



**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**

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**Title:** National Programme for Improved Cookstoves in India  
**Version:** 05  
**Date:** 16/12/2012

**A.2. Purpose and general description of the PoA**

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**Policy/measure or stated goal that the PoA seeks to promote**

The purpose of this Programme of Activities (PoA) is to promote the widespread use of improved biomass cookstoves in India by making them available to the households and community institutions<sup>1</sup> across India at lower affordable prices by means of carbon credit revenues. The Programme will promote stove categories that replace existing less efficient solid biomass cookstoves. The improved cookstoves (ICS) to be made available are more efficient in fuel combustion and transferring heat to the cooking utensil when compared to the stoves typically being used in the country. By replacing inefficient stoves, the PoA will save on consumption of woody biomass (Non Renewable Biomass), which is the dominant fuel used for cooking in the country<sup>2</sup>. The reduction in the amount of non-renewable biomass as fuel, through the replacement<sup>3</sup> of less efficient stoves with more efficient ICS reduces the amount of CO<sub>2</sub> emitted into the atmosphere. The intended target group for the PoA are the households (domestic users) and community institutions (non-commercial users) in India.

The goal of the PoA is to enable a sustainable large-scale deployment of high efficiency improved cookstoves in India by means of support in the form of end user price reduction, training, marketing and awareness programmes and the provision of maintenance services. The PoA will have multiple benefits of reducing global greenhouse gas (GHG) emissions, reducing pressure on forests and woody biomass resources, reducing indoor air pollution associated with use of traditional stoves as well as saving the local population from their efforts undertaken for procurement of fuel-wood (i.e., woody biomass).

**Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity**

There are no laws/policies mandating the adoption and/or dissemination of improved cookstoves in India at a national level or any of the regions within the PoA boundary. Thus, in India there is no regulatory requirement for implementation of improved cookstoves and the managing entity and/or the individual component project activity (CPA) implementers are also not mandated to implement any such programme; the initiative is taken up voluntarily. Therefore, the proposed PoA is a voluntary action by the coordinating/managing entity (CME) and the participating CPA implementers.

<sup>1</sup> Community institutions will be referred to as institutions that prepare meals to a group of community members on a non-commercial basis, e.g. schools, prisons, community centres, religious institutions, etc. this shall exclude

<sup>2</sup> [http://content.undp.org/go/cms-service/stream/asset/?asset\\_id=2205620](http://content.undp.org/go/cms-service/stream/asset/?asset_id=2205620)

<sup>3</sup> The “replacement” of traditional cookstoves may denote either the physical substitution of the traditional cookstoves with ICS or operation of the traditional cookstoves in parallel to the ICS disseminated under the PoA.

### Framework for the implementation of the proposed PoA

The CME will coordinate the efforts of different CPA implementers to distribute improved cookstoves in the boundary of the PoA and comply with the requirements of this PoA. The CME is not envisaged to be a CPA implementer. The CPA implementer can be any of State Nodal Agencies (SNA) of MNRE, NGOs, Cookstove Manufacturers and/or distributors, Financial Institutions, Carbon Mitigation Projects Developers, or any other organisation/institute willing to venture into cookstove dissemination business.

Each CPA implementer will sell improved cookstoves and will ensure that correct procedures are followed during distribution of improved cookstoves. This shall also include the correct recording of data required for monitoring activities. The CME will provide training on need basis and guidance documents on the correct distribution and monitoring procedures to each CPA implementer. Each CPA implementer will act individually by implementing the relevant CPA(s) in accordance with local conditions.

When purchasing an improved cookstove, the customer will provide certain information that will be recorded along with the unique stove identification number to enable tracking of the stove during monitoring. This information will form part of the CPA Implementation Record. The customer will also release the legal rights of the carbon credits generated by the improved cookstoves to the CPA implementer.

The carbon credits proceeds would help the CPA implementers make the stove technology more affordable by reducing the cost of improved cookstoves sold to end users. Furthermore, carbon revenues would be used to increase technology, business and marketing capacities of stove producers and distributors, monitoring of stoves, provide maintenance and after-sale services, and raise awareness among users about the benefits and correct long-term utilization of the improved stove products. Socio-cultural mobilization of communities will be key for increasing the acceptance and long-term use of the new stove technologies.

