



**Component project activity design document form for  
small-scale CDM component project activities**

**(Version 03.0)**

*Complete this form in accordance with the Attachment "Instructions for filling out the component project activity design document form for CDM small-scale component project activities" at the end of this form.*

**COMPONENT PROJECT DESIGN DOCUMENT (CPA-DD)**

<b>Title of the CPA</b>	Empowering DRC communities through the use of Improved Cook Stoves – CPA 001
<b>Version number of the CPA-DD</b>	Version 06
<b>Completion date of the CPA-DD</b>	16/09/2014
<b>Title of the PoA to which the CPA is included</b>	Empowering DRC communities through the use of Improved Cook Stoves
<b>Host Party(ies)</b>	Democratic Republic of Congo
<b>Estimated amount of annual average GHG emission reductions</b>	42,599

## SECTION A. General description of CPA

### A.1. Title of the proposed or registered PoA

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Empowering DRC communities through the use of Improved Cook Stoves

### A.2. Title of the CPA

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(a) The title of CPA and the unique identification of the CPA: Empowering DRC communities through the use of Improved Cook Stoves – CPA 001

(b) The current version number of the CPA-DD: Version 06

(c) The date the CPA-DD was completed: 16/09/2014

### A.3. Description of the CPA

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The purpose of this small-scale CDM Component project activity (CPA) is the dissemination of Improved Charcoal Cook Stoves (ICS) to urban, peri-urban, and rural users (households, communities and SMEs) in South Kivu province of the Democratic Republic of Congo (DRC), replacing the inefficient traditional biomass fired (charcoal) cook stoves and cooking devices, thereby reducing the amount of non-renewable biomass fuel used.

The forestry practices in DRC are not sustainable; therefore the woody biomass and the charcoal produced from it are mostly non-renewable. greenhouse gases (GHG), including carbon dioxide, are produced as a result of the combustion of non-renewable biomass as used in traditional cook stoves. ICS improve heat transfer efficiency as compared to the baseline traditional cook stoves, thereby reducing the amount of non-renewable biomass fuel used.

The project will reduce use of non-renewable biomass and thus as well the greenhouse gases accountable to it.

The CPA is submitted for validation together with the PoA “Empowering DRC communities through the use of Improved Cook Stoves”. The CME of the proposed PoA is Climate Corporation Emissions Trading GmbH (further on referred to as “Climate Corporation”).

The CPA will improve the quality of life of communities via making the ICS available to the users:

- *Livelihood of the poor:* the circumstances of poor families will be improved since the ICS reduce fuel cost. Reduction in biomass consumption implies relief from drudgery and more opportunity for productive activity, arising from less time spent collecting fuel.
- *Access to energy services:* The improved charcoal cook stoves replace non-renewable biomass fuel, which in many areas, is a scarce resource or very expensive to buy. Users have also found ICS more convenient, shortening the cooking time.
- *Health:* Reduction of indoor air pollution (carbon monoxide and particulate matter), reducing exposition for children and mothers, reducing children pneumonia, respiratory diseases, and cancer. In addition, risks associated with open fire cooking are reduced.
- *Air quality:* Air pollution from charcoal production for project users will be reduced, as well as indoor air pollution from indoor cooking with solid fuels.
- *Environmental benefits:* Reduction of GHG and dust emissions associated with non-renewable biomass combustion. Avoided deforestation.
- *Sustainable development:* Reduced costs for cooking fuel and/or no collection of wood fuel create opportunities for development of the livelihood.

**A.4. Entity/individual responsible for the operation of CPA**

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The CPA is implemented by company TaiCom Congo SPRL (TaiCom), which is a SME based in Kinshasa, Democratic Republic of Congo (DRC), and registered under DRC law in 2010. TaiCom has a specific competence of environmental projects and the tools of CDM and REDD in DRC. TaiCom and individuals from TaiCom have long experience from working with the government, NGOs and communities in DRC.

**A.5. Technical description of the CPA**

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A typical CPA will replace a traditional biomass-firing cook stoves (three-stone-fire, non-efficient wood and charcoal stoves) with an improved charcoal cook stove with higher efficiency, at minimum 20%.

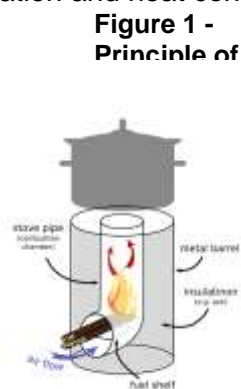
The CPA may implement various ICSs from various producers during the CPA lifetime, unless the efficiency is at minimum 20%.

However, the first and the most spread ICS is the EcoJiko charcoal stove, a rocket cook stove, with metal case and ceramic (clay) liner which serves as insulation and heat conservation.

A rocket cook stove achieves efficient combustion of temperature by ensuring a good air draft into the fire, fuel, complete combustion of volatiles, and efficient heat.

A rocket cook stove's main components are:

- Fuel magazine: Into which the unburned fuel is which it feeds into the combustion chamber
- Combustion chamber: At the end of the fuel where the fuel burns
- Chimney: A vertical chimney above the chamber to provide the updraft needed to maintain



**Figure 1 - Principle of**

the fuel at a high controlled use of use of the resultant

placed and from magazine, combustion combustion

The fuel magazine can be horizontal, with additional fuel added manually, or vertical, with fuel automatically fed.

As the fuel burns in the combustion chamber, convection draws new air into the combustion chamber from below, ensuring that any smoke from smoldering wood near the fire is also drawn into the fire and up the chimney. The chimney can be insulated to increase the temperature and improve combustion; according to studies this can increase efficiency by up to two percent.

For cooking purposes, the design keeps the cooking vessel in contact with the fire over the largest possible surface area. A pot skirt can be used to create a narrow channel that forces hot air and gas to flow along the bottom and sides of the cooking vessel. Optional baffles guide hot air and flame up the sides of the pot.

**“EcoJiko Charcoal Stove”**

The cook stove is currently produced by company “Africa Energy Saving Ltd” in Kenya and will be imported to DRC. Local production is foreseen for the future, too.

The cook stove is composed of an outer iron steel part, and an inside ceramic liner which is made of high quality clay material. The ceramic liner is designed to have a rocket (straight) type of the outlet.

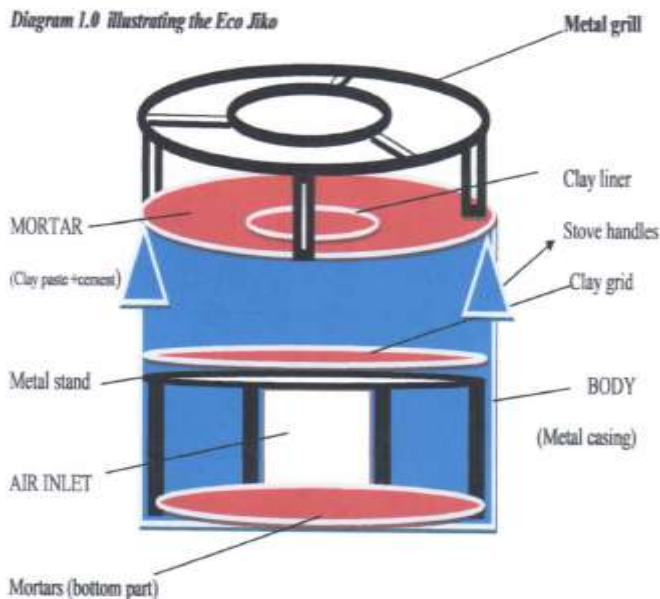
Charcoal is introduced from the top of the cook stove onto the perforated clay grid in a combustion chamber.

The parameters of EcoJiko Charcoal Stove are:

Components:	Description:
Metal sheet case:	Composing the body of the stove Opening for air inlet Opening for ashes removal

	Handles on sides
Clay liner:	Composing the centre of the stove, in direct contact with the fire Made of burnt clay material Used for heat retention
Grid:	It serves as fuel holder Perforations filter the ashes from the burning fuel Made of burnt clay material Perforated, holes have diameter 2.54 cm
Metal grill:	Holder for the pot
Metal stand:	Holding the clay grid in position

Diagram 1.0 illustrating the Eco Jiko



Thermal efficiency: **26%**. The manufacturer’s information on efficiency of the cook stove is substantiated by results of the testing performed at University of Nairobi, Kenya. The cook stove has been tested according to the Water Boiling Test protocol.

