PROGRAMME DESIGN DOCUMENT FORM FOR SMALL-SCALE CDM PROGRAMMES OF ACTIVITIES (F-CDM-SSC-PoA-DD) Version 02.0

PROGRAMME OF ACTIVITIES DESIGN DOCUMENT (PoA-DD)

PART I. Programme of activities (PoA)

SECTION A. General description of PoA

A.1. Title of the PoA

Domestic Cooking Stoves substitution programme in Mozambique
Version 01
17/01/2014

A.2. Purpose and general description of the PoA

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1. General operating and implementing framework of PoA

Domestic Cooking Stoves substitution programme in Mozambique is an initiative of Fondazione AVSI. The aim of this PoA is to improve energy efficiency by substituting inefficient traditional cooking stoves with more effective ones improving the conditions of the local population living in Mozambique and reducing the greenhouse gas emissions.

The PoA and the CPAs under it are implemented and monitored in accordance with the requirements specified by AMS-II.G Version 5, and as further described in this PoA Design Document (PoA-DD) and the relevant CDM Programme Activity Design Documents (CPA-DD).

Details concerning stove performance, distribution, and assembly will be provided at the CPA level. For each CPA under the proposed PoA stoves will have a unique serial number. The GPS coordinates of each stove will be recorded after installation in the project area. Data collected during distribution and monitoring of each CPA will be stored in an electronic data management system, or monitoring database, for a minimum of two years past the crediting period. From this data, the emissions reductions of each CPA in the PoA will be determined. This system will be available for review by the Designated Operational Entity (DOE) during the validation and verification of the PoA and each CPA.

A stakeholder engagement process will be undertaken for each of the CPAs under the proposed PoA, ensuring that potential stove recipients understand the installation agreement, are trained in the usage of the stove, and are able to give adequate feedback on their usage.

2. Confirmation that the PoA is a voluntary action by the CME

Fondazione AVSI as the coordinating/managing entity hereby confirms that the PoA is a voluntary action. There are currently no laws, policies or mandatory requirement stipulating the use of fuel-efficient cook stoves in Mozambique. It follows that the PoA is a voluntary action.

3. Contribution to sustainable development

The PoA contributes to the sustainable development in a number of ways:

i. Environmental

- The efficient stoves reduce the consumption of charcoal for cooking and thus reduce CO_2 emissions.
- The potential decrease in charcoal production will also reduce greenhouse gas emissions as charcoal production is responsible for example for the emission of methane (one of the most dangerous GHGs).
- The project activity will lead to a decrease in the use of woody biomass discouraging the deforestation with consequent decrease of biodiversity loss.
- On the other hand, thanks to the enhancement of the awareness for a sustainable use of natural resources, it will be possible to increase the amount of water available for the local community.

ii. Social

- Especially women and children´s overall health will be improved as the amount of indoor air pollutants from the burning of biomass in the family home will be reduced. Less carbon dioxide, carbon monoxide and particulate matter will be emitted. Thus there is a potentiality of reducing the number of deaths from poisoning as well as the respiratory tract infection.
- Considerably less time will be needed for cooking which has implications on livelihoods and on social relations.

iii. Economic

- Costs for fuel purchase will be reduced through increased thermal efficiency, the saved money can be used for other basic needs and therefore reduce poverty.
- The project activity will also give the opportunity to increase employment. There will be some local people hired for the distribution of the new stoves and the removal of the inefficient traditional stoves.
- The project can provide also useful tools for local economy, in particular for the production and sale of meals on local markets.

A.3. CMEs and participants of PoA

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(a) The CME of the proposed PoA

The coordinating and managing entity (CME) of the proposed PoA is Fondazione AVSI. Fondazione AVSI is the entity which communicates with the CDM Executive Board.

(b) Project participants to the PoA

The project participants to the PoA are:

- Fondazione AVSI
- CarbonSinkGroup s.r.l.
- Cloros Srl
- MAN.SE.F. Onlus

As per paragraph 178 of the Project Standard "The operators of individual CPAs are not required to be project participants. CDM project participation is only recorded at the PoA level."[1]. Thus, the operators of individual CPAs are not required to be project participants and CDM programme participation is only recorded at the PoA level. The inclusions of new CPAs to the PoA will be requested by the CME from the DOE during the lifetime of the PoA.

[1] CDM-EB65-A05-STAN. Clean Development Mechanism Project Standard (Version 05.0). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

A.4. Party(ies)

Name of Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
The Republic of Mozambique (host)	Private entity (NGO): Fondazione AVSI	No

A.5. Physical/ Geographical boundary of the PoA

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The geographical boundary for the proposed PoA is the Republic of Mozambique[2]. All CPAs included in the PoA will be implemented in Mozambique.

However, the CME at any time during the life time of the PoA may amend this boundary to include any other host parties which were not included in this PoA DD at the time of registration.

Imagine A-1. Map of Africa

Imagine A-2. Mozambique

A.6. Technologies/measures

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The CPAs included in the PoA will be a Type II.G projects[3]. Each CPA will reduce the consumption of energy by substituting inefficient traditional cooking stoves with more effective ones. The stove design may vary by CPA as different locations, climates and traditions demand. One example of the used stove model is CH-2200 Charcoal Cooking stove (Imagine A-3). This stove model is one of the world's most fuel-efficient charcoal cooking stove models performing at 38.2 per cent thermal efficiency, thereby it can lead to a charcoal usage reduction of up to 50% compared to traditional stoves. The CH-2200 Charcoal Cooking stove has been tested in accordance with the "Emissions and Performance Test

[2] Mozambique_KML

[3] CDM-EB65-A05-STAN. Clean Development Mechanism Project Standard (Version 05.0), paragraph 81. Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

Protocol", with emissions measurements based on the stove testing protocol developed by Colorado State University. A testing certificate is attached in Appendix 4.

Imagine A-3. CH-2200 Charcoal Cooking Stove (source: Envirofit)

For CPAs using an alternative stove model, a stove testing report similar to that shown in Appendix 4 will be provided for the alternative design. All stove designs eligible under the CPAs must have a thermal efficiency greater than 20 per cent required by the applied AMS-II.G methodology.

A.7. Public funding of PoA

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The PoA will not receive public founding from the Annex 1 Parties. This statement holds true also for all the CPAs implemented by the CME (Fondazione AVSI). Individual CPA operators shall provide written attestation to the fact that their CPAs do not receive any public funding marked for official development assistance. If any CPAs do receive any public funding, the project proponent will confirm that such funding does not result in any diversion of official developmental assistance, it is separate from, and is not counted towards the financial obligations of those Parties in accordance with the Annex 17 of EB 66[4].

SECTION B. Demonstration of additionality and development of eligibility criteria

B.1. Demonstration of additionality for PoA

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According to the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 03.0)[5] additionality shall be demonstrated by establishing that in the absence of CDM PoA, none of the implemented CPAs would occur.

In accordance with the Guidelines on the Demonstration of Additionality of Small-Scale Project Activities (Version 09.0)[6] the demonstration can be done by providing an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

[4] EB 66, Annex 17. Guidelines For Completing The Component Project Design Document Form For Small-scale Component Project Activity (Version 01.0). http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid15.pdf

[5] EB 74 Annex 5. Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 03.0). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

[6] EB 68, Annex 27. Guidelines on the Demonstration of Additionality of Small-Scale Project Activities (Version 09.0). http://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf (site visited 09/01/2014)

(a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;
(b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
(c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
(d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

Anyhow, the documentation of barriers is not required for the positive list of technologies and project activity types that are defined as automatically additional. In accordance to the paragraph 2 point (c) of the above mentioned guidelines, the documentation of barriers is not required for "Project activities solely composed of isolated units where the users of the technology/ measure are households or communities or Small and Medium Enterprises (SMEs) and where the size of each unit is no larger than 5% of the small-scale CDM thresholds".

The proposed PoA distributes efficient cooking stoves for the household and the size of each unit is no larger than 5 % of the small-scale CDM threshold[7]. Therefore the project activity can be considered automatically additional and the documentation of barriers is not required.