### Contribution to sustainable development:

The proposed PoA involves reduction in fuel consumption by replacing inefficient cookstoves with efficient stove thus reducing greenhouse gas emissions from the use of non-renewable biomass in India. The potential benefits of the proposed PoA have been analysed below in the light of the indicators for sustainable development specified by the National CDM Authority (NCDMA), Ministry of Environment and Forests (MoEF), Government of India:

#### Social well-being:

- Reduction in the time and efforts of the local populace and communities in collecting wood<sup>4</sup>
- Improvement of overall household and community environment by reducing smoke in the kitchen and indoor air pollution<sup>5</sup>
- Reduction in health hazards from dangerous and infectious diseases like respiratory illness and a range of other diseases, including cataracts, bronchitis, pneumonia and possibly cancer caused by cooking smoke<sup>4</sup>

#### Environmental well-being:

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<sup>4</sup> “The time required for biomass collection can preclude formal employment outside the household for women, and the cost of purchasing biomass can weigh heavily on household budgets where formal biomass markets exist” – Shrimali, G., et al., Improved stoves in India: A study of sustainable business models. Energy Policy (2011), doi:10.1016/j.enpol.2011.07.031

<sup>5</sup> Household Cookstoves, Environment, Health, and Climate Change – A New Look at an Old Problem: by The World Bank, May 2011;

- Improvement of the national environment owing to a reduced rate of degradation of forests and deforestation
- Significant reduction in indoor and outdoor air pollution and elimination of health related hazards<sup>6</sup>
- Significant reduction in environmental pollution by reduction in use of non-renewable biomass and therewith GHG emission reductions.

Economic well-being:

- Reduction in the household and community institutions' expenditures on fuel wood<sup>3</sup>
- Employment creation in stove manufacturing and distribution
- Opportunities for alternative livelihood activities owing to reduced time for collection of fuel wood<sup>3</sup>
- Reduction in the medical expenses of the family and community by improving the indoor and outdoor air quality and reducing health hazards<sup>4</sup>

Technological well-being

- Introduction of a new clean technology to community institutions and households
- Improved fuel combustion efficiency and therewith reduced fuel consumption

### A.3. CMEs and participants of PoA

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Sardar Swaran Singh National Institute of Renewable Energy (NIRE)<sup>7</sup>, (an autonomous Institute of Ministry of New and Renewable Energy (MNRE), Government of India) will be the coordinating/managing entity (CME) for this PoA.

### 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)
India (Host Party)	Sardar Swaran Singh National Institute of Renewable Energy	No

### A.5. Physical/ Geographical boundary of the PoA

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The boundary for the PoA in terms of a geographical area is defined as the boundary of India. All small-scale CPAs associated with this PoA will be implemented within the geographical boundary of the PoA. The country latitude and longitude are 22.00°N and longitude of 77.00° E<sup>8</sup>.

### A.6. Technologies/measures

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The PoA will be implemented using the approved methodology *AMS. II.G, - Energy efficiency measures in thermal applications of non-renewable biomass*. This category comprises appliances involving efficiency improvements in thermal applications of non-renewable biomass. Examples of these technologies and measures include the introduction of improved biomass fired cookstoves to households and community institutions. This PoA envisages deploying efficient biomass cookstoves with better technological design features e.g. grates, insulation, optimized combustion chambers, induced draft or forced air flow to provide a cleaner burning and increased efficiency of the device.

<sup>6</sup> <http://www.bioenergylists.org/stovesdoc/Environment/staton.pdf>

<sup>7</sup> <http://www.nire.res.in/>

<sup>8</sup> Reference: [www.mapsofworld.com/lat\\_long/india-lat-long.html](http://www.mapsofworld.com/lat_long/india-lat-long.html)



The biomass cookstoves are of two types: natural draft and forced draft. The improved cook-stoves may be made with metal, ceramic and terracotta/ pottery (durable type) and combination thereof. With this, the stoves could be categorized as metallic (MS, SS, cast iron and combination thereof), metal clad ceramic/ pottery and ceramic (having warranty of minimum one year) types. For the fixed type cook-stoves platform may be prepared using brick and cement for increasing durability and ease of operation. The PoA intends to cover fixed as well as portable type; single pot as well as multiple pot stoves as per the implementation framework for dissemination in any CPA under the PoA.

#### **A.7. Public funding of PoA**

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No public funding that amounts to diversion of ODA is involved for financing of the PoA.