Lifetime: minimum 5 years

**Tentative implementation plan for the first crediting period:**

Year	New charcoal ICS implemented (Number)	Total charcoal ICS in operation (Number)
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2015	7,500	7,500
2016	7,500	15,000
2017	2,750	17,750
2018	0	17,750
2019	0	17,750
2020	0	17,750
2021	0	17,750

**A.6. Party(ies)**

Name of Party involved (host) indicates host Party	Private and/or public entity(ies) CPA implementer(s) (as applicable)	Indicate if the Party involved wishes to be considered as CPA implementer (Yes/No)
Democratic Republic of Congo (host)	TaiCom Congo SPRL	No
Democratic Republic of Congo (host)	Climate Corporation Emissions Trading GmbH	No

**A.7. Geographic reference or other means of identification**

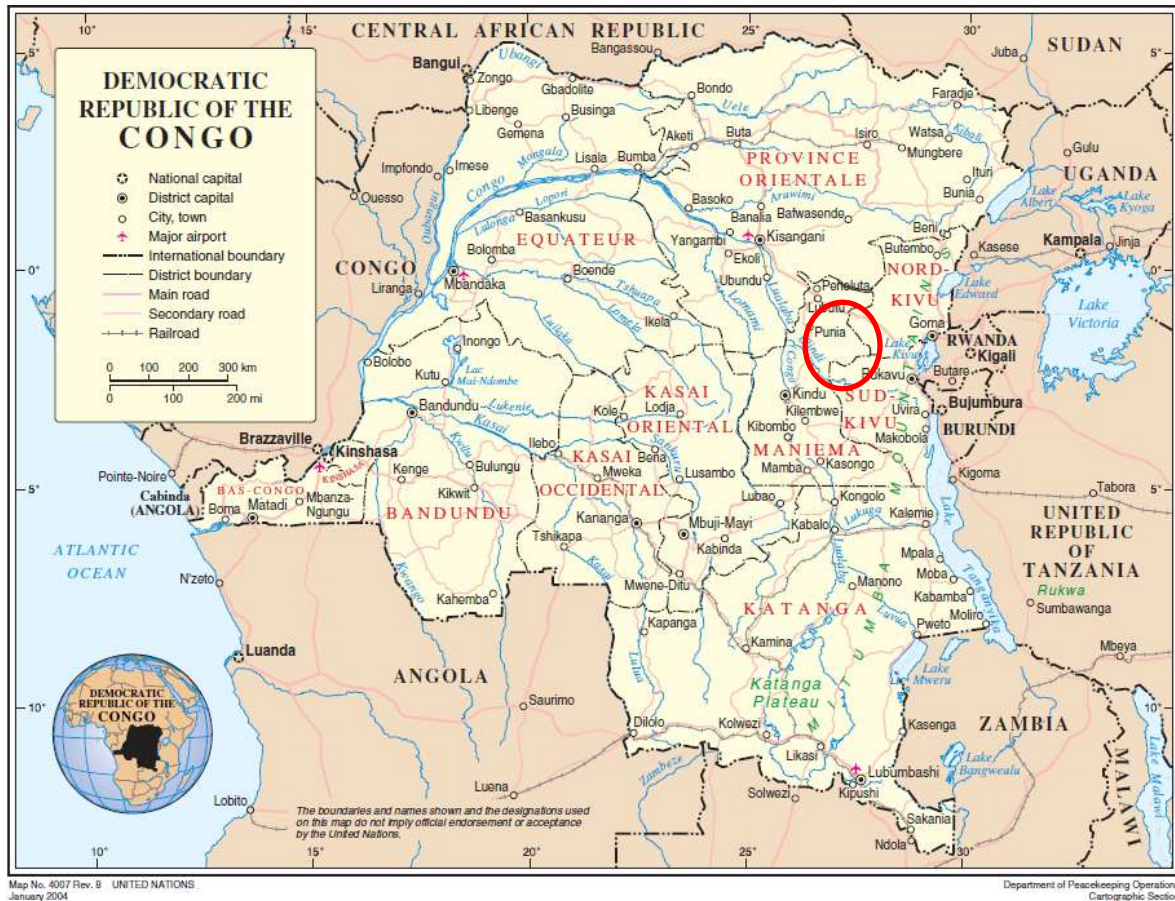
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The physical boundary of the CPA is determined by the physical locations of installed charcoal ICSs. Proposed CPA is implemented within geographic boundary of Democratic Republic of Congo, in the province of South Kivu, which is one of the provinces of the PoA

Capital of the South Kivu province is city Bukavu.

GPS coordinates: 2°30'S 28°52'E

Figure 1: Map of DRC showing administrative boundaries (Districts)



**A.8. Duration of the CPA**

**A.8.1. Start date of the CPA**

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The CPA will start only after the PoA is successfully registered, no ICS are purchased and distributed until then.

Expected start date of the CPA is on 01/01/2015, or the date of purchase of the first batch of imported ICS, whichever occurs later.

Start date of the CPA is after the start date of the PoA (which is the date of publication of the PoA-DD for global stakeholder consultation).

**A.8.2. Expected operational lifetime of the CPA**

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21 years (3 x 7 years of crediting period).

**A.9. Choice of the crediting period and related information**

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7 years, twice renewable.

**A.9.1. Start date of the crediting period**

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01/01/2015

**A.9.2. Length of the crediting period**

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7 years, twice renewable.

**A.10. Estimated amount of GHG emission reductions**

Emission reductions during the crediting period	
Years	Annual GHG emission reductions (in tonnes of CO <sub>2</sub> e) for each year
2015	20,103
2016	40,206
2017	47,577
2018	47,577
2019	47,577
2020	47,577
2021	47,577
Total number of crediting years	7
Annual average GHG emission reductions over the crediting period	42,599
Total estimated reductions (tonnes of CO <sub>2</sub> e)	298,194

**A.11. Public funding of the CPA**

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TaiCom as the CPA implementer confirms hereby that no public funding from Annex 1 countries is involved in financing of the CPA.  
Thus there is no risk of ODA diversion.

**A.12. Debundling of small-scale component project activities**

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In accordance with eligibility criterion (I) “De-bundling” of the PoA, proposed CPA demonstrated that it each of the independent subsystems/measures included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the methodology applied, as follows:

The 1% of SSC threshold represents:	1.8 GWh <sub>th</sub>
Actual outputs/capacities of the ICS are:	
Output <sub>new, charcoal ICS</sub> =	0.007 GWh <sub>th</sub> < 1.8 GWh <sub>th</sub>

Each ICS will replace an existing traditional biomass-firing cook stove used by households or by communities or SMEs.. Energy use of the existing traditional cook stove is therefore calculated based on the average national values for charcoal consumption by households.

The calculation<sup>1</sup> shows that domestic and similar cook stoves do not exceed 1% of the SSC threshold, and that therefore the CPA is exempted from the de-bundling check.

**A.13. Confirmation for CPA**

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<sup>1</sup> Details of the calculation are in the attached excel sheet.



TaiCom as the CPA implementer confirms hereby that the CPA is not and will not be registered as a separate CDM project activity or as a part of another registered PoA

**A.14. Contact information of responsible persons/ entities for completing the CDM-SSC-CPA-DD-FORM**

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**Contact person:** Clemens Ploechl

**Organization:** Energy Changes Projektentwicklung GmbH

**Street/P.O. Box:** Obere Donaustrasse 12/28

**Telephone:** +43 676 847133100

**City:** Vienna

**E-mail:** [clemens.ploechl@energy-changes.com](mailto:clemens.ploechl@energy-changes.com)

**Website:** [www.energy-changes.com](http://www.energy-changes.com)

**SECTION B. Environmental analysis**

**B.1. Analysis of the environmental impacts**

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The Environmental Impact Analysis is established at the PoA level, as described in section E of the PoA-DD.

No significant negative impacts are expected as a result of the CPA. The proposed CPA will have a positive contribution to the environment through the reduction of consumption of Non Renewable Biomass (NRB) which will lead to lower air pollution and deforestation.