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

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The following eligibility criteria are developed in accordance with the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 03.0)[8]. These criteria must be met by each CPA to ensure its eligibility under the PoA.

Table B-1. The eligibility criteria needed to be fulfilled by each CPA to be included in the PoA

Eligibility criteria
1. The geographical boundary of the CPA is within the geographic boundaries of Mozambique.
2. The CPA ensures that double counting of emission reductions is avoided, through the GPS tracking and identification of each stove with a unique identification number. Evidences are also provided that the CPA has not been and will not be registered as a single CDM project activity or as a CPA of another PoA.
3. The CPA involves distribution of efficient cooking stoves. The specifications of the technology will be included within each CPA-DD, for example, by indicating the type, capacity and other key design features that makes the cook stove efficient more efficient than the baseline stoves.
4. The start date of the CPA will not be prior of the start date of the PoA, i.e. the date on which the CDM_PoA-DD is first published for global stakeholder consultation. Documentary evidence is provided to support the start date of the CPA.
5. The CPA uses the latest version of the small scale approved methodology AMS.II.G: Energy Efficiency Measures in Thermal Applications of Non-renewable Biomass. The fulfilling of applicability condition of the methodology is demonstrated.

[7] See Appendix 4 for CPA1

[8] EB 74 Annex 5. Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 03.0). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

6. The CPA demonstrates its additionality by demonstrating that its "Project activities area 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" or with another appropriate way.
7. The CPA includes a description and documentation about local stakeholder consultation, and environmental impact analysis in the case required by host country.
8. It is affirmed that in case of public funding it will not result in a diversion of Official Development Assistance.
9. The target group of the CPA are the households or communities or Small and Medium Enterprises (SMEs) cooking with traditional stove.
10. The CPA follows the sampling requirements specified in the latest version of Guidelines for sampling and surveys for CDM project activities and programme of activities[9] or any other relevant guidelines.
11. The CPA adheres to the small-scale threshold criteria and remains within that threshold throughout the crediting period.
12. The CPA is not a de-bundled component of another CDM activity or PoA. The requirements for a debundling check as outlined in the latest version of the "Guidelines on assessment of debundling for SSC project activities"[10] are met.
13. End users receiving efficient stoves under the CPA contractually cede their rights to claim and own emission reductions to the CME of the PoA.

B.3. Application of methodologies

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The approved small-scale baseline and monitoring methodology applied to the CPAs included in the PoA is AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass (Version 05.0), Sectoral Scope 03: Energy Demand[11]. This methodology has been selected as the technologies to be implemented in the proposed PoA include the introduction of energy efficient cook stoves with efficiency improvements in the thermal applications of non-renewable biomass.

The description of the sampling plan and demonstration on how it meets applicable provisions in the "Standard for sampling and surveys for CDM project activities and programmes of activities (Version 04.1)[12]" will be included in each CPA-DD. In accordance with that standard the sampling plan of each CPA shall include a description of the sampling approach, important assumptions, and justification for the selection of the chosen approach. Moreover, according to the "Guidelines for sampling and surveys for CDM project activities and programmes of activities (Version 03.0)"[13] the sampling plan should contain information relating to (A) sampling design; (B) data to be collected; and (C) implementation plan.

[9] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)

[10] EB 54, Annex 13. Guidelines on Assessment of Debundling for SCC Project Activities (Version 03). http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf (site visited 09/01/2014)

[11] AMS-II.G (Version 05.0). http://cdm.unfccc.int/methodologies (site visited 09/01/2014)

[12] CDM-EB50-A30-STAN (Version 04.1). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

[13] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)

SECTION C. Management system

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In accordance with the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 03.0)[14] the management system includes following points:

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

The programme is managed by Fondazione AVSI as the Coordinating and Managing Entity (CME), and it is implemented by Fondazione AVSI or possible other CPA Implementers through small scale CDM programme activities (CPAs).

Fondazione AVSI (CME) will act as the focal point for the Executive Board of the CDM in all aspects relating to validation, verification, registration and issuance of carbon credits generated by the programme. Based on previous CDM experience and staff training, the Fondazione AVSI has the competencies to review and include CPAs in the PoA ensuring that each CPA meets the eligibility criteria presented in the section B.2 of the registered PoA. Moreover, CarbonSinkGroup s.r.l. which supports Fondazione AVSI in the task will bring available its competencies. Below in the table C-1 are described the roles and responsibilities of personnel involved in the whole process of inclusion of CPAs.

Table C-1. Roles and responsibilities

Personnel	**Roles and responsibilities**
Fondazione AVSI (CME)	- Responsible for identifying, registering and managing all SSC-CPAs to be included in the proposed PoA - To sign a contract with the CPA implementer/operator - To submit the CPA-DD to the DOE for validation and inclusion in the PoA
CarbonSinkGroup s.r.l.	- Supports Fondazione AVSI in its role as CME and the possible CPA implementers
Possible CPA implementer (in case not Fondazione AVSI)	- To apply for inclusion in the PoA by submitting CPA-DDs to the CME
DOE	- To validate that the CPA-DDs and the PoA-DD are compliant with the baseline and monitoring methodology AMS-II.G, the sampling standard and project standard identified in the PoA-DD - To validate the CPA-DDs fulfil the eligibility criteria contained within the PoA-DD - To validate that at the time of validation CME has received LoA from the Host Country

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

As part of the inclusion of a SSC-CPA under the PoA, an agreement will be signed by the Project implementer and the project managing entity (Fondazione AVSI)[15]. The agreement will include specific provisions and declarations that confirm the SSC-CPA project implementers agree that their activity is being subscribed under the PoA. Suitable training will be conducted for project implementers proposing new SSC-CPAs to make them aware of the rules of the CDM and SSC-PoA. Training will include:

[14] EB 74 Annex 5. Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 03.0). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

[15] This is in the case the CPA implementer is not Fondazione AVSI

- Data recoding procedures
- Efficient cooking stove distribution procedures
- Monitoring procedures

The CPA implementer will be in charge for the training of the field staff.

c) A Procedure for technical review of inclusion of CPAs

The CME shall ensure that all CPAs included under the PoA meets the eligibility criteria outlined in section B.2 of this PoA-DD and that the records of the technical review process are maintained. All documentation will be kept in an organised and easy to access manner, such as sorting by either date or serial number with a clear division between the CPAs.

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

All the new SSC-CPA which will be included to the PoA needs to fulfil all the eligibility criteria for inclusion in to the PoA like outlined in section B.2 of this PoA-DD. The eligibility criteria number 2 ("The CPA ensures that double counting of emission reductions is avoided, through the GPS tracking and identification of each stove with a unique identification number. Evidences are also provided that the CPA has not been and will not be registered as a single CDM project activity or as a CPA of another PoA") will be confirmed by the managing entity of the PoA (Fondazione AVSI) prior registering each new SSC-CPA within the PoA.

Double counting is avoided by registering the serial number of each distributed efficient cooking stove in the database together with the contact details of the user and the geographical location. The database will restrict entry of repeat serial numbers and/or contact details. The serial number together with the contact details of the user constitutes the unique identification of the system. In addition, each CPA will be cross-checked with other CPAs of this PoA and with any other CDM project activity/ voluntary carbon activity operating in the same geographic area to ensure that the CPA is not included in any other PoA, CDM project activity or voluntary carbon activity. Moreover, individual CPA operators shall provide details of the date of sale/distribution of efficient cooking stoves as well to attest that the efficient cooking stoves are not included in any other CDM project activity or in CPAs of other PoAs.

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

The CME (Fondazione AVSI) will maintain general database which will allow the CME to have an quick overview of each CPA. This electronic database includes following information about each CPA included in the PoA:

- name of the CPA operator;
- name of the CPA;
- date of inclusion of the CPA to the registered PoA;
- start date of the CPA;
- CERs realized in the CPA;
- Host Party;
- total number of efficient cooking stoves distributed in the CPA.