**SECTION B. Demonstration of additionality and development of eligibility criteria****B.1. Demonstration of additionality for PoA**

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The PoA level additionality pointers are addressed below:

(i) *The proposed PoA is a voluntary coordinated action;*

Government of India does not have laws/policies mandating the adoption of improved cookstoves. This proposed PoA is a voluntary action by the CME. The Government of India has not issued any mandatory law / regulation in India that mandates the dissemination of cookstoves. Some of the past and present policy initiatives to promote cookstoves are summarised below:

**National Programme on Improved Cookstoves (NPIC):** In India, the then Department of Non-conventional Energy Sources (DNES), which was created in 1982 initiated demonstration of improved cook-stoves soon after its inception followed by launching of a Demonstration project on Improved Chulhas in 1983 which was converted to NPIC in 1985. The programme objectives were identified to be (i) fuelwood conservation; (ii) removal/reduction of smoke from kitchens; (iii) reduction of deforestation and environmental degradation; (iv) reduction in the drudgery of tasks performed by women and girl-children and their consequent exposure to health hazards; and (v) employment generation in rural areas (MNES, 1998). In 1992, the DNES was upgraded to Ministry of Non-conventional Energy Sources (MNES) and continued to manage this programme. (In 2009, the ministry was renamed as Ministry for New and Renewable Resources (MNRE)).

A total of 35.2 million improved chulhas were installed by 2003 under this programme with varying degree of success in different regions in the country. Some models had better acceptability than others in specific regions. Certain regions showed greater enthusiasm on the part of the users to adopt new designs. For a variety of reasons the programme brought a mixed bag of experiences<sup>9</sup>. The programme was formally declared closed in 2004.

**National Biomass Cookstove Initiative (NBCI)**<sup>10</sup>: NBCI was launched by MNRE on 2nd December 2009 with the primary aim to enhance the availability of clean and efficient energy for the energy deficient and poorer sections of the country. The new initiative emphasizes on enhancement of technical capacity in the country by setting up state-of-the-art testing, certification and monitoring facilities and strengthening R&D programmes in key technical institutions. Under this initiative, a series of pilot scale projects during 2011-2012 are envisaged using several existing commercially – available and better cook-stoves and different grades of process biomass fuel. This will help in exploring a range of technologies deployment, biomass processing and delivery models leveraging public-private partnerships. The feedback from the programme shall be used in the Twelfth Five Year Plan (2012-17).

In summary, in India there is no regulatory requirement for implementation of efficient cookstoves. The CME is also not mandated to implement any such programme and the initiative is taken up voluntarily.

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

The programme aims at dissemination of improved biomass cookstoves in India. The programme faces various barriers as mentioned below. All these barriers are prohibitive in nature and the programme cannot be viable at a reasonable scale without external finance. Therefore, carbon revenues are essential to make the project sustainable. The uncertainty about the acceptance of the stoves among the target population

<sup>9</sup> Kishore VVN, Ramana PV. Improved cookstoves in rural India: how improved are they?: a critique of the perceived benefits from the National Programme on Improved Chulhas (NPIC). Energy 2002;27:47–63.

<sup>10</sup> <http://www.mnre.gov.in/prog-nbci.htm>

increases the financial risks for investors. The barriers that prevent the implementation of the project without carbon revenues are as follows:

### ***Barriers to Investment***

Barriers to investment exist at both the User level and the Implementer level.

*User Level:* The cost of an ICS is significantly higher than of a traditional cookstove. Although there is reduced fuel consumption to the end user associated with use of ICS, this does not automatically recover the monetary expenditures for the stove purchase, as most households in rural India collect firewood (i.e., woody biomass) for cooking without any costs involved<sup>11</sup>. In selected cases where households purchase firewood from the market, cost savings are realizable only in small amounts over a long period of time. As a result, user acceptability of the improved cookstoves is low, mainly because of their high initial cost, particularly relative to the low incomes of the rural households and areas<sup>12</sup>.

As per World Energy Outlook (WEO) Report 2010, around 73% of the Indian population relies on biomass for cooking in India<sup>13</sup>. Majority of the population, especially villagers in rural India do not have adequate information on modern cookstoves. They have been using traditional mud cookstoves for generations and are unwilling to change especially since they are required to pay a high price for efficient cooking devices as opposed to a traditional cookstove, which is constructed at hardly any cost. They have limited understanding about the disadvantages of the mud cookstoves as well as the health risks involved. They are also wary of spending a substantial part of their income on a new technology. Hence building consumer awareness is difficult, which can be a highly potent threat to the success of the program.