**SECTION C. Local stakeholder comments**

**C.1. Solicitation of comments from local stakeholders**

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Local Stakeholder consultation is done at CPA level, as described in section F of the PoA-DD.

The stakeholder consultation event was held on 5 December 2013 at Hotel Sultani in Kinshasa, DRC.

Stakeholders were invited by email, invitations to governmental organisations and institutions as well as NGOs in Kinshasa were delivered personally. The invitation to the stakeholder consultation event was also announced in a newspaper.

The objective was to explain the CPA to relevant stakeholders in DRC and to gather their comments on the project.

The 57 registered stakeholders represented a good national cross-section of stakeholder groups: national and local representatives, potential ICS users, DNA representatives, and personnel from national and international NGOs were present at the meeting.

Detailed information on the stakeholder conference was submitted to DOE for validation and it can be found on the Gold Standard website where the stakeholder consultation report is publicly available.

**C.2. Summary of comments received**

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During the LSC event, in total 41 evaluation forms were submitted by the stakeholders, which is 72% of the participants. The general impressions about the LSC and the cook stove project were very positive.

Participants found that the consultation was useful, interesting, important, well organized. The participation of the stakeholders was active, with many discussions and opinion exchanges. Many of them mentioned that they learnt a lot about CDM projects, carbon market and improved cook stoves.

Participants liked the fact that the cook stove will reduce the time for cooking, that the need of fuel will be reduced, and less smoke will be emitted, which is beneficial for the health of the population in households.

Details on the comments can be found on the GS web page, as mentioned above.

**C.3. Report on consideration of comments received**

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Details on the consideration of the received comments can be found on the GS web page, as mentioned above.

**SECTION D. Eligibility of CPA and estimation of emissions reductions**

**D.1. Reference of methodology(ies) and standardized baseline(s)**

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As prescribed in the PoA-DD, proposed CPA applies the methodology: AMS-II.G “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass”, Version 05.0.

Reference: <http://cdm.unfccc.int/methodologies/DB/REQC2MYZJJ6I7BC9SKCS32T2K87AOW>

**D.2. Applicability of methodology(ies) and standardized baseline(s)**

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A single methodology is applied across the PoA. Therefore the methodology measures established in the PoA-DD, Part I, section B.3 constitutes the justification for the choice and applicability of the selected methodology.

This CPA meets the applicability criteria of AMS-II.G as follows:

Methodology Requirement	CPA Compliance
Small scale: <i>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 output</i>	The maximum number of ICSs is defined according to the specific ICS models distributed, and corresponding <u>cook</u> stove performance, to ensure a maximum energy saving of 180 GWh <sub>th</sub> /year, as follows: Average energy saving per ICS implemented in the proposed CPA: <ul style="list-style-type: none"> <li>• 0.010 GWh<sub>th</sub>/device/year for charcoal ICS</li> </ul> Therefore the maximum number of ICSs to be implemented by the proposed CPA is: <ul style="list-style-type: none"> <li>• 17,754 charcoal ICS</li> </ul> This is below the limit for energy saving of 180 GWh <sub>th</sub> /year per CPA <sup>2</sup> .

<sup>2</sup> Details of the calculation are in the attached excel sheet.

	<p>If the number of ICSs in the CPA exceeds the energy limit, the number of ERs shall be capped at those generated by ICSs saving in aggregate a maximum of 180GWh per year. Any additional emission savings will either not be counted in the program or included in another CPA as appropriate.</p> <p>During the monitoring, the CPA shows annual energy savings data that demonstrate that the CPA does not exceed the small-scale threshold for each year of the CPA crediting period.</p>
<p>Technology:  <i>“This category comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency<sup>3</sup> biomass fired cook stoves<sup>4</sup> or ovens or dryers and/or energy efficiency improvements in existing biomass fired cook stoves or ovens or dryers.”</i></p>	<p>Proposed CPA implements ICS with efficiency of 20% or higher; the “EcoJiko Charcoal Stove” has an efficiency of 26%.                  New ICS will displace existing cooking devices using non-renewable biomass.                  This will be ensured by recording the fuel used prior to ICS installation and baseline cook stove type of all ICS purchasers.                  Any ICSs replacing cook stoves using fossil fuels (such as kerosene and LPG) will not be recorded in the CPA database (i.e., ICS may be still installed, but will not be included within the installation record and emission reduction calculations).</p>
<p>Non-renewable biomass:  <i>“The project participants are able to show that non-renewable biomass has been used since 31 Dec 1989, using survey methods or referring to published literature, official reports or statistics.”</i></p>	<p>Demonstrated at PoA-level, as follows: according to FAO<sup>5</sup>, area of forest and other wooded land in DRC decreased in between years 1990-2005 by 1.07% which is a loss of 357,000 ha.</p>
<p>Leakage to be considered:</p>	<p>Proposed CPA considers the leakage by using the default gross to net adjustment factor of 0.95.</p>

**D.3. Sources and GHGs**

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A description of the sources and gases included in the project boundary is presented below:

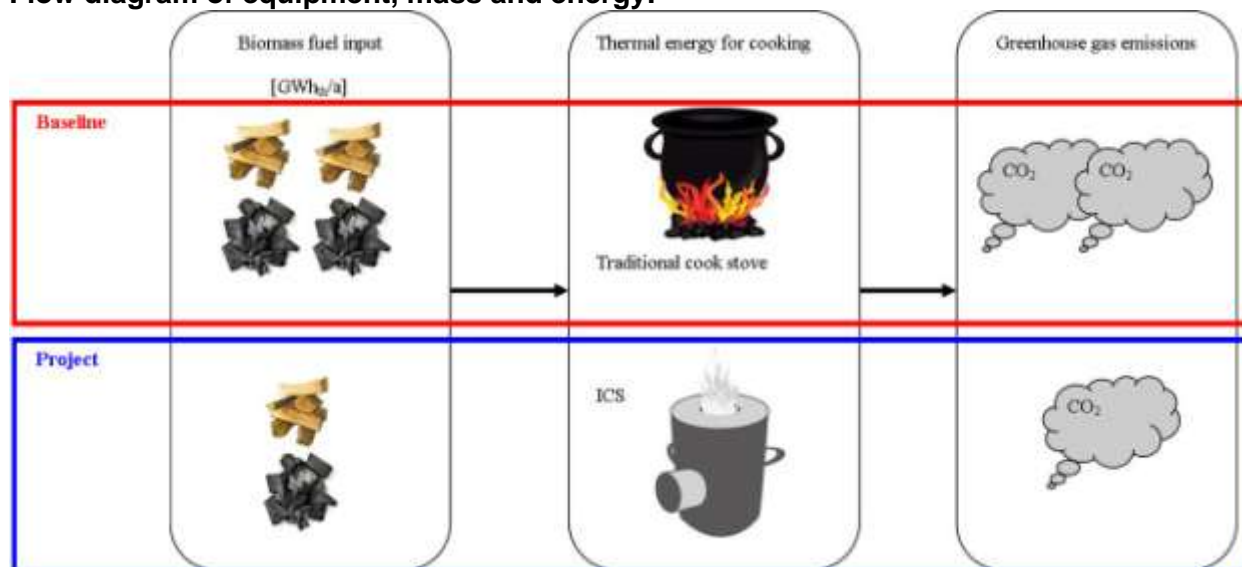
	Sources	Gas	Included?	Justification/Explanation
<b>Baseline</b>	Combustion of non-renewable biomass for cooking	CO <sub>2</sub>	Yes	Main source of emissions  Excluded for simplification; in accordance with the methodology.
		CH <sub>4</sub>	No	
		N <sub>2</sub> O	No	
<b>Project</b>	Combustion of non-renewable biomass for	CO <sub>2</sub>	Yes	Main source of emissions  Excluded for simplification; in accordance with the methodology.
		CH <sub>4</sub>	No	
		N <sub>2</sub> O	No	

<sup>3</sup> 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.”

<sup>4</sup> Single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.

	cooking			
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**Flow diagram of equipment, mass and energy:**



**D.4. Description of the baseline scenario**

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The proposed CPA consists of the dissemination of ICSs, which by definition are small appliances providing energy efficiency improvements in the thermal applications of non-renewable biomass, in accordance with AMS-II.G.