Moreover, there will be separate electronic project databases for each CPA. The purpose of these databases is to provide enough information to enable full monitoring of each CPA. The databases will

include for example information about the efficient cooking stove model and its technical description, project location details, cooking stove distribution records as well as the monitoring reports. Each project databases will be operated and maintained by managing entity (Fondazione AVSI) or project implementer. A back-up of the database is made regularly and stored in a hard-copy form like CDs. All data monitored and required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever is later.

f) Measures for continuous improvements of the PoA management system

The CME (Fondazione AVSI), in close consultation with the possible CPA implementers, will undertake an annual review of the overall PoA management system, including identifying any problems with stove distribution, stove use in the homes, monitoring of the stove use and overall database maintenance. This review will ensure that the best practices are maintained through the lifetime of the PoA. If the methodology and standard are updated, the PoA management system will be improved too.

SECTION D. Duration of PoA

D.1. Start date of PoA

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The start date of the proposed PoA is 20/01/2014 or the expected date of publication of the PoA-DD for global stakeholder consultation, whichever is later.

D.2. Length of the PoA

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The length of the proposed PoA is 28 years.

SECTION E. Environmental impacts

E.1. Level at which environmental analysis is undertaken

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Due to its small scale nature, together with its positive social and environmental benefit and absence of negative impact, and acknowledging that the impact of the installation of millions of improved cooking stoves in Mozambique is best assessed from a macro perspective, as per the requirements of the CDM modalities and procedures, environmental analysis should be performed at the PoA level. On the other hand, the Designated National Authority for the Clean Development Mechanism (DNA) in Mozambique has confirmed that, according to the legislation in Mozambique, an Environmental Impact Assessment is not required for this project activity.

E.2. Analysis of the environmental impacts

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N/A

SECTION F. Local stakeholder comments

F.1. Solicitation of comments from local stakeholders

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The local stakeholder consultation process is performed at the CPA level. This is because the whole PoA project area is wide and includes several CPA project sites. In addition, with the aim of ensuring that potential stove recipients understand the installation agreement, are trained in the usage of the stove, and able to give adequate feedback on their usage, accurate stakeholder engagement process will be undertaken for each of the CPAs under the proposed PoA.

F.2. Summary of comments received

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N/A

F.3. Report on consideration of comments received

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N/A

SECTION G. Approval and authorization

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The managing entity has obtained the Letter of Approval (LoA)[16] from the Host Party Designated National Authority (DNA).

PART II. Generic component project activity (CPA)

SECTION A. General description of a generic CPA

A.1. Purpose and general description of generic CPAs

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Each CPA within the PoA "Domestic Cooking Stoves substitution programme in Mozambique" is an initiative of Fondazione AVSI. The aim of each CPA is to improve energy efficiency by substituting inefficient traditional cooking stoves with more effective ones and at the same improving the conditions of the local population living in project area of the each CPA. Each CPA implemented in the proposed PoA shall be implemented within the project boundary of the PoA as stated in this PoA-DD.

All the CPA activities are Type II: Energy efficiency improvement project activities that reduce energy consumption, on the supply and/or demand side, with a maximum output of 60 GWh per year (or an appropriate equivalent) in any year of the crediting period.[17] The amount of efficient stoves in each CPA is limited to an annual thermal energy savings of 180 GWh[18]. The maximum number of stoves limitation is dependent on the project baseline and will vary by CPA. The baseline as described in AMS-II.G Version 5 will be determined separately for each CPA.

Stove recipients will submit to the monitoring requirements as specified by AMS-II.G Version 5, and further described in this PoA Design Document (PoA-DD) and the relevant CDM Programme Activity Design Document (CPA-DD).

[16] DNA Mozambique, 2013. Letter of Approval (LoA)

[17] CDM-EB65-A05-STAN. Clean Development Mechanism Project Standard (Version 05.0). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

[18] AMS-II.G (Version 05.0). http://cdm.unfccc.int/methodologies (site visited 09/01/2014)

Details concerning stove performance, distribution, and assembly will be provided at the CPA level. For each CPA under the proposed PoA stoves will have a unique serial number. The GPS coordinates of each stove will be recorded after distrivution in the project area. Data collected during distribution and monitoring of each CPA will be stored in an electronic data management system for a minimum of two years past the crediting period. From this data, the emissions reductions of each CPA in the PoA will be determined. This system will be available for review by the Designated Operational Entity (DOE) during the validation and verification of the PoA and each CPA.

A stakeholder engagement process will be undertaken for each of the CPAs under the proposed PoA, ensuring that potential stove recipients understands the installation agreement, are trained in the usage of the stove, and is able to give adequate feedback on their usage.

SECTION B. Application of a baseline and monitoring methodology

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

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AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass (Version 05.0)[19]. This methodology is approved for application to CPAs under PoAs by the CDM Executive Board.

All the required guidelines, tools and standards of the above methodology will be also used:

- General guidelines for SSC CDM methodologies (Version 20.0)[20]
- Guidelines on the demonstration of additionality of small-scale project activities (Version 09.0)[21]
- General guidance on leakage in biomass project activities (attachment C to appendix B) (Version 03)[22]
- Standard for sampling and surveys for CDM project activities and programmes of activities (Version 04.1)[23]

B.2. Application of methodology(ies)

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Justification of the choice of the selected methodology

Justification of the choice of the selected methodology is done by showing that each CPA meets all the applicability conditions as described in table II.B-1.

Table II.B-1. Applicability conditions of the Methodology AMS-II.G and the PoA

Applicability condition	Each generic CPA
Type II Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass: This category comprises appliances involving the efficiency improvements in the thermal applications of non-renewable biomass. Examples	Each CPA involves distribution of improved energy efficiency biomass fired stoves to the households within the boundaries of PoA. Each CPA will contribute in reduction of non-renewable biomass consumption which would have been otherwise consumed by the less efficient cooking stoves. The cooking stoves being distributed have

[19] AMS-II.G (Version 05.0). http://cdm.unfccc.int/methodologies (site visited 09/01/2014)
[20] CDM-EB66-A23-GUID (Version 20.0). Available at http://cdm.unfccc.int/Reference/index.html (site visited 09/01/2014)
[21] EB 68, Annex 27. (Version 09.0). http://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf
[22] EB 47, Annex 28. (Version 03). http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid04.pdf
[23] CDM-EB50-A30-STAN (Version 04.1). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

of these technologies and measures include the introduction of high efficiency[24] biomass fired cook stoves[25] or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers.	high thermal efficiency as shown in the test results which will be added as annex of each CPA-DD.
Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	There are historical analysis of the biomass use which clearly shows that non-renewable biomass has been used since 1989 in the project area of the proposed PoA.[26] The strong and growing demand for charcoal fuel has been referred as an important cause of deforestation in Mozambique.[27] The deforestation and non-renewable biomass use will be demonstrated more detailed in each CPA-DD with appropriate references like FAO Forest Resource Assessments.
The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.	The maximum thermal energy savings achieved by each CPA is limited to an annual thermal energy savings of 180 GWh_{th}. Each CPA-DD includes detailed calculation of the thermal energy savings and how the savings would not exceed the above mentioned limit (i.e. the number of efficient cooking stoves under the CPA will be presented).
The project should reduce non-renewable biomass being used by proving two of the following statements: 1. A trend showing an increase in time spent or distance travelled for gathering fuel-wood, by users (or fuel-wood suppliers) or alternatively, a trend showing an increase in the distance the fuel-wood is transported to the project area; 2. Survey results, national or local statistics, studies, maps or other sources of information, such as remote-sensing data, that show that carbon stocks are depleting in the project area; 3. Increasing trends in fuel wood prices indicating a scarcity of fuel-wood;	Each CPA-DD includes a description how the project reduces non-renewable biomass being used.

[24] The efficiency of the project systems as certified by a national standards body or an appropriate certifying agent recognized by it. Alternatively manufacturers' specifications may be used.