The cost of improved cookstoves is significantly higher than traditional cookstove. Although, there is fuel savings to the end user associated with use of ICS, however, that is only realizable if the fuel is being procured and that too in small amounts over a long period of time. As a result, user acceptability especially in developing countries is slow, main reason being their high initial cost, particularly relative to the low cash incomes<sup>14</sup>.

*Implementer level:* At the implementer level, it has been consistently observed that the lack of initial working capital required for scaling up cookstove programmes has always been a challenge<sup>15</sup>. Further, high distribution costs for remote and sparsely populated areas make the supply of improved stoves a difficult task in India. Activities required for creating user acceptance and willingness for long-term utilisation of the ICS constitute a significant additional financial burden on stove distributors (cp. Technological Barrier)<sup>16</sup>. A recent study suggests that none of the major organisations distributing improved cookstoves in India “have yet achieved both scale and proven financial sustainability in cookstove distribution”<sup>17</sup>. This barrier is non-existent in case of traditional cookstoves due to its relatively lower cost and the absence of a need for social mobilisation for its proper long-term use. Hence, considering the fact that the ICS is disseminated at a lower price compared to the cost price, carbon revenues are essential for the CPA Implementer in order to provide for the gap financing.

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<sup>11</sup> “In rural areas, biomass use is higher, incomes are lower, and biomass is likely to be collected rather than purchased” – page 3, Shrimali, G., et al., Improved stoves in India: A study of sustainable business models. Energy Policy (2011), doi:10.1016/j.enpol.2011.07.031

<sup>12</sup> Trends in Consumption and Production: Household Energy Consumption – Report by United Nations: Department of Economic and Social Affairs <<http://www.un.org/esa/sustdev/publications/esa99dp6.pdf>>

<sup>13</sup> World Energy Outlook 2010, table 1 page 9: 855 million people in India rely on biomass for cooking

<sup>14</sup> Trends in Consumption and Production: Household Energy Consumption – Report by United Nations: Department of Economic and Social Affairs <<http://www.un.org/esa/sustdev/publications/esa99dp6.pdf>>

<sup>15</sup> “Carbon Markets for Improved Cooking Stoves: A GIZ guide for project operators”, January 2011 – Published by GIZ-HERA – Poverty-oriented Basic Energy Services

<sup>16</sup> Viswanathan, B. Kavi Kumar, KS, Cooking fuel use patterns in India:1983–2000, *Energy Policy*, vol. 33 (2005), pp. 1022

<sup>17</sup> Gireesh Shrimali, Xander Slaski, Mark C. Thurber, Hisham Zerriffi: Improved stoves in India: A study of sustainable business models.

Therefore, carbon revenues will serve to hedge the aforesaid risks and cover the essential additional costs being incurred by the CPA implementers to make the project feasible and sustainable. The barrier to investment does not prevent the implementation/ usage of traditional cookstoves.

### *Prevailing Practice Analysis*

The programme aims at distribution of ICS in India. Though there have been many improved cook-stove initiatives in the past, however they are not close to the scale of this programme.

An assessment of some of the ongoing cook-stove initiatives in the past has been discussed below describing other cookstove initiatives. As explained above in the barrier section, ICS dissemination initiatives need external funding / subsidy element to run/ scale up in a sustainable manner.

1. National Programme on Improved Chulhas (NPIC) - The Indian government initiated the NPIC in 1983 in response to concerns about deforestation and rural fuel poverty. The NPIC was implemented by the Ministry of Non-conventional Energy Sources (MNES) in cooperation with regional, district, and state government offices. Under the original program, the NPIC provided a subsidy of at least 50% for households purchasing an improved cookstove. From 1983 to 2000, approximately 35 million ICS of various types were distributed through contractors/distributors etc (ARAVALI-U chulha, ASTRA OLE, ASTRA chulha, Doachhi Chulha Stove etc); however, the NPIC has not been effective or successful over the long term in promoting a fundamental change-over to improved stoves in India. In 2002 the NPIC funding was discontinued. Thus, despite the government of India providing a subsidy of 50% on ICS the programme failed due to the Investment and technical barriers discussed above.
2. Appropriate Rural Technology Institute (ARTI) cookstove initiative<sup>18</sup> – Running in rural Maharashtra, the initiative has been funded by Shell Foundation UK. The aim of the initiative is to reach to 1.5 million households in the state with cleaner cooking fuels/ stoves. However at present the initiative is still not fully operational and is securing remaining budgets through grants and donations.

