year. This has been clarified to include technologies of similar operational lifetimes.
  Further, the sampling plan previously stated that “The target population is the end-users who receive project technologies under a CPA within the PoA that share the following characteristics …. -Socioeconomic level (if target group is HH), or type of establishment, such as restaurant, school, etc (if target group is SME)”. This has been revised to clarify that
  Further, the sampling design has updated to define confidence/precision requirements for CPAs consisting solely of microscale CDM units.
- Update to stove efficiency parameter
  A comment was added to the parameter box in section I.7.1, stating that the efficiency of the project devices in the first batch must be monitored annually through representative samples and this rate of loss can be applied to subsequent batches. This corresponds to the monitoring procedures outlined in AMS-II.G, and was added to clarify that it is permissible in this PoA. It does not impact emission reductions.
- Update to Life Span parameter
  According to AMS-II.G, the life span should be reported in cases where the efficiency loss is determined using as per paragraph 21 (a). This parameter has therefore been updated to be required only if paragraph 21a is applicable in a CPA. This change follows the methodology and has no impact on emission reductions.Value shall be fixed and recorded at the time of commissioning/distribution.

2. Changes to programme or project design
    - Change to installed/rated capacity
      The stove specifications included in the previous version of the PoA-DD were for the version of the stove utilized in the pilot project. However, this was discovered only recently. Delagua reached out to the Rwanda Standards Board (RSB) in 2018, requesting certification of the project stove lifetime. In response to this request, RSB informed DelAgua that it was still not able to conduct this testing, but that we should talk to the CREEEC lab because it was recently recognized testing agent (prior to this notification, Rwanda did not have a national standards body or certifying agent for woodstoves).
      At the same time, DelAgua was looking for alternatives to conducting in-house stove efficiency monitoring; our testing during the first two years of stove lifetime showed degradation levels that we suspected were excessive and we wanted a third-party to assess stove efficiency. DelAgua therefore requested that CREEC certify the stove lifetime and conduct efficiency tests for us. While CREEC was not able to conduct the stove lifetime assessment, they were able to complete the efficiency tests. DelAgua submitted project stoves that had been operational for 4 years to CREEC for testing in August 2018, and was made aware of the change in efficiency upon completion of the CREEC report the same month.
      The stove efficiency in the PoA-DD was updated following DOE comments in August, 2019, from the initial value of 38.1% to 44.9% (with skirt) and 40.9% as specified in updated manufacturers specifications.
    - Change to eligibility criterion #17 & 23:
      This criterion previously required that all CPAs have aggregate energy savings below the relevant small-scale threshold (180 GWh thermal forType II projects, and 60,000 tCO_2 for Type III projects. However, recent guidance from the EB[33] allows registered PoAs to submit a PRC to eliminate this threshold, so that CPAs can have aggregate energy savings below, equal to, or above the relevant threshold without penalty. This change streamlines management of the PoA without impacting emission reductions at the PoA-level.
      Eligibility criterion # 18 &24: Debundling check exemption has also been added. This change streamlines management of the PoA without impacting emission reductions at the PoA-level.
3. Corrections
    - Change to stove name
      The stove distributed was previously called the EcoZoom Dura, which is a reference to a previous partner on the project. The CME is working with new project partners, and so the stove name is being changed to avoid confusion. The stove manufacturer has confirmed that this is a cosmetic change and will not affect stove performance. This change was confirmed by the manufacturer on July 24, 2019, and will be applied to all stove shipments confirmed after this date. This change has no impact on emission reduction calculations.
    - Minor updates have been made to the PoA-DD to comply with the updated PoA-DD template (version 09.0), including:

[33] Paragraph 124(m) of CDM PS PoA Version 2

i. A discussion of how the PoA encourages sustainable development (in section A.1)
ii. The discussion of the baseline scenario has been moved to section H.4.
iii. Section A.1 was updated to include a discussion of how the PoA contributes to the sustainable development of the host Party
iv. Updates to section references in the CPA-DD, to comply with the current version of the CPA-DD template (version 09)

Version 5.3 of the PoA-DD, submitted as part of the renewal of the PoA period, includes the following post-registration change to programme design:

- AMS-III.AV has been removed from the PoA. Accordingly, consideration of cross-effects between AMS-III.AV and AMS-II.G has been removed as well.

The project is no longer distributing water filters, due to a lack of funding, and this change has been made to clarify/streamline CPA requirements. While AMS-III.AV requirements that are no longer applicable have been removed from the PoA-DD, none of these changes affect:

- The applicability and application of AMS-II.G
- Compliance of the monitoring plan with AMS-II.G
- The level of accuracy and completeness in the monitoring of the PoA/CPAs
- The additionality of the PoA
- The scale of the CPA
- The eligibility criterion of the inclusion of the CPAs related to AMS-II.G

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Document information

Version	*Date*	*Description*
09.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for programmes of activities" (CDM-EB93-A07-STAN); • Make editorial improvements.
08.1	28 June 2017	Revision to: • Remove a duplicated instruction; • Make editorial improvement.
08.0	7 June 2017	Revision to: • Improve consistency with the "CDM project standard for programmes of activities" and with the PDD and CPA-DD forms; • Make editorial improvement.

Version	*Date*	*Description*
07.0	25 May 2017	Revision to: • Ensure consistency with the "CDM project standard for programmes of activities" (CDM-EB93-A07-STAN) (version 01.0); • Incorporate the "Programme design document form for small-scale CDM programmes of activities" (CDM-SSC-PoA-DD-FORM); • Make editorial improvement.
06.0	15 April 2016	Revision to ensure consistency with the "Standard: Applicability of sectoral scopes" (CDM-EB88-A04-STAN) (version 01.0).
05.0	9 March 2015	Revision to: • Include provisions related to choice of start date of PoA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Add exception for generic CPA where technology is under positive lists; • Make editorial improvement.
04.1	5 August 2014	Editorial revision to correct the document information table.
04.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM programme of activities (these instructions supersede the Guideline: Completing the programme design document form for CDM programme of activities (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the PoA in B.4 and Appendix 1; • Add general instructions on post-registration changes in paragraphs 2 and 3 of general instructions and Appendix 6; • Change the reference number from F-CDM-PoA-DD to CDM-PoA-DD-FORM; • Make editorial improvement.
03.0	3 December 2012	EB 70 Revision to reflect changes to the *Guideline: Completing the programme design document form for CDM programmes of activities* (EB 70, Annex 6).
02.0	13 March 2012	EB 66 Revision required to ensure consistency with the "Guidelines for completing the programme design document form for CDM programmes of activities" (EB 66, annex 12).

Version	*Date*	*Description*
01.0	27 July 2007	EB 33, Annex 41 Initial publication.

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Equation (4)