[25] Single pot or multi pot portable or *in situ* cook stoves with specified efficiency of at least 20%.

[26] Perspectives GmbH , 2011. Proposal for a New Standardised Baseline for Charcoal Project in the Clean Development Mechanism. 2011. http://cdm.unfccc.int/methodologies/standard_base/npbcharcoal.pdf (site visited 14/01/2014)

[27] Girard, P., 2011. Charcoal production and use in Africa: what future?, Unasylva 211, Vol. 53, 2002. Available at ftp://ftp.fao.org/docrep/fao/005/y4450e/y4450e05.pdf (site visited 14/01/2014)

4. Trends in the types of cooking fuel collected by users that indicate a scarcity of woody biomass.	

General description of the sampling plan

The description of the sampling plan and demonstration on how it meets applicable provisions in the "Standard for sampling and surveys for CDM project activities and programme of activities (Version 04.1)[28]" will be included in each CPA-DDs. The sampling plan of each CPA shall include a description of the sampling approach, important assumptions, and justification for the selection of the chosen approach as stated in above mentioned standard. Moreover, according to the "Guidelines for sampling and surveys for CDM project activities and programme of activities (Version 03.0)"[29] the sampling plan should contain information relating to (A) sampling design; (B) data to be collected; and (C) implementation plan.

B.3. Sources and GHGs

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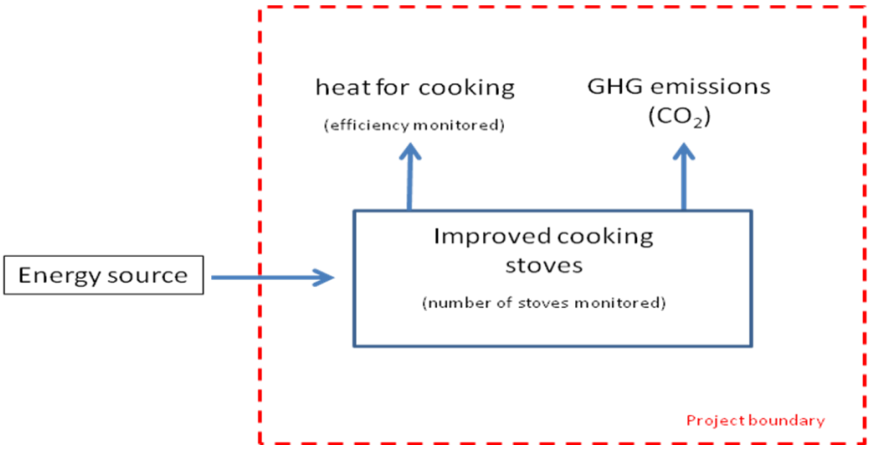
The sources listed in table II.B-2 are included in the project boundary of each CPA. The combustion of fuel used for cooking in both the baseline scenario and project activity will release significant amounts of CO_2. Each CPA is implemented within the geographical boundary of the registered PoA.

Table II.B-2. Emissions sources and GHGs included in or excluded from the CPA boundary

	Sources	Gas	Included?	Justification/Explanation
Baseline	Combustion of non-renewable biomass for cooking	CO_2	Yes	Major source of emissions
		CH_4	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
		N_2O	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
Project activity	Combustion of non-renewable biomass for cooking	CO_2	Yes	Major source of emissions
		CH_4	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
		N_2O	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.

[28] CDM-EB50-A30-STAN (Version 04.1). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

[29] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)



Imagine II.B-1. Project boundary of typical CPA

B.4. Description of baseline scenario

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Baseline scenario is the continuation of the current situation i.e. continuation of the use of traditional cooking stoves, the baseline is determined for each CPA by calculating baseline emissions.

Determination of baseline Emissions

Emission reductions are calculated by multiplying the thermal energy from annual biomass savings of non-renewable biomass with an emission factor for fossil fuels as described in paragraph 11 of the applied methodology:

$$ER_y = B_{y,savings} * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{y,i}$$

Where:

ER_y	Emission reductions during the year y in tCO2e
$B_{y,saivings}$	Quantity of woody biomass that is saved in tonnes per device
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non-renewable woody biomass (NRB) values available on CDM website[30]
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, wet basis)
$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO_2/TJ
$N_{y,i}$	Number of project devices of type i operating in year y

In order to determine $B_{y,savings}$ Option 2 of paragraph 12 of AMS-II.G is chosen and thus the following equation is used:

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

Where:

[30] http://cdm.unfccc.int/DNA/fNRB/index.html

$B_{y,saivings}$ Quantity of woody biomass that is saved in tonnes per device
B_{old} Quantity of woody biomass used in the absence of the project activity in tonnes per device
η_{old} Efficiency of the system being replaced (fraction)
$\eta_{new,y}$ Efficiency of the device being deployed as part of the project activity (fraction)

Table II.B-3. The parameter needed for determination of baseline emissions.

Step	Parameter	Description	Data sources	Type
1	B_{old}	Quantity of woody biomass used in the absence of the project activity in tonnes per device	Calculation based on the Baseline Survey	Fixed
2	η_{old}	Efficiency of the system being replaced (fraction); measured using representative sampling methods or based on references literature values, use weighted average values id more than one type of device is being replaced. A default value of 0.10 may be optionally used if the replaced device is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney; for other types of devices, a default value of 0.2 may be optionally used.	AMS-II G Default Value	Fixed
3	$\eta_{new,y}$	Efficiency of the device being deployed as part of the project activity (fraction); as determined annually[31] using the water boiling test (WBT) protocol carried out in accordance with national standards (if available) or international standards or guidelines. Use weighted average values if more than one type of system is being introduced by the project activity	Efficiency Testing (WBT)	Monitored
4	$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass	Country specific default value	Fixed
5	$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is	IPCC default value for wood fuel	Fixed

[31] Biennial monitoring (i.e. monitoring once every two years) may be chosen, if the project proponents are able to demonstrate that the efficiency of the cook stove does not drop significantly as compared to the initial efficiency of the new device, over a time period of two years of typical usage.

		substituted		
6	$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers	AMS-II G default value	Fixed
7	$N_{y,i}$	Number of project devices of type i operating in year y	Usage survey	Monitored
8	LAF	Leakage adjustment factor to account for leakages	AMS-II G default value	Fixed

To determine the required parameters (shown in table II.B-3) the below described steps will be implemented.

Step 1.
Paragraph 13 of the applied methodology, AMS-II.G, provides two approaches to determine the quantity of woody biomass used in the absence of the project activity (B_{old}). Here is chosen to apply approach (a):

> *Calculated as the product of the number of systems multiplied by the estimated average annual consumption of woody biomass per appliance (tonnes/year). This can be derived from historical data or a survey of local usage*.

If official, historical data on woody biomass consumption are not available for the project area of the CPA, the average annual consumption can be estimated based on a survey of local usage.

Step 2.
Option 2 described in the paragraph 12 of the methodology AMS-II.G provides two approaches to determine the efficiency of the baseline systems being replaced (η_{old}). Here below is how to apply the approach (2):

> "*A default value of 0.10 may be optionally used if the replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e. without a grate or a chimney; for other types of systems a default value of 0.2 may be optionally used*."

The baseline stoves are conventional models without an improved combustion air supply or flue gas ventilation system. Stoves that lack these types of design characteristics can be assumed to have a low efficiency and thus in accordance to the applied methodology a default value of 0.10 may be used.

Step 3.
In accordance to the applied methodology (AMS-II.G, paragraph 12, Option 2) efficiency of the systems being deployed ($\eta_{new,y}$) is measured using the Water-Boiling-Test (WBT) protocol. The values derived from efficiency tests conducted *ex post* shall be used to calculate *ex post* emission reductions. For the *ex ante* estimations $\eta_{new,y}$ is determined based on the manufacturer's specification.

Step 4.
In accordance to the applied methodology (AMS-II.G, paragraph 11) fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass ($f_{NRB,y}$) can be estimated

using survey methods or government data or default country specific fraction of non-renewable woody biomass values available on the CDM website[32].