Even relatively smaller initiatives have sourced funds from carbon

- Improved cookstove CDM project of Samuha<sup>19</sup> – includes approx 21000 stove
- Improved cookstove CDM project of JSMBT<sup>20</sup> - includes approx 21000 stove

Apart from the aforesaid, even micro level projects are usually funded by Corporate/ Institutions an example is the ICS programme launched in North India in the Solan district of Himachal Pradesh<sup>21</sup>. The programme was sponsored by Indian Oil Corporation Ltd and the Gas Authority of India Ltd. but was limited to pilot scale only and including only 241 cook-stoves.

Thus, it can be concluded that the prevailing practice is indeed use of traditional cookstoves. Thus, taking into account all the barriers listed above, carbon revenue is imperative to make this programme sustainable and hedge the investment, technological and social risks.

The CDM has been identified as the only realistic and adequate source of finance to overcome the existing barriers to the implementation of the proposed stove dissemination programme. Carbon finance is needed in order to successfully develop, promote and implement the programme, to reach the intended scale and to provide customers with high quality products at an affordable price, whilst ensuring customer satisfaction over the long term. Hence none of the future CPAs under the PoA would have been implemented without the potential incentives from the same of carbon credits.

<sup>18</sup> [http://www.arti-india.org/index.php?option=com\\_content&view=article&id=44&Itemid=92](http://www.arti-india.org/index.php?option=com_content&view=article&id=44&Itemid=92)

<sup>19</sup> <http://cdm.unfccc.int/Projects/DB/PJR%20CDM1304601410.01/view>

<sup>20</sup> <http://cdm.unfccc.int/Projects/DB/PJR%20CDM1297320586.35/view>

<sup>21</sup> [http://www.teriin.org/index.php?option=com\\_casestudy&task=details&sid=1](http://www.teriin.org/index.php?option=com_casestudy&task=details&sid=1)



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

Not applicable as the PoA is not implementing any mandatory policy/regulation.

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

Not applicable.

Additionality of CPAs under the PoA would be demonstrated as per the “Guidelines for demonstration of additionality of small scale project activities”, version 9.0, EB – 68, Annex – 27.

As per paragraph 2 of the guidelines, documentation of barriers is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list comprises of, under point (c), 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.

Since the target group of the PoA are households and community institutions therefore each CPA would qualify for automatic additionality if it can demonstrate that each ICS results in energy savings under the threshold of 5% of the type-II SSC cap (180 GWh<sub>th</sub>) i.e., each ICS results in energy savings under 9 GWh<sub>th</sub> per year.

Furthermore, none of the CPAs to be included in the PoA will start prior to the commencement of validation of the PoA.

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

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The eligibility criteria for the inclusion of a CPA in the PoA, in accordance with EB70, Annex 5, para 16 which shall be stated and confirmed in each CPA-DD, are as follows:

No	Eligibility Criteria	Condition to be met	Likely Evidence/Supporting Document
1	Geographical boundary	The geographical boundary of the CPA shall be consistent with the geographical boundary set in the PoA, i.e., India	Location and boundary as specified in the CPA-DD
2	Double counting	The CPA as whole or part shall not result in double counting of emission reductions by means of <ul style="list-style-type: none"><li>• Confirmation from the CPA implementer that each ICS would have a unique identification number and the end-user location would be recorded;</li><li>• Confirmation from the CPA implementer that the CPA or the ICS in the CPA has not been proposed as an individual CDM project or as a part of any other CDM PoA or any other mechanism to</li></ul>	Contract between CME and CPA implementer; template document from CPA Implementer to demonstrate voluntary relinquishment of carbon rights from end-user; check on the UNFCCC website.