In accordance with the methodology, *it is assumed that in the absence of the project activity, the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs.*

**D.5. Demonstration of eligibility for a CPA**

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The proposed CPA is eligible to be included in the PoA because it meets all the criteria listed in the eligibility criteria for inclusion of a CPA in the PoA in of the PoA-DD:

Ref. to PoA Standard (par. 16)	Eligibility Criteria		Mean of proof / Evidence Document
	Category	Description	
(a)	Geographical Boundary	All ICS listed in the CPAs will be located in one of the 6 provinces of the DRC.	The CPA is eligible.  <b>Documents/evidence checked:</b> <ul style="list-style-type: none"> <li>The CME provided the statement that the CPAs will be implemented in one of the 6 provinces of the PoA - - in province of South Kivu, in Democratic Republic of Congo.</li> </ul>
(b)	Double-counting	All CPAs will be checked to prevent double counting and are not	The CPA is eligible.

		registered as a separate CDM project activity, or as part of another registered CDM PoA.	<p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>UNFCCC website, UNEP Risoe CME has checked the 2 websites and confirmed that the CPA is not registered as another single CDM project activity or CPA under another PoA.</li> <li>Statement of CPA implementer that the CPA will not be registered as any above in the future, either, is provided to the DOE. The CPA will implement system of unique identification codes to prevent double-counting of individual ICS, as detailed in the monitoring plan.</li> </ul>
(c)	Technology	Each CPA will implement ICS with minimum efficiency of 20%.	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>The manufacturer provided technology specification to proof minimum efficiency of the charcoal ICS distributed.</li> </ul>
(d)	Start date	Start date of the PoA is date of publication of the PoA-DD for global stakeholder consultation; 14/02/2014. All CPAs will state very clearly their start date, and evidence that their start date is not prior to the start date of the PoA.	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>The CME provided the statement that no ICS have been sold under this CPA until now and the CPA will not start before the registration of the PoA; thus the start date of the CPA will not be prior to the start date of the PoA.</li> </ul>
(e)	Methodology	Each CPA will comply with the methodology used for this PoA, i.e. AMS-II.G (Energy efficiency measures in thermal applications of non renewable biomass), Version 05.0. <u>Applicability criteria of the methodology are:</u> 1. Small scale: <i>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 output</i> 2. Technology: <i>efficiency improvements in the thermal applications of non-renewable</i>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ol style="list-style-type: none"> <li>The CME provided a statement that the energy savings generated by the ICSs under this CPA will not exceed 180 GWh thermal per year. The exact number of ICSs will be calculated based on the efficiency of the ICSs, as monitored during the implementation.</li> </ol>

		<p><i>biomass</i>  <i>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.</i></p> <p>3. Non-renewable biomass: Demonstrate that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports, or statistics.          This criterion is demonstrated at the PoA-level, as described in section B.3 of the PoA-DD, no action needed by CPA.</p> <p>4. Leakage to be considered: Each CPA will describe how the leakage is considered.</p>	<p>2. Manufacturer provided technology specification (same as for (c) above).</p> <p>3. N/A Demonstrated at the PoA level, as described in Section B.3 of the PoA-DD.</p> <p>4. Leakage is considered using the default adjustment factor – documented in the Emissions reduction calculation (excel sheet)</p>
(f)	Additionality	<p>Additionality for all CPAs is demonstrated according to “<i>Standard for Demonstration of Additionality, Development of Eligibility Criteria and application of multiple methodologies for Programme of Activities</i>”, and “<i>Guidelines for the demonstration of additionality of small scale project activities</i>”.</p> <p>CPAs having the following characteristics are thus automatically additional:</p> <ul style="list-style-type: none"> <li>• The ICS disseminated under each CPA would be isolated units</li> <li>• The users of the ICS would be households, or communities or SMEs</li> <li>• The size of the each unit will be no larger than 5% of the small- scale CDM thresholds - 9 GWh<sub>th</sub> of energy savings per year.</li> </ul>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>• Manufacturer provided technology specification as described in Section A.5 above which confirms that             <ul style="list-style-type: none"> <li>▪ The ICS are isolated units</li> <li>▪ The energy saving per ICS are 0.007 GWh<sub>th</sub>, thus no larger than SSC CDM threshold</li> </ul> </li> <li>• CME provided a statement that the target groups are rural, peri-urban, and urban households, communities, and SMEs</li> </ul>
(g1)	Stakeholder meeting	<p>Local stakeholder consultation is done at CPA level, as described in section F of the PoA-DD. Local stakeholder consultation report must be provided with CPA-DD.</p>	<p>N/A          Local stakeholder consultation has been carried out on December 5<sup>th</sup> 2013 as described in section C of the CPA-DD.</p>
(g2)	Environmental Impact Analysis (EIA)	<p>The EIA is established at the PoA level as described in section E of the PoA-DD. No further action needed at the CPA level to satisfy this eligibility criterion.</p>	<p>N/A          EIA is carried out on PoA level.</p>
(g3)	Monitoring	<p>As per the methodology, monitoring shall</p> <ul style="list-style-type: none"> <li>• <i>consist of checking of all devices or a representative sample thereof, at least once</i></li> </ul>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>• CME developed the</li> </ul>

		<p>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.</p> <ul style="list-style-type: none"> <li>• consist of checking the efficiency of all devices or a representative sample thereof annually</li> <li>• 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)</li> <li>• ensure that either: <ul style="list-style-type: none"> <li>a) The replaced low efficiency devices are disposed of and not used within the boundary or within the region; or</li> <li>b) If baseline cook stoves continue to be used, monitoring shall ensure that the wood consumption of those cook stoves is excluded from <math>B_{old}</math>.</li> </ul> </li> </ul> <p>Each CPA has procedures in place to track the distribution of ICS.</p>	<p>monitoring plan in line with all the methodology; it is described in Section D.7 below. The CPA implementer will do the monitoring, as agreed in the contract with the CME.</p> <ul style="list-style-type: none"> <li>• CME provided example of paper records of sales (Sales receipts) to be used for tracking the ICSs distribution.</li> </ul>
(g4)	Approval of CPA by CME	<p>Each CPA has a project implementer that is either the Coordinating/Managing Entity or another entity that has signed a contractual agreement with the CME. Those agreements include all rights and responsibilities of both parties, e.g. approval procedures by the CME, monitoring requirements, carbon credit rights transfer. This eligibility criterion is not necessary if the CPA implementer is the CME.</p>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>• CME provided contractual agreement between TaiCom as the CPA implementer and Climate Corporation as the Coordinating/ Managing Entity</li> </ul>
(g5)	Inclusion of CPA	<p>Each CPA inclusion by CME shall be confirmed in the CPA-DD</p>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <p>CME agreed with TaiCom on the CPA implementation and signed the contract. CME confirms by the means of this elaborated CPA-DD that this CPA is included into the PoA. Proposed CPA is the first CPA submitted with PoA for validation.</p>
(g6)	CER rights transfer	<p>The users purchasing the ICS shall sign an agreement with the CME to transfer the carbon credit rights of these ICS.</p>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p>