Here is chosen to use for all the CPA the country specific fraction (91 % for Mozambique[33]). This ex ante made decision is in accordance of the option b) of the paragraph 30 of the used methodology.

Step 5.
According to the applied methodology (AMS-II.G, paragraph 11) IPCC default for wood fuel, 0.015 TJ/tonne can be used for net calorific value of the non-renewable woody biomass that is substituted ($NCV_{biomass}$).

Step 6.
According the applied methodology (AMS-II.G, paragraph 11) the value of 81.6 tCO2/TJ is to be used as emission factor for the substitution of non-renewable woody biomass by similar consumers ($EF_{projected\_fossilfuel}$).

Step 7.
According to the applied methodology (AMS-II.G, paragraph 22) the number of project devices that are operating in year y (N_y) needs to be monitored at least every two years. This will be done through a usage survey made on a representative sample as described in the monitoring plan of each CPA.

Step 8.
According to AMS-II.G (paragraph 29) the use of the methodology in a project activity under a programme of activities is legitimate if the following leakages are estimated and accounted for, if 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.

To account for leakage a net to gross adjustment factor of 0.95 (option c above) will be applied. In this case surveys on leakage are not required.

The leakage caused by "devices currently being utilised outside the project boundary transferred to the project activity" described in paragraph 21 of the applied methodology can be neglected as the project stoves are new stoves that has not being used before.

B.5. Demonstration of eligibility for a generic CPA
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[32] Default values endorsed by designated national authorities and approved by the Board are available at website: http://cdm.unfccc.int/DNA/fNRB/index.html (site visited 09/01/2014)
[33] http://cdm.unfccc.int/DNA/fNRB/index.html (site visited 09/01/2014)

Each CPA shall meet all the eligibility criteria for inclusion in to the PoA like outlined in section B.2 of part I of this PoA-DD.

Table II.B-4. Eligibility criteria

Eligibility criteria	Justification
1. The geographical boundary of the CPA is within the geographic boundaries of Mozambique.	The boundary of each CPA is uniquely defined by GPS coordinates and maps to demonstrate that the boundary is within the geographic boundaries of the PoA.
2. The CPA ensures that double counting of emission reductions is avoided, through the GPS tracking and identification of each stove with a unique identification number. Evidences are also provided that the CPA has not been and will not be registered as a single CDM project activity or as a CPA of another PoA.	The each energy efficient stove has a unique identification number and GPS coordinates to demonstrate that the stove is a part of the project activity. In addition, each CPA will be cross-checked with other CPAs of this PoA and with any other CDM project activity/voluntary carbon activity operating in the same geographic area to ensure that the CPA is not included in any other PoA, CDM project activity or voluntary carbon activity. Moreover, individual CPA operators shall provide details of the date of sale/distribution of efficient cooking stoves as well to attest that the efficient cooking stoves are not included in any other CDM or voluntary project activity or in individual projects of other PoAs.
3. The CPA involves the distribution and installation of efficient cooking stoves. The specifications of the technology will be included with each CPA-DD	Each CPA involves distribution of energy efficient stoves to households in the area where the traditional unimproved stoves are currently used. The specifications of the technology will be included with each CPA-DD.
4. The start date of the CPA is not be before the start date PoA, i.e. the date on which the CDM_PoA-DD is first published for global stakeholder consultation. The start date will be proofed by documentary evidence like the first stove receipt.	The start date of any CPA will not before the start date of the PoA. This will be shown with a document evidences of the first stove delivery to the project site (like receipts of the selling the stoves).
5. The CPA uses the latest version of the small scale approved methodology AMS.II.G: Energy Efficiency Measures in Thermal Applications of Non-renewable Biomass.	Each CPA uses the version latest version of the methodology AMS-II.G[34] like described in each CPA-DD.
6. The CPA demonstrates additionality	The demonstration of additionality is made by proofing that CPA is solely composed of isolated units where the users of the technology/ measure are households or communities or Small and Medium Enterprises (SMEs) and that the size of each unit is no larger than 5% of the small-scale CDM thresholds in accordance with EB 68, Annex 27[35].
7. The CPA includes a description and	The description and documentation about local

[34] AMS-II.G. Available at http://cdm.unfccc.int/methodologies

[35] EB 68, Annex 27. Guidelines on the Demonstration of Additionality of Small-Scale Project Activities (Version 09.0). http://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf

documentation about local stakeholder consultation, and environmental impact analysis in the case required by host country.	stakeholder consultation and environmental impact analysis is included in each CPA-DD.
8. It is affirmed that in case of public funding it will not result in a diversion of Official Development Assistance.	Each CPA includes an affirmation that there is no public funding involved in the project finance.
9. The target group of the CPA are the households cooking with traditional stove for domestic purposes.	Each CPA involves distribution of energy efficient stoves to households in the area where the traditional unimproved stoves are currently used. The specifications of the target group will be included within each CPA-DD.
10. The CPA follows the sampling requirements specified in the latest version of Guidelines for sampling and surveys for CDM project activities and programme of activities[36] or any other relevant guidelines.	Each CPA follows the sampling requirements specified in the latest version Guidelines for sampling and surveys for CDM project activities and programme of activities[37]. The sampling plan is described in each CPA-DD.
11. The CPA adheres to the small-scale threshold criteria and remains within that threshold throughout the crediting period.	Each CPA provides a detailed calculation of the thermal energy savings and shows that the savings don't exceed the 180 GWh_{th} which is the limit for small scale Type II projects.
12. The CPA is not a de-bundled component of another CDM activity or PoA. The requirements for a debundling check as outlined in the latest version of the "Guidelines on assessment of debundling for SSC project activities"[38] are met.	The demonstration that the CPA is not a de-bundling component of another CDM activity or PoA is provided in each CPA-DD.
13. End users receiving efficient stoves under the CPA contractually cede their rights to claim and own emission reductions to the CME of the PoA.	End users will enter into an agreement with the CPA implementer transferring rights to the CERs generated by CPA in return for the free installation of the improved stove and its on-going maintenance over a lifetime of the each CPA.

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

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Estimations of emission reductions are made applying all relevant equations provided the methodology AMS-II.G, version 05.0. The applied methodology requires the following methodological choices to be to be worked out:

- $B_{y,savings}$ is estimated using one the following methods presented in paragraph 12 of the used methodology:
    - Option 1: $B_{y,savings} = B_{old} - B_{y,new,KPT}$

[36] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)

[37] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)

[38] EB 54, Annex 13. Guidelines on Assessment of Debundling for SCC Project Activities (Version 03). http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf

- Option 2: $B_{y,savings} = B_{old} \cdot (1 - \frac{\eta_{old}}{\eta_{new,y}})$

$$B_{y,savings} = B_{y,new,survey} \cdot (\frac{\eta_{new,y}}{\eta_{old}} - 1)$$

- Option 3: $B_{y,savings} = B_{old} * (1 - \frac{SC_{new,y}}{SC_{old}})$

In accordance to the PoA the option 2 will be used in each CPA as described in Section B.4 (Part II), in Step 2 and 3.

- B_{old} is determined by using one of the following two options presented in paragraph 13 of the used methodology:
  - Option (a): Calculated as the product of the number of systems multiplied by the estimated average annual consumption of woody biomass per appliance (tonnes/year). This can be derived from historical data or a survey of local usage,
  - Option (b): Calculated from the thermal energy generated in the project activity.

In accordance to the PoA option (a) will be used in each CPA as described in section B.4 (Part II), in Step 1.

- Leakage

Like described in Step 7 of section B.4 (Part II) a net to gross adjustment factor of 0.95 presented in paragraph 29 of the used methodology will be applied for each CPA.

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

(Copy this table for each data and parameter.)