No	Eligibility Criteria	Condition to be met	Likely Evidence/Supporting Document
		<p>avail climate change mitigation benefits.</p> <ul style="list-style-type: none"> <li>Mechanism for relinquishment of carbon rights from the end-user to the CPA implementer.</li> </ul>	
3	Specifications of technology/measure	<p>Specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications. The ICS shall have efficiency of at least 20% demonstrated through test reports from MNRE approved cookstove testing center.</p>	<p>Product data sheets or specification or product information sheets from manufacturer of the ICS to be distributed under the CPA and test reports from MNRE approved cookstove testing center</p>
4	Start date	<p>The CPA start date shall be after the PoA start date i.e., 9<sup>th</sup> May 2012.</p> <p>As the CPAs do not require construction or significant pre-project implementation, the “start date” (as per glossary of CDM terms) is to be considered as the earliest date when real action occurs.</p>	<p>The start date shall either correspond to the completion of ICS rollout (if implementation is completed); or planned implementation completion date (if implementation is in future), supported by suitable documents/evidence like project planning/design/ feasibility study document, ICS rollout records, etc.</p>
5	Methodology	<p>Compliance with the following applicability criteria of methodology AMS-II.G. has to be demonstrated:</p> <ul style="list-style-type: none"> <li>CPA shall involve efficiency improvements in the thermal applications of non-renewable biomass by introduction of improved biomass cookstoves having efficiency of at least 20%;</li> <li>Demonstration that non-renewable biomass has been used since 31 December 1989;</li> <li>Annual energy savings of each CPA shall not go beyond the limits of 180 GWh<sub>th</sub>/year over the entire crediting period;</li> <li>Leakages are to be estimated and accounted for in accordance with para 23 of the methodology.</li> </ul>	<p>The compliance with methodology applicability criteria shall be demonstrated as follows:</p> <ul style="list-style-type: none"> <li>Efficiency test certificate from MNRE approved stove testing center for each model disseminated in the CPA</li> <li>As the demonstration of non-renewable biomass usage since 31 December 1989 is demonstrated at PoA level so this need not be revisited at CPA level.</li> <li>GHG emission reduction calculation spreadsheet for the CPA.</li> <li>The leakage shall be estimated using para 23(c) of the methodology in the CPA-DD.</li> </ul>



No	Eligibility Criteria	Condition to be met	Likely Evidence/Supporting Document
6	Additionality	<p>The additionality for each CPA is demonstrated as per EB 68 Annex 27 “Guidelines on the demonstration of additionality of small-scale project activities”, para 2(c), as follows:</p> <ul style="list-style-type: none"> <li>• The CPA is solely composed of isolated units;</li> <li>• The users of the ICS are households or communities; and</li> <li>• Each ICS results in energy savings no larger than the threshold of 5% of the type-II SSC cap (180 GWh<sub>th</sub>) i.e., each ICS results in energy savings no larger than 9 GWh<sub>th</sub> per year.</li> </ul>	<p>Since the ICS are isolated units and the users are covered in the eligibility criteria – ‘Target group’, comprising of households or communities, so only the calculation for energy savings is to be demonstrated. This could get confirmed through the CPA-DD, along with calculation sheets and references.</p>
7	<p>PoA-specific requirements stipulated by the CME</p> <ul style="list-style-type: none"> <li>• Minimum user contribution</li> <li>• Local stakeholder consultation</li> <li>• Environmental impact analysis</li> </ul>	<p>The following requirements stipulated by the CME are to be fulfilled:</p> <ul style="list-style-type: none"> <li>• The ICS shall not be distributed for free to household consumers, i.e., a minimum proportion of the cost of the ICS (equivalent to at least INR. 100) shall be charged from the end user. There is no restriction on user contribution in case of ICS distributed to community institutions.</li> <li>• Each CPA shall conduct a local stakeholder consultation exercise for informing the various relevant stakeholders and obtaining their feedback and comments on the CPA.</li> <li>• No environmental impact analysis study or approval is required to be carried out for a CPA, as established in section E.1. of the PoA-DD by means of host country government guidelines.</li> </ul>	<p>The PoA-specific requirements stipulated by the CME can be confirmed through the following:</p> <ul style="list-style-type: none"> <li>• Contract between CME and CPA implementer;</li> <li>• Stakeholder consultation report mentioning relevant means of invitation of relevant stakeholders, details of discussions with stakeholders and their comments and feedback received</li> <li>• No EIA required for any CPA under the PoA.</li> </ul>
8	Official development assistance	<p>Confirmation that the CPA is either:</p> <ul style="list-style-type: none"> <li>• Not receiving any funding from Annex I parties; or</li> <li>• The Annex I party funds do</li> </ul>	<ul style="list-style-type: none"> <li>• Confirmation by CPA implementer;</li> <li>• Affirmation by funding party (in case ODA is availed)</li> </ul>