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			<ul style="list-style-type: none"> <li>• CME provided carbon credits rights transfer agreement clause in the example of the ICS sale document (Sales receipt)</li> </ul>
(h1)	Funding from Annex I countries	Each CPA will state clearly in the CPA-DD the source of public funding, if any.	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>• CPA implementer provided statement that no ODA funding is involved.</li> </ul>
(h2)	No diversion of ODA	If public funding is used for any CPA, the relevant Annex I party will confirm that the funding is not a diversion of ODA for that CPA.	<p>N/A</p> <p>No public funding is used.</p>
(i)	Target Group and distribution mechanism	The CPA serves households, communities or SMEs either in urban, peri-urban or rural areas, and distributes the ICS through adequate distribution channels.	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>• CME provided a statement contract of CPA implementer with CME, identifying the target groups are rural, peri-urban, and urban households, communities, and SMEs</li> </ul>
(j)	Sampling	<p>Provide a sampling method (e.g. in the monitoring plan and baseline studies) that follows the “Standard For Sampling And Surveys for CDM Projects and Programmes of Activities. The sampling plan contains information relating to: (a) sampling design; (b) data to be collected; and (c) implementation plan.</p> <p>The CPA complies with the following confidence interval and error requirement:</p> <ul style="list-style-type: none"> <li>• When biennial inspection is chosen a 95% confidence interval and a 10% margin of error requirement for the sampling parameter. When annual inspection is used, a 90% confidence interval and a 10% margin of error requirement is achieved for the sampled parameters. In cases where survey results indicate that 90/10 precision or 95/10 precision (above) is not achieved, the lower bound of a 90% or 95% confidence interval of the parameter value is chosen as an alternative to repeating the survey efforts to achieve the 90/10 or 95/10 precision.</li> </ul>	<p>The CPA is eligible.</p> <p><b><u>Documents/evidence checked:</u></b></p> <ul style="list-style-type: none"> <li>• CME developed the sampling plan in line with all the methodology and standard requirements. The sampling plan is described in the Monitoring plan below</li> </ul>



		If required, leakages are estimated and accounted for on a sample basis using a 90/30 precision for the selection of samples.	
(k)	De-bundling	As per “Guidelines on assessment of debundling for SSC project activities <sup>6</sup> ” Part II, paragraph 10: “If each of the independent subsystems/measures (e.g., biogas digester, solar home system) included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the methodology applied, then that CPA of PoA is exempted from performing de-bundling check i.e., considering as not being a de-bundled component of a large scale activity”. The size of the each ICS will be no larger than 1% of the small-scale CDM thresholds – 1.8 GWh <sub>th</sub> of energy savings per year.	The CPA is eligible.  <b><u>Documents/evidence checked:</u></b> Manufacturer provided technology specification as described in Section A.5 above which confirms that the energy saving per ICS are 0.007 GWh <sub>th</sub> which is below 1% of the SSC threshold

**D.6. Estimation of emission reductions**

**D.6.1. Explanation of methodological choices**

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The following methodological choices for calculation of the emission reductions of each CPA will be used for each type of implemented ICS. The same type of ICS involves cook stoves having the same efficiency.

The emission reductions of the CPA are sum of emission reductions achieved by each of the applied type of the ICS.

$$ER_y = B_{y,savings} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_{fossilfuel}} \times N_{y,i} \quad \text{Equation (1)}$$

Where:

- $ER_{y,i}$  Emissions reductions during the year y (tCO<sub>2</sub>e)
- $B_{y,savings}$  Quantity of woody biomass that is saved in tonnes per device
- $N_{y,i}$  Number of project devices of the type *i* operating in year *y*, determined as per paragraph 22 of the methodology
- $f_{NRB,y}$  Fraction of woody biomass used in the absence of the project activity in year *y* that can be established as non renewable biomass using nationally approved methods or government data or approved default country specific fraction of non-renewable woody biomass ( $f_{NRB}$ ) values available on the CDM website<sup>7</sup>
- $NCV_{biomass}$  Net calorific value of the non-renewable biomass that is substituted (IPCC default for wood fuel: 0.015 TJ/tonne, wet basis)
- $EF_{projected_{fossil fuel}}$  Emission factor for the substitution of non-renewable woody biomass by similar consumers. (81.6 t CO<sub>2</sub>/TJ<sup>8</sup>)

<sup>6</sup> [http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC\\_guid17.pdf](http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf)

<sup>7</sup> Default values endorsed by designated national authorities and approved by the Board are available at <http://cdm.unfccc.int/DNA/fNRB/index.html> .

<sup>8</sup> This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. It is assumed that the mix of present and future fuels used would consist of a solid fossil fuel (lowest in the ladder of fuel choices), a liquid fossil fuel (represents a progression over solid fuel in the ladder of fuel use choices), and a gaseous fuel (represents a progression over liquid fuel in the ladder of

Determining  $B_{y,savings}$ :

The methodology provides three options for determining  $B_{y,savings}$  – the quantity of woody biomass saved by the project activity:

- Option 1: kitchen performance test (KPT)

$$B_{y,savings} = B_{old} - B_{y,new,KPT} \quad \text{Equation (2)}$$

- Option 2: water boiling test (WBT)

$$B_{y,savings} = B_{old} \times \left(1 - \frac{\eta_{old}}{\eta_{new,y}}\right) \quad \text{Equation (3)}$$

OR

$$B_{y,savings} = B_{y,new,survey} \times \left(\frac{\eta_{new,y}}{\eta_{old}} - 1\right) \quad \text{Equation (4)}$$

- Option 3: controlled cooking test (CCT)

$$B_{y,savings} = B_{old} \times \left(1 - \frac{SC_{new,y}}{SC_{old}}\right) \quad \text{Equation (5)}$$

Due to the data availability, the proposed CPA will use Option 2, Equation (3) as follows:

 $B_{y,savings}$  Option 2

$$B_{y,savings} = B_{old} \times \left(1 - \frac{\eta_{old}}{\eta_{new,y}}\right) \quad \text{Equation (3)}$$

Where:

$B_{old}$  Quantity of woody biomass used in the absence of the project activity in tonnes per device

$\eta_{old}$  1. Efficiency of the system being replaced, measured using representative sampling methods or based on referenced literature values (fraction), use weighted average values if more than one type of system is being replaced;  
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

$\eta_{new,y}$  Efficiency of the system being deployed as part of the project activity (fraction), as determined annually<sup>9</sup> using the Water Boiling Test (WBT) protocol carried out in accordance with national standards (if available) or international standards or guidelines<sup>10</sup>. Use weighted average values if more than one type of system is being introduced by the project activity.

Determining  $B_{old}$ :

The methodology provides two options for determining  $B_{old}$  – the quantity of woody biomass used in the absence of the project activity (in tonnes per device).

Due to the data availability, proposed CPA will use option (a), as follows:

- Calculated as the product of the number of devices multiplied by the estimated average annual consumption of woody biomass per device (tonnes/year). This may be derived from historical data or a survey of local usage;

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*fuel use choices). Thus a 50% weight is assigned to coal as the alternative solid fossil fuel (96 t CO<sub>2</sub>/TJ) and a 25% weight is assigned to both liquid and gaseous fuels (71.5 t CO<sub>2</sub>/TJ for kerosene and 63.0 t CO<sub>2</sub>/TJ for liquefied petroleum gas (LPG).*

<sup>9</sup> *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.*

<sup>10</sup> *In all cases the testing protocol shall be the same for both the device being replaced and the device being deployed.*

Since the CPA involves charcoal ICS:

The quantity of woody biomass will be determined according to option (b), as follows:

b) Alternatively, credible local conversion factors determined from a field study or literature may be applied.

Determination of  $N_{y,i}$ :

Not all the ICS will be in use from the 1<sup>st</sup> day of any year. Dissemination will be ongoing and ICSs will be added every day.  $N_{y,i}$  will be also adjusted for ICS that are operational for less than a year, in pro rata basis. Number of ICSs operational for one year (N) included in the monitoring period will be calculated with the following formula:

$$N_{y,i} = \sum_{D=1}^n Nd \times \frac{D_{y,i}}{365} \quad \text{Equation (7)}$$

Where:

$Nd$  Number of devices operating for „D“ days during the monitoring period

$D$  Number of days of operation of the device in year  $y$

$D = 1, 2, 3, \dots$

Accounting for the leakage:

The CPA will apply approach when  $B_{old}$  is multiplied by a net to gross adjustment factor of 0.95 to account for leakages

#### D.6.2. Data and parameters fixed ex-ante

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	UNFCCC national default value for DRC <a href="http://cdm.unfccc.int/DNA/fNRB/index.html">http://cdm.unfccc.int/DNA/fNRB/index.html</a>
Value(s) applied	0.9
Choice of data or Measurement methods and procedures	default
Purpose of data	Calculation of baseline and project emissions
Additional comment	The parameter is prescribed by the methodology as monitored. However, since the nationally approved default value is available, it can be reported ex-ante.