Data / Parameter	B_{old}
Unit	t/household/years
Description	Quantity of woody biomass used in the absence of the project activity in tonnes
Source of data	Calculation based on the Baseline Survey
Value(s) applied	7.30
Choice of data or Measurement methods and procedures	See section B.4 (Part II), Step 1.
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed for entire crediting period

Data / Parameter	η_{old}
Unit	Fraction
Description	Efficiency of the system being replaced
Source of data	AMS-II.G Default Value
Value(s) applied	0.10
Choice of data or Measurement methods and procedures	The baseline stoves are conventional models without an improved combustion air supply or flue gas ventilation system. Stoves that lack these types of design characteristics can be assumed to have a low efficiency and thus in accordance to the applied methodology (AMS-II.G, paragraph 12) a default value of 0.10 may be used.
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed for entire crediting period

Data / Parameter	$f_{NRB,y}$
Unit	Fraction
Description	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
Source of data	Country specific default value[39]
Value(s) applied	0.91
Choice of data or Measurement methods and procedures	According the applied methodology (AMS-II.G, paragraph 11) a default country specific fraction of non- renewable woody biomass (NRB) values available on CDM website can be used.
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed for entire crediting period

Data / Parameter	$NCV_{biomass}$
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted
Source of data	IPCC default value for wood fuel
Value(s) applied	0.015
Choice of data or Measurement methods and procedures	According to the applied methodology (AMS-II.G, paragraph 11) IPCC default for wood fuel, 0.015 TJ/tonne can be used for net calorific value of the non-renewable woody biomass that is substituted ($NCV_{biomass}$).
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed for entire crediting period

[39] http://cdm.unfccc.int/DNA/fNRB/index.html

Data / Parameter	$EF_{projected\_fossilfuel}$
Unit	tCO2/TJ
Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers
Source of data	AMS-II.G default value
Value(s) applied	81.6
Choice of data or Measurement methods and procedures	According the applied methodology (AMS-II.G, paragraph 11) the value of 81.6 tCO2/TJ is to be used as emission factor for the substitution of non-renewable woody biomass by similar consumers ($EF_{projected\_fossilfuel}$).
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter is fixed for entire crediting period

Data / Parameter	LAF
Unit	Fraction
Description	Leakage adjustment factor to account for leakages
Source of data	AMS-II.G default value
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	To account for leakage a net to gross adjustment factor of 0.95 (option c of the paragraph 29 of the AMS-II.G methodology) will be applied. In this case surveys are not required.
Purpose of data	Calculation of leakage
Additional comment	This parameter is fixed for entire crediting period. Survey will not be conducted to determine leakage.

B.6.3. Ex-ante calculations of emission reductions

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***Ex ante* calculation of emission reductions per households under the project activity**

$$ER_y = B_{y,savings} * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{y,i}$$

$$ER_y = \left(B_{old} * LAF * \left(1 - \frac{\eta_{\text{old}}}{\eta_{new,y}} \right) \right) * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{y,i}$$

Where:

ER_y	Emission reductions during the year y in tCO2e
$B_{y,saivings}$	Quantity of woody biomass that is saved in tonnes per household
B_{old}	Quantity of woody biomass used in the absence of the project activity in tonnes per household
η_{old}	Efficiency of the device being replaced
$\eta_{new,y}$	Efficiency of the device being deployed as part of the project activity

LAF	Leakage adjustment factor to account for leakages
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted
$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers
$N_{y,i}$	Number of project devices of type i operating in year y

Below is presented as an example the calculations of emission reductions (per household) of the first CPA "Domestic Cooking Stoves in Maputo (Mozambique)" of the proposed PoA.

$ER_y = [7.33 * 0.95 * (1- 0.10/0.382)] * 0.91 * 0.015 * 81.6 * N_{y,i}$

$= 5.7\ tCO2/household/year * N_{y,i}$

***Ex ante* estimation of Number of households under the project activity**

Each CPA-DD will include an ex ante estimation of number of households under the project activity. The efficient stoves will be included in the project activity from the beginning of the next month in which they have been delivered to the households. Here below is presented as an example the number of household under the first CPA "Domestic Cooking Stoves in Maputo (Mozambique)"of the proposed PoA. For ex ante estimations it can estimated conservatively also that, for example, only 90% of the households presented in the Table II.B.5 would be using the new stoves.

Table II.B-5. Estimated number of households to be included at project activity of the first CPA

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2014	-	-	-	-	-	-	-	-	-	-	-	440
2015	740	940	1,380	1,820	2,260	2,700	3,140	3,580	4,020	4,460	4,900	5,340
2016	5,640	5,840	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
2017	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
2018	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
2019	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
2020	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
2021	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	-	-

***Ex ante* calculation of emission reductions**

The ex ante calculations of emission reductions will be provided for each CPA with a separate electronic spreadsheets. The of ex ante calculations of the first CPA "Domestic Cooking Stoves in Maputo (Mozambique)" of the proposed PoA are available for the DOE for validation.

B.7. Application of the monitoring methodology and description of the monitoring plan
B.7.1. Data and parameters to be monitored by each generic CPA
(Copy this table for each data and parameter)

Data / Parameter	$\eta_{new,y}$
Unit	Fraction
Description	Efficiency of the device being deployed as part of the project activity in year y
Source of data	Efficiency Testing
Value(s) applied	0.382
Measurement methods and procedures	Efficiency of the appliances is measured using the Water-Boiling-Test (WBT) protocol using the international standard testing protocol[40]. For the *ex ante* estimations $\eta_{new,y}$ is used the value (thermal efficiency of 38.2 %) provided by the manufacturer.
Monitoring frequency	Annually (or biennially)
QA/QC procedures	• The sample size will be chosen for a 95/10 precision (95% confidence interval and 10 % margin of error). In cases where the results indicate that 95/10 precision is not achieved, the lower bound of a 95 % confidence interval of the parameter value will be chosen as an alternative in repeating the survey efforts to achieve the 95/5 precision. • The Water-Boiling-Test is conducted with trained monitoring personal following the international standard testing protocol[41]. • Results from the test will be compared to the value adopted for baseline emission calculations (specifications from the manufacturer) and the conservative value will be considered for *ex post* emission reductions calculation. Testing is also used also to ensure that the stoves are still operating above the minimum 20% efficiency required by the AMS-II.G (version 05.0) methodology. • The results will be stored for the crediting period of the project activity and an additional two years or until the last issuance of CERs for the project activity, whichever is later.
Purpose of data	Calculation of baseline emissions
Additional comment	The values derived from efficiency tests conducted *ex post* shall be used to calculate *ex post* emission reductions. For the *ex ante* estimations $\eta_{new,y}$ is determined based on the manufacturer's specification.

[40] For example available at http://www.aprovecho.org/lab/pubs/testing (site visited on 10/01/2014)
[41] For example available at http://www.aprovecho.org/lab/pubs/testing (site visited on 10/01/2014)

Data / Parameter	N_y
Unit	Number
Description	Total number of households using efficient cooking stoves under the project activity
Source of data	Project database records and usage survey on a representative sample
Value(s) applied	For example for the first CPA is estimated to be up to 5,000 (See the indicative implementation schedule for the first CPA in section B.6.3 (Part II), Table II.B-5 of this PoA-DD)
Measurement methods and procedures	The percentage of stoves on a representative sample still in operation in the monitoring period compared to the total number of stoves distributed according to the electronic project database will be assessed. Stoves in operation in the sample will be counted during each monitoring period to derive a drop-out rate (expressed as a percentage) and this percentage deduction will be applied to the total number of stoves.
Monitoring frequency	At least biennially
QA/QC procedures	• The unique reference number of each stove is transferred to the project database. The date of distribution is utilized to determine the number of stoves in operation. • The database entries of the distributed fuel efficient stoves are made on a monthly basis by specialist of AVSI. The data-base entries will be cross-checked with the purchase contracts. In case of inconsistencies, the AVSI will take appropriate corrective actions. • Usage survey on a representative sample to confirm the share of the households sill operating the efficient stoves will be made by trained monitoring team. • The data will be stored for the crediting period of the project activity and an additional two years or until the last issuance of CERs for the project activity, whichever is later.
Purpose of data	Calculation of baseline emissions
Additional comment	The number of efficient stoves shall remain within the limit of 180 GWh_{th} for type II CDM project activities.