No	Eligibility Criteria	Condition to be met	Likely Evidence/Supporting Document
		not result in a diversion of ODA.	
9	Target group	The end-user of the ICS shall be either a household (domestic user) or a community institution (non-commercial user).	Contract between CME and CPA implementer depicting where the ICS would get deployed. Could also be checked from the specification of the ICS to be deployed.
10	Sampling requirements	It is envisaged that there would be multiple CPA implementers and ICS types under the PoA. Therefore, each CPA would be verified. Thus there is no PoA level sampling to be considered. For the purpose of monitoring, each CPA shall follow the sampling plan guidelines provided in section B.7.2. (part II) of the PoA-DD.	Each CPA would be verified. There is no PoA level sampling. The sampling plan indicated for the generic CPA (section B.7.2, part II of the PoA-DD) will be followed in each CPA-DD.
11	Small-scale threshold criteria	Annual energy savings of each CPA shall not go beyond the limits of 180 GWh <sub>th</sub> /year for small scale CPAs over the entire crediting period	GHG emission reduction calculation spreadsheet for the CPA
12	Debundling check	<p>The CPA shall comply with the “Guidelines on assessment of de-bundling for SSC Project activities” (EB54, Annex 13). According to the EB 54, Annex 13, para 10 for determining the occurrence of debundling under a Programme of Activities (PoA), if each of the independent subsystem/measures included in the CPA of a PoA is not larger than 1% of the small scale threshold defined by the methodology applied, then that CPA of the PoA is exempted from performing de-bundling check, i.e. considered as being not a de-bundled component of a large scale activity.</p> <p>In light of same, debundling check is not required if it can be demonstrated that each ICS reduces energy consumption by less than 1.8GWh<sub>th</sub>/year.</p>	GHG emission reduction calculation spreadsheet for the CPA and the CPA-DD shall establish that each ICS reduces energy consumption by less than 1.8GWh <sub>th</sub> /year.



### **B.3. Application of methodologies**

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The technology/measures for the PoA have been described in section A.6. of this document. The approved SSC methodology used is AMS-II.G, version 3: Energy efficiency measures in thermal applications of non-renewable biomass.

As each CPA would be verified so there is no sampling plan required at PoA level.

**SECTION C. Management system**

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The CME will support the SSC-CPA implementer(s) in implementing the CDM Programme Activities (CPAs) in India. A typical CPA will be located within the PoA geographical boundary and replace inefficient traditional biomass cookstoves with efficient improved biomass cookstoves in India. By reducing non-renewable biomass consumption, the project activity shall reduce green house gas (GHG) emissions from the use of non-renewable biomass.

The primary rights and responsibilities of the CPA implementer in a typical small-scale CDM project under the PoA are as follows:

- Manufacture/ procure the efficient improved cookstoves;
- Supply the cookstoves at a reduced price;
- Increase technical, business, and marketing skills of stove producers & distributors;
- Create awareness among users about the benefits and correct long-term utilization of the improved stove products;
- Socio-cultural mobilization of communities for increasing the acceptance and long-term use of the new stove technologies;
- Manage access to after-sale and maintenance services for the lifetime of the efficient cookstoves in the households and community institutions.

The primary activities of the end users (households and community institutions) of the ICSs in the programme are as follows:

- Purchase of the ICS at a lower price from the CPA implementer
- Use of ICS for cooking activities instead of the traditional cookstoves in the prescribed manner
- Transfer of carbon rights to the CPA implementer.

The proposed PoA involves implementing a number of operational activities and management arrangements to ensure that any CPAs that seeks inclusion in the PoA meets the requirements and thereafter, are implemented and operated in accordance with the criteria and terms set out in the present PoA DD and the corresponding SSC-CPA-DD.

Requirements from the CME needed as per EB70, Annex 5, para 19 have been addressed as follows:

*a) Roles and responsibilities*

Implementing the PoA requires a number of specific tasks to be performed and responsibilities to be assigned to those based placed to take them on. These are described in the following table.

**Operational and Management responsibilities**

Entity/Job Function	Management Responsibilities and Arrangements
CME/ PoA Director	<ul style="list-style-type: none"><li>• CME-CPA implementer agreement signature</li><li>• Contract