Data / Parameter	$B_{old}$
Unit	tonnes/year
Description	estimated average annual consumption of woody biomass per device
Source of data	Historical data (details in the attached calculation sheet)
Value(s) applied	Charcoal: 4.16
Choice of data or Measurement methods and procedures	Calculated based on available data
Purpose of data	Calculation of baseline emissions
Additional comment	If option (a) is used to determine $B_{old}$

Data / Parameter	$\eta_{old}$
Unit	-
Description	Efficiency of the device being replaced
Source of data	AMS-II.G.
Value(s) applied	0.10/0.2
Choice of data or Measurement methods and procedures	Default values 0.10 - 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; 0.2 - for other types of systems
Purpose of data	Calculation of baseline and project emissions.
Additional comment	If Option 2 is used to determine $B_{y,savings}$ CPAs may use other values if the data is available - measured using representative sampling methods or based on referenced literature values (fraction), use weighted average values if more than one type of system is being replaced

Data / Parameter	<b>CF</b>
Unit	Number
Description	conversion factor charcoal to wood
Source of data	local conversion factor as per Projet Makala/CIFOR – Bois énergie en RDC : Analyse de la filière des villes de Kinshasa et de Kisangani; December 2011 (pg. 25) <a href="http://ur-bsef.cirad.fr/en/content/download/4097/32023/version/1/file/Projet+Makala++Analyse+de+la+filière+bois+énergie++à+Kinshasa+et+Kisangani_web.pdf">http://ur-bsef.cirad.fr/en/content/download/4097/32023/version/1/file/Projet+Makala++Analyse+de+la+filière+bois+énergie++à+Kinshasa+et+Kisangani_web.pdf</a>
Value(s) applied	6.67
Choice of data or Measurement methods and procedures	Local conversion factor
Purpose of data	Calculation of baseline emissions
Additional comment	To be used for charcoal cook stoves

### D.6.3. Ex-ante calculation of emission reductions

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Emission reductions are calculated for expected ICSs to be distributed by the proposed CPA according to the tentative implementation plan for the first crediting period:

Year	New charcoal ICS implemented (Number)	Total charcoal ICS in operation (Number)
2015	7,500	7,500
2016	7,500	15,000
2017	2,750	17,750
2018	0	17,750
2019	0	17,750
2020	0	17,750
2021	0	17,750

Emission reductions are calculated, as follows:

$$ER_{y,charcoal} = B_{y,savings,charcoal} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel} \times N_{y,i}$$

**CDM-SSC-CPA-DD-FORM**  
**Equation (1)**

Where:		Value:
$ER_y$	Emissions reductions during the year $y$ (tCO <sub>2</sub> e)	Calculated below
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes per device	Calculated from parameter $B_{old}$ below
$N_{y,i}$	Number of project devices of the type $i$ operating in year $y$	As per CPA database, for ex-ante estimation values from the implementation plan are used
$f_{NRB,y}$	Fraction of woody biomass used in the absence of the project activity in year $y$ that can be established as non renewable biomass	0.9 <sup>11</sup>
$NCV_{biomass}$	Net calorific value of the non-renewable biomass that is substituted – wood, wet basis	0.015 TJ/tonne
$EF_{projected\_fossil\ fuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers.	81.6 t CO <sub>2</sub> /TJ

Determination of  $B_{y,savings}$  according to Option 2:

$$B_{y,savings} = B_{old} \times \left( 1 - \frac{old}{new,y} \right) \quad \text{Equation (3)}$$

Where:		Value:
$B_{old}$	Quantity of woody biomass used in the absence of the project activity in tonnes per device	Calculated below
$\eta_{old}$	Efficiency of the system being replaced default value of 0.10 since 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	0.10
$\eta_{new,y,charcoal}$	Efficiency of the system being deployed as part of the project activity (fraction)	0.26 (for ex-ante)

Determination of  $B_{old}$  according to option a): based on historical data

Parameter	Description	Value	Source
	Average charcoal consumption	52 kg/household /month	Projet Filière Bois; "Etude de faisabilité projet briquelette: Ville de Bukavu"; September 2013 (pg. 13)

<sup>11</sup> Default values endorsed by designated national authorities and approved by the Board are available at <http://cdm.unfccc.int/DNA/fNRB/index.html> .

CF	Conversion factor charcoal to wood	6.67	Projet Makala/CIFOR – Bois énergie en RDC : Analyse de la filière des villes de Kinshasa et de Kisangani; December 2011 (pg. 25)
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Consideration of leakage:

As per paragraph 20 of the methodology, Bold is adjusted by a net to gross adjustment factor of 0.95 for leakages.

Applying the above parameters, the emission reductions calculation per one cook stove using charcoal is:

$$\Rightarrow B_{old,charcoal} = \text{Average charcoal consumption} \times 12 \text{ months} \times CF$$

$$B_{old,charcoal} = 52 \text{ kg/household/month} / 1,000 \times 12 \text{ months} \times 6.67 = \underline{4.16 \text{ ton/device/year}}$$

Adjustment for leakage:

$$\Rightarrow B_{old,charcoal,LE} = B_{old,charcoal} \times 0.95$$

$$B_{old,charcoal,LE} = 4.16 \text{ ton/device/year} \times 0.95 = \underline{3.95 \text{ ton/device/year}}$$

$$\Rightarrow B_{y,savings,charcoal} = B_{old,charcoal,LE} \times \left( 1 - \frac{old}{new,y,charcoal} \right)$$

$$B_{y,savings,charcoal} = 3.95 \text{ ton/device/year} \times (1 - 0.1/0.26) = 2.43 \underline{\text{ ton/device/year}}$$

Calculation of emission reductions per one charcoal cook stove<sup>12</sup>:

$$\Rightarrow ER_{y,charcoal} = B_{y,savings,charcoal} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel} \times N_{y,i}$$

$$ER_{y,charcoal} = 2.43 \text{ ton/device/year} \times 0.9 \times 0.015 \text{ TJ/tonne} \times 81.6 \text{ tCO}_2/\text{TJ} \times 1 = \underline{2.68 \text{ tCO}_2/\text{year}}$$

Total ER of the proposed CPA are calculated as per tentative implementation plan. Details are in the attached calculation sheet.

**D.6.4. Summary of the ex-ante estimates of emission reductions**

Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
2015	38,207	15,870	NA*	20,103
2016	76,415	31,741	NA	40,206
2017	90,425	37,561	NA	47,577
2018	90,425	37,561	NA	47,577
2019	90,425	37,561	NA	47,577
2020	90,425	37,561	NA	47,577
2021	90,425	37,561	NA	47,577
<b>Total</b>	<b>566,747</b>	<b>235,416</b>	NA	<b>298,194</b>

<sup>12</sup> For simplification of the ex-ante estimation of emission reductions the adjustment of number of operating cook stoves is not applied.

Total number of crediting years				
Annual average over the crediting period	80,963	33,630	NA	42,599

\*Not applicable: the leakage adjustment is done by using the default factor of 0.95 in the ER calculation

## D.7. Application of the monitoring methodology and description of the monitoring plan

### D.7.1. Data and parameters to be monitored

(Copy this table for each data and parameter.)

Data / Parameter	$N_{y,i}$																		
Unit	Number																		
Description	Number of project devices $i$ that are operating in year $y$																		
Source of data	CPA database																		
Value(s) applied	<p>-</p> <p>For the ex-ante estimation, the cumulative numbers have been used according to the preliminary distribution plan:</p> <table border="1"> <thead> <tr> <th colspan="2">Charcoal ICS</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>7,500</td> </tr> <tr> <td>2016</td> <td>7,500</td> </tr> <tr> <td>2017</td> <td>2,750</td> </tr> <tr> <td>2018</td> <td>0</td> </tr> <tr> <td>2019</td> <td>0</td> </tr> <tr> <td>2020</td> <td>0</td> </tr> <tr> <td>2021</td> <td>0</td> </tr> <tr> <td><b>Total</b></td> <td><b>17,750</b></td> </tr> </tbody> </table>	Charcoal ICS		2015	7,500	2016	7,500	2017	2,750	2018	0	2019	0	2020	0	2021	0	<b>Total</b>	<b>17,750</b>
Charcoal ICS																			
2015	7,500																		
2016	7,500																		
2017	2,750																		
2018	0																		
2019	0																		
2020	0																		
2021	0																		
<b>Total</b>	<b>17,750</b>																		
Measurement methods and procedures	As per paragraph 22 of the methodology: Monitoring shall consist of checking of all devices or a representative sample thereof, at least once 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. Primary data collection, for each cook stove type																		
Monitoring frequency	at least once every two years (biennial)																		
QA/QC procedures	-																		
Purpose of data	Calculation of baseline and project emissions																		
Additional comment	$N_y$ is adjusted according to actual operational days $D$ during a given monitoring period $y$ . The sales date for each appliance listed in the CPA database signifies the start of operation for each appliance type. The operational days of each appliance is divided by the total number of days of the current monitoring period to determine the adjusted $N_y$ number of devices in operation.																		