Data / Parameter	t
Unit	Number
Description	Number of months efficient cooking stove will be operational
Source of data	Project database records
Value(s) applied	The expected value is 12 months/year, as the efficient cooking stoves will be operational during the whole year. Only in the following cases the value will be < 12: • Efficient cooking stove is delivered during the year • Drop-outs or replacements has occurred Indicative implementation schedule is presented in section B.6.3 (Part II), Table II.B-5 of this PoA-DD.
Measurement methods and procedures	Each sold stove is recorded. The user signs a purchase contract, where the selling date, user´s name and the address and the geographical coordinates of the house are noted, to doubtlessly identify the user. Every efficient cooking stove has an identification number which is also noted on the purchase contract. The information from the purchase contract is transferred to the electronic database. The number of months calculated from the month after the signature of the purchase contract until the end of the monitoring period will be assessed from the project database.
Monitoring frequency	At least biennially
QA/QC procedures	• The unique reference number of each stove is transferred to the project database. The date of distribution is utilized to determine the months of the monitoring period that the stove has been in operation. Any interruption in the stoves' operation (e.g. where stoves are replaced or dropped out) will be registered as a missed operating time in the database. • The database entries of the sold efficient stoves are made on a monthly basis by specialist of AVSI. The database entries will be cross-checked with the purchase contracts. In case of inconsistencies, the AVSI will take appropriate corrective actions. • The data will be stored for the crediting period of the project activity and an additional two years or until the last issuance of CERs for the project activity, whichever is later.
Purpose of data	Calculation of baseline emissions
Additional comment	Emission reductions of each cooking stove is calculated only from the month after the signature of the purchase contract.

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

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According to AMS-II.G (paragraph 22 and 23) monitoring shall consist of checking all devices or a representative sample thereof, at least ones every two years (biennial) to determine if they are still operating; those devices that have been replaced by an equivalent in-service device can be counted as operating. Monitoring shall also consist of checking the efficiency of all devices or a representative sample thereof annually (or biennially).

> Monitoring consist of checking a representative sample biennially to determine if the improved project stoves are still operating and annual checking of the stove efficiency of a representative sample of the households under the project activity. Where appliances are found to be operational but with a changed efficiency the actual efficiency determined in monitoring will be applied to calculate emission reductions. Where appliances are found not operational these households are excluded from the emission reductions calculations.
>
> Efficiency of the appliances is measured by using the Water-Boiling-Test (WBT) protocol. The test is carried out using the international standard testing protocol[42]. The value obtained from the test will be used to calculate the emission reductions of the systems for that year of operation.
>
> Where there is replacement of appliances, the replaced devices are considered with their related efficiency as applicable. If the appliance is replaced with a higher efficiency appliance, the same efficiency of the earlier appliance will be considered, to be conservative.

According to paragraph 23 of the applied methodology: For project activities using the Kitchen Performance Test Protocol to determine the quantity of fuel saved (i.e. paragraph 12, Option 1), monitoring shall determine the fuel consumption per operating device ($B_{y,new,KPT}$) of all operating devices or a representative sample thereof, annually.

> Annual monitoring of the fuel consumption can be neglected as Option 1 of paragraph 12 is not chosen to determine the quantity of the fuel saved as described in section B.4 (Part II) of this PoA-DD.

According to paragraph 24 of the applied methodology: If Option (b) in paragraph 13 is chosen for determining B_{old}, monitoring shall include the amount of thermal energy generated by the project technology t in year y.

> B_{old} is determined with the Option (a) and not with Option (b) and thus the monitoring of the thermal energy generated by the project technology t in year y is not needed.

According to paragraph 25 of the applied methodology: In order to assess the leakage, monitoring shall include data on the amount of woody biomass saved under the project activity that is used by non-project households/users (who previously used renewable energy sources). Other data on non-renewable woody biomass use required for leakage assessment shall also be collected.

> Like described in section B.4 (Part II) of this PoA-DD to account for leakage a net to gross adjustment factor of 0.95 (option c of paragraph 29 of the AMS-II.G methodology) will be applied. In this case monitoring of leakage is not required.

Moreover, according to paragraph 26 of the applied methodology monitoring shall ensure that:

[42] For example available at http://www.aprovecho.org/lab/pubs/testing (site visited on 10/01/2014)

(a) The replaced low efficiency devices are disposed of and not used within the boundary or within the region; or

(b) If baseline stoves continue to be used, monitoring shall ensure that the fuel-wood consumption of those stoves is excluded from B_{old}.

When each new efficient stove is sold the users sign a purchase contract where they agree to be included in the monitoring programme. It is enhanced that the old low efficiency stove will not be more used but instead to be sold to local iron recycling companies. During the verification the number of sold stoves and the number of dismantled stoves can also be compared through the information stored in the electronic database in case the iron recycling companies are collaborating with the project.

In cases if the further use of the inefficient baseline stoves is find out by the monitoring survey made on a representative sample, these households are excluded from the emission reductions calculations. There might be some cases where the users have migrated out of the project area, in such case the new user will be provided with a new stove so that the total number of stoves will remain the same.

Data archiving

The purpose of data archiving is to provide enough information to enable full monitoring for each monitoring period. The electronic project databases for each CPA will included for example the information from the purchase contracts, the possible receipts of the selling of the stoves to the iron recycling companies as well as the data obtained during the usage surveys are transferred to the electronic database. Each project databases will be operated and maintained by managing entity (Fondazione AVSI) or project implementer. A back-up of the database is made regularly and stored in a hard-copy form like CDs. All data monitored and required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever is later.

Sampling plan

According to "Standard for sampling and surveys for CDM project activities and programme of activities (Version 04.1)"[43] sampling plan should include a description of the sampling approach, important assumptions, and justification for the selection of the chosen approach. Moreover, according to the "Guidelines for sampling and surveys for CDM project activities and programme of activities (Version 03.0)"[44] the sampling plan should contain information relating to (A) sampling design; (B) data to be collected; and (C) implementation plan.

A. Sampling design

A.1 Objectives and reliability requirements

The objective of the sampling is to determine and monitor variable parameters described in B.7.1 (Part II of the PoA-DD), including the proportion of the households annually operating the efficient cooking stoves under the CPA activity (N) and to check the efficiency the stoves (η_{new}) during the monitoring

[43] CDM-EB50-A30-STAN (Version 04.1). Available at http://cdm.unfccc.int/Reference/Standards/index.html (site visited 09/01/2014)

[44] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)

period. During the monitoring surveys it is also confirmed that the households are not using the old inefficient stoves. The desired precision for all parameters is 95/10 (95 % confidence interval and 10 % margin of error) when monitored biennially. In case of annual surveys, a 90% confidence interval and a 10% margin of error shall be achieved for the sampled parameters. In cases where the survey results indicate that 95/10 precision or 90/10 precision are not achieved, the lower bound of 95% or 90% confidence interval of the parameter value may be chosen as an alternative to repeating the survey efforts to achieve 95/10 or 90/10 precision.

A.2 Target population

Target population is all the households included in each CPA project activity. These households used prior to project activity inefficient cooking stoves.

A.3 Sampling method

As a sampling method a "Simple random sampling" is chosen to estimate the proportion of the households annually operating the efficient cooking stoves as well as the efficiency of the stoves. The simple random sampling is an appropriate method as it is assumed that the population living in the project area is homogenous compared to the continued use of the efficient cooking stoves. Moreover, the efficient cooking stoves distributed under the project activity are industrial products and can thus be assumed to have constant quality.

A.4 Sample size

As there is more than one parameter to be estimated in each CPA project activity, the sample size calculation will be done for each of them and separate surveys are made when necessary. It is assumed that each CPA will include two parameters to be monitored through a survey on a representative sample ($\eta_{new,y}$ and N_y) and therefore the sample size is calculated separately for both of the parameters.