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	Primary data collection - WBT
Value(s) applied	<p>-</p> <p>For the ex-ante estimation of emission reductions:</p> <ul style="list-style-type: none"> <li>for ICS EcoJiko Charcoal Stove: 26%</li> </ul>



Measurement methods and procedures	Water Boiling Test Weighted average values if more than one type of system is being introduced by the project activity In all cases the testing protocol shall be the same for both the device being replaced and the device being deployed.
Monitoring frequency	Annually or biennially Biennial monitoring may be chosen, if it can be demonstrated 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.
QA/QC procedures	WBT protocol shall be carried out in accordance with national standards (if available) or international standards or guidelines.
Purpose of data	Calculation of project emissions
Additional comment	If option 2 is used to determine $B_{y,savings}$

Data / Parameter	<b>D</b>
Unit	number
Description	number of days that the ICS are in use during the monitoring period
Source of data	sales record and database
Value(s) applied	(M=1,2,3, .....n)
Measurement methods and procedures	Not all the ICS will be sold on 1 <sup>st</sup> day of any year. Every day, sales will be added. The database contains the information on sales date sourced from the sales receipt.
Monitoring frequency	Continuously
QA/QC procedures	Cross-checking the sales receipt and CPA database for a representative sample
Purpose of data	Calculation of project emissions
Additional comment	Not applied in the ex-ante estimation, for simplification

Data / Parameter	<b>LE<sub>y</sub></b>
Unit	-
Description	Net to gross adjustment factor to account for leakages
Source of data	Bold is adjusted by default value factor as per methodology
Value(s) applied	0.95x B <sub>old</sub>
Measurement methods and procedures	-
Monitoring frequency	-
QA/QC procedures	-
Purpose of data	Calculation of leakage emissions
Additional comment	Adjustment of B <sub>old</sub>

**D.7.2. Description of the monitoring plan**

>>

TaiCom as the CPA implementer will follow the same monitoring methodology as described in the PoA-DD. The CME oversees the monitoring process.

Monitoring activities include:

1. Data on the ICS are recorded in the field at the time of sale by TaiCom’s personnel and/or contracted partners (e.g. sales points), and reported to TaiCom. TaiCom keeps the records and enters the data to the CPA database. CPA database is established with assistance from the CME to ensure that data is collected correctly and organized in a useable fashion.

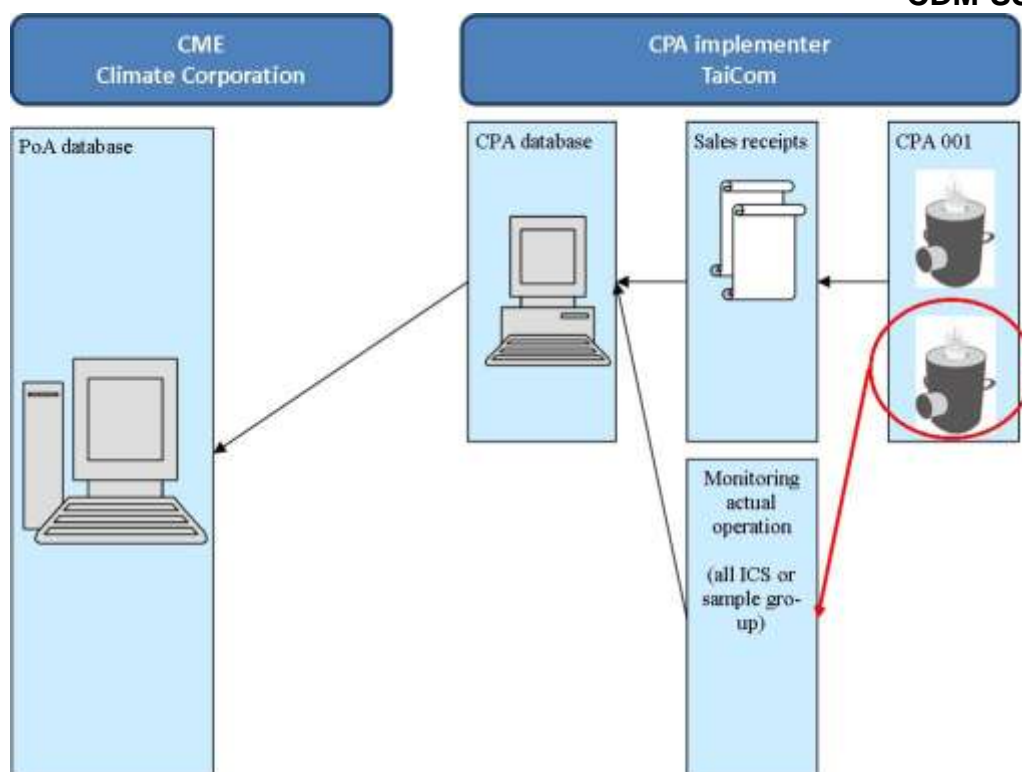
Minimum ***data to be recorded at the point of sale*** include:

- Name of the customer and contact details (phone number, if available)
- Address, location
- Replaced cook stove type and fuel
- ICS type and size
- Date of sale
- Unique identification code of the cook stove engraved on the side:  
The identification code is generated, as follows:  
ECO-abbreviation of CPA implementer-number of CPAserial Nr.  
E.g. ECO-TCC-001-W-12345

2. ***Data management:*** TaiCom will keep all the records and documents with collected data and enter the data to the CPA database.  
TaiCom will maintain records on end user household contact information, cook stove data, and other inventory information in a manner that enables the CME and DOE to verify that dissemination is indeed occurring and ICS are being used by users within the border of the host country that results in a decrease in greenhouse gas emissions.
  - Before recording the ICS into the CPA database, the identification code will be cross-referenced to guarantee that no double counting has occurred (there may not be ICSs with identical codes in the database).
  - In order to confirm the displacement of non-renewable woody biomass, only the ICS where the household was using non-renewable woody biomass for cooking in the baseline situation will be included in the CPA. This will be confirmed in sales receipts by each of the users.
3. TaiCom will keep the CPA database up-to-date at least annually by checking all the ICS or a representative sample thereof and collecting the data on actual operation of the distributed ICS in accordance with eligibility criterion (g3).
4. If sampling is applied, it will be in accordance with eligibility criterion (j) of the PoA. The CPA database will serve as a basis for sampling, if sampling is applied. See Sampling plan below for more details
5. TaiCom will report the data to CME as per conditions set in the contractual agreement.
6. Original copies of all the documents will be kept by TaiCom and kept for two years after the end of the crediting period.

TaiCom will be assisted by the CME in monitoring as needed. Monitoring activities might be carried out partly by external, specialised consultants reporting to the CME/CPA implementers.

**Flow-chart for the roles and responsibilities of the CPA monitoring:**



### Quality Assurance and Quality Control

The CME is responsible to supervise all monitoring activities. A CPA database template will be developed by the CME to store the data collected.

All field personnel involved in distribution/sales of the ICSs will be trained in the proper installation, use, and maintenance of the appliances, and will be provided with sufficient training to introduce recipient households to the proper operation and maintenance of the device, as well as contact information for the CME.

### Sampling Plan:

#### i. Sampling objectives and reliability requirements:

Efficiency of the ICS is determined on the PoA level, under responsibility of CME.

Proportion of operating ICS and the share of households where both ICS and old inefficient cook stoves are used are monitored on the CPA level, under responsibility of the CPA implementer (as specified in PoA-DD, Part I., Section C., paragraph 8).

Objective of the sampling is to determine the values of these parameters with 90/10 confidence/precision.

The CPAs will conduct the biennial monitoring to:

- determine if ICSs are still operating; those devices that have been replaced by an equivalent in-service device can be counted as operating.
- identify any sources of leakage
  - confirm that the replaced low efficiency devices are disposed of and not used within the boundary or within the region; or
  - if baseline cook stoves continue to be used ( fuel-wood consumption of those cook stoves will be excluded from Bold).
  - if woody biomass saved under the project activity is used by non-project households/users (who previously used renewable energy sources)

Monitoring personnel (CPA personnel or contracted external experts), coordinated by the CME, will be trained on the basic concept of the programme and administering of the developed monitoring form before sending to the field.

Data from the filled monitoring forms will be recorded in the software (e.g. MS Excel or similar) by CPA implementer and reported to the CME.

**ii. Target Population and sampling frame:**

The target population will be the complete set of ICS distributed by all the CPAs in each type.

The total number of ICSs distributed and operated per type of ICS in a monitoring period will be the total sampling frame per that ICS type.

The CPA databases will serve as a basis for sampling.

**iii. Sampling method:** Stratified random sampling will be conducted biennially<sup>13</sup> covering each group of the same ICS type (strata).

**iv. Sample size:**

The sample size for each of the type of ICS distributed under the PoA is determined using the Standard: *Sampling and surveys for CDM project activities and programmes of activities, Version 04.1*<sup>14</sup>.

The level of precision will be 90/10 (90% confidence interval and 10% margin of error), as required for the small-scale project activities.

The minimum sample size to obtain proportion of operational ICS is calculated using the equation for stratified random sampling as per the Guideline: *Sampling and surveys for CDM project activities and programmes of activities Version 03.0*<sup>15</sup>, as follows:

$$n \geq \frac{1.645^2 NV}{(N - 1) \times 0.1^2 + 1.645^2 V} \quad \text{(Equation 4, paragraph 24. of the sampling guideline)}$$

$$V = \frac{SD^2}{\bar{p}^2}$$

$$SD^2 = \frac{(g_a \times p_a (1 - p_a)) + p_b (g_b \times (1 - p_b)) + (g_c \times p_c (1 - p_c)) + \dots + (g_k \times p_k (1 - p_k))}{N} \quad \text{(Equation 5, paragraph 24. of the sampling guideline)}$$

$$\bar{p} = \frac{(g_a \times p_a) + (g_b \times p_b) + (g_c \times p_c) + \dots + (g_k \times p_k)}{N} \quad \text{(Equation 6, paragraph 24. of the sampling guideline)}$$

Where:

*n* Sample size

*N* Total number of devices

*p* Expected proportion of operational ICSs of the respective type *i* in the population. 0.9 (As new stoves will be used, it is assumed that only 10% will not be operational at the end of the monitoring period) After the first monitoring period,

<sup>13</sup> If a significant drop in efficiency of the stoves is confirmed by the CME on PoA level, the CPA implementers will be requested to change the frequency to annual.

<sup>14</sup> [http://cdm.unfccc.int/filestorage/e/x/t/extfile-20131128104214767meth\\_stan05.pdf/meth\\_stan05.pdf?t=UUZ8bjVpeGRqfDDOrHkO4L5zCToWtZgoDrvW](http://cdm.unfccc.int/filestorage/e/x/t/extfile-20131128104214767meth_stan05.pdf/meth_stan05.pdf?t=UUZ8bjVpeGRqfDDOrHkO4L5zCToWtZgoDrvW)

<sup>15</sup> [http://cdm.unfccc.int/filestorage/e/x/t/extfile-20131010103828384-meth\\_guid48.pdf/meth\\_guid48.pdf?t=Zld8bjVpdnFvfDApTw22PjEjqoBCv24v4l4i](http://cdm.unfccc.int/filestorage/e/x/t/extfile-20131010103828384-meth_guid48.pdf/meth_guid48.pdf?t=Zld8bjVpdnFvfDApTw22PjEjqoBCv24v4l4i)

the value will be updated based on the actual results from the previous monitoring period.

- 1.645 Confidence interval (90%)
- 0.1 Level of relative precision (10%)
- $SD^2$  Overall variance
- $\bar{p}$  Overall proportion of operational ICSs
- $g_i$  Total number of ICSs of type  $i$

The sample size of each type  $i$  (strata) is then determined, as follows:

$$n_i = \frac{g_i}{N} \times n$$

Example of sample size calculation for ICSs implemented in the proposed CPA during the first crediting period:

Year	ICS implemented	ICSs implemented in total ( $N_v$ )	Calculated sample size in year (n)	Real sample size to be drawn*
2015	7,500	7,500	29.692	33
2016	7,500	15,000	29.95	33
2017	2,750	17,750	29.967	33
2018	0	17,750	29.967	33
2019	0	17,750	29.967	33
2020	0	17,750	29.967	33
2021	0	17,750	29.967	33
Total	17,750	17,750	29.967	33

\*In order to anticipate any data missing and bias, 10% oversampling will be applied, giving a minimum sample size of **33** retained for the monitoring surveys.

**SECTION E. Approval and authorization**

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The Designated National Authority of Democratic Republic of Congo, has issued the Letter of Approval for the PoA and Authorisation for the CME on July 10<sup>th</sup>, 2014.

No other approvals or authorizations are required for the CPA.

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## Appendix 1. Contact information of CPA implementer(s) and responsible person(s)/ entity(ies) for completing the CDM-SSC-CPA-DD-FORM

<b>CPA implementer and/or responsible person/ entity</b>	<input type="checkbox"/> CPA implementer(s) <input checked="" type="checkbox"/> Responsible person/ entity for completing the CDM-SSC-CPA-DD-FORM
<b>Organization</b>	TaiCom Congo SPRL
<b>Street/P.O. Box</b>	N°1 Père Boka avenue – Gombe/ N°1 TaiCom Station (Dingi Dingi) – Nsele / P.O.Box : 823 KIN 1
<b>Building</b>	-
<b>City</b>	Kinshasa
<b>State/Region</b>	Kinshasa
<b>Postcode</b>	243
<b>Country</b>	Democratic republic of Congo
<b>Telephone</b>	+243 999940502 / +243819977070
<b>Fax</b>	-
<b>E-mail</b>	taicom.congo@gmail.com
<b>Website</b>	www.taicomafrika.com
<b>Contact person</b>	Joseph NKINZO TCHIBO
<b>Title</b>	President & CEO
<b>Salutation</b>	Mr.
<b>Last name</b>	TCHIBO
<b>Middle name</b>	NKINZO
<b>First name</b>	JOSEPH
<b>Department</b>	-
<b>Mobile</b>	-
<b>Direct fax</b>	-
<b>Direct tel.</b>	-
<b>Personal e-mail</b>	nkinzo@gmail.com

## Appendix 2. Affirmation regarding public funding

No public funding from Annex I. country has been used for the CPA which would result in ODA diversion.



Kinshasa, 17 February 2014

To whom it may concern,

TaiCom, as the CPA Implementer of the "Empowering DRC communities through the use of Improved Cook Stoves – CPA 001", included in the Programme of Activities "Empowering DRC communities through the use of Improved Cook Stoves" confirms herewith that no public funds from Annex I countries have been used for this CPA which would cause a diversion from Official Development Assistance.

Sincerely,

  
Joseph NKINZO  
President & CEO

A circular blue ink stamp. The outer ring contains the text "TaiCom Congo" at the top and "Kin - Kinshasa RDC" at the bottom. In the center, the "TaiCom Congo" logo is printed.

### **Appendix 3. Applicability of methodology(ies) and standardized baseline(s)**

See Section D.2 of this CPA-DD, in the attached excel sheet, and Section B.3, Part I. of the PoA-DD.



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

See attached excel sheet.

## Appendix 5. Further background information on monitoring plan

See Section D.7 of this CPA-DD.

## Appendix 6. Summary of post registration changes

N/A. This is left blank intentionally.

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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 component project design document form for small-scale component project activities" (EB 66, Annex 17).
01	EB33, Annex44 27 July 2007	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Form <b>Business Function:</b> Registration		