In accordance to paragraph 12 of the "Guidelines for sampling and surveys for CDM project activities and programme of activities"[45] the equation to calculate the required sample size for annual determining of $\eta_{new,y}$ can be written as follows:

$$n \geq \frac{1.645^2 N * p(1-p)}{(N-1) * 0.2^2 * p^2 + 1.645^2 p(1-p)}$$

Where:

n	Sample size
N	Total number of households
p	Expected proportion
1.645	Represents the 90% confidence required
0.2	Represents the 10% relative precision[46]

[45] CDM-EB67-A06-GUID (Version 03.0). Available at http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd (site visited 09/01/2014)

[46] Relative margin of error = absolute margin of error divided by the sample's point of estimate 0.1/0.50 = 0.2

The equation to calculate the required sample size for biannual determining of N_y can be written as follows:

$$n \geq \frac{1.96^2 N * p(1-p)}{(N-1)*0.2^2 * p^2 + 1.96^2 p(1-p)}$$

Where:

n	Sample size
N	Total number of households
p	Expected proportion
1.96	Represents the 95% confidence required
0.2	Represents the 20% relative precision[47]

A.5 Sampling frame

The sampling frame for all monitored parameters is the list of all the households under each CPA project activity i.e. all the households which have signed the purchase contract of the new efficient cooking stoves. The list can be obtained from the project database and it is available for check controls during verification. The sample is drawn at random from the sampling frame using a computerized randomizer. All random selections will be stored in the electronic database and therefore, traceability of the selection is provided.

B. Data to be collected

B.1 Field measurements

The method of collecting data will be field surveys on the required sample size of stove users. Data will be collected from the field surveys, entered in the database and included in the monitoring report.

Identification of all variables to be measured

The variables to be measured are $\eta_{new,y}$ and N and t as described in section B.7.1 (Part II of the PoA-DD).

Determination of appropriate timing

The sampling will occur at the end of each monitoring period and all the measurements will be conducted at the latest 6 months after the end of the specific monitoring period. The maximum length of one monitoring period will be two years (duration, not calendar years). Therefore the measurement will be conducted at the latest 24 + 6 months after the start of the specific monitoring period.

Frequency of measurements

All measurements will be one time measurements, i.e. for the determined number of samples the measurement will only be conducted once per sample.

Seasonal fluctuations

When the measurements are conducted only during limited time periods and are to be scaled up to the whole year, it needs to demonstrate that the parameter of interest is not subject to seasonal fluctuations or the time period selected is conservative or the necessary corrections are applied.

Parameter	Demonstration
η_{new}	Efficiency of the system being deployed as part of the project activity (fraction), as determined using the water boiling test (WBT) protocol is not affected by seasonal

[47] Relative margin of error = absolute margin of error divided by the sample's point of estimate 0.1/0.50 = 0.2

	fluctuations.
N	Total number of households using the efficient cooking stoves under the project activity is not affected by seasonal fluctuations since the decision whether the efficient cooking stove or the baseline appliance is used depends on a household decision
t	Number of months the efficient cooking stove will be operational is not scaled up for the whole year.

Description of measurement methods
Methods of measurement for each variable are described in section B.7.1 (Part II of the PoA-DD). Measuring methods are to ensure that the field data collection is performed properly and that any potential intentional errors or unintentional errors are minimized and documented.

B.2 Quality assurance/Quality control

Procedures for conducting the data collection and/or field measurements

Measuring methods for data collection and field measurements described in B.7.1 (Part II of the PoA-DD) are to ensure that the data collection is performed properly and that any potential intentional errors or unintentional errors are minimized and documented.

Data collected during the monitoring as well the data entered to the project database will be checked regularly and in case of inconsistencies appropriate corrective actions will be taken. All the monitoring data will be stored for the crediting period for two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever is later. Appropriate record keeping procedures will be implemented to ensure that each monitoring period data set can be transparently attributed to the proper CPA, preventing any occurrences of double counting.

All personnel involved in the monitoring will be trained before performing any monitoring activities. The managing entity (Fondazione AVSI) will facilitate training. The training includes the provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response and the documentation of above mentioned cases. Managing entity (Fondazione AVSI) will ensure that personnel taking part in the monitoring undertakes an appropriate monitoring assignment according to the monitoring plan. Only trained people are qualified to be involved in the monitoring.

Provisions for maximizing response rates

The sample size is be chosen for a 95/10 precision (95 % confidence interval and 10 % margin of error) when monitored biennially. In case of annual surveys, a 90% confidence interval and a 10% margin of error shall be achieved for the sampled parameters. In cases where the survey results indicate that 95/10 precision or 90/10 precision are not achieved, the lower bound of 95% or 90% confidence interval of the parameter value may be chosen as an alternative to repeating the survey efforts to achieve 95/10 or 90/10 precision. To be conservative it is expected the response rate from the sampled households is to be only 80% thus the sample size is scaled up accordingly.

Procedure for refusals and non-respondents

Refusals and non-respondents (i.e. households where the contact could not be established) will be recorded by the monitoring team as well as the reason for the refusal. If the refusal is due to a likely non-use of the efficient cooking stove, this household will be counted as Drop-Out. If the reason is e.g. a time constraint which cannot be solved by repeating the survey effort at this household at another date, the household will be replaced by another household chosen at random. Where appliances are found not operational these households are excluded from the emission reductions calculations.

Procedure for defining outliers

Outliers will be defined as those data points with values greater than three standard deviations from the mean of the sample. Data/measurements data points identified as outliers will be examined further to correct for possible transcription and data entry errors, but will be omitted from the analysis if no such administrative errors exist.

B.3 Analysis

Managing entity (Fondazione AVSI) will assess all the monitoring data with the help possible external consultants. Managing entity or the possible consultant is responsible for preparing the monitoring report which will present the data used to calculate the emission during the specific monitoring period of each CPA. Monitoring reports will be provided for the DOE for verification.

C. Implementation plan

C.1 Schedule for implementing the sampling effort

As mentioned above, the schedule for implementing the sampling effort shall be so that within 6 months after the end of the specific monitoring period the effort can be finalized.

C.2 Skills and resources required for data collection and the analyses

Managing entity (Fondazione AVSI) will be responsible for managing data collection and data entries into the project database as well as analyses of the data. People participating in the monitoring will receive training organized by Fondazione AVSI to ensure that all personnel have the skill required for his/hers particular monitoring task. The personnel participating in the monitoring needs to certify that they have no conflicts of interest. If there is conflict of interest, the personnel will not be allowed to participate in data collection and analysis. Any people participating in the on-site monitoring will be required to speak the local language, or will be accompanied by interpreters, allowing for full understanding of any responses given by users, and any questions therein.

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Appendix 1: Contact information on entity/individual responsible for the PoA

Organization	Fondazione AVSI
Street/P.O. Box	4, Via Legnone
Building	
City	Milano
State/Region	
Postcode	20158
Country	Italy
Telephone	+39 02 6749881
Fax	+39 02 6749 0056
E-mail	info@avsi.org
Website	www.avsi.org
Contact person	Giorgio Capitanio
Title	Mr.
Salutation	Country Representative
Last name	Capitanio
Middle name	
First name	Giorgio
Department	
Mobile	+39 347 4263726
Direct fax	+39 02 6749881
Direct tel.	
Personal e-mail	giorgio.capitanio@avsi.org

Appendix 2: Affirmation regarding public funding

N/A

Appendix 3: Application of methodology(ies)

N/A

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

1. A separate PDF-document “Colorado State university, 2011. Emission and Performance Report CH2200”
2. A separate electronic spreadsheet “CPA1_ex ante_ER_calculations”

Appendix 5: Further background information on the monitoring plan

N/A

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History of the document

Version	Date	Nature of revision(s)
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the programme design document form for small-scale CDM programmes of activities" (EB 66, Annex 13).
01	EB33, Annex43 27 July 2007	Initial adoption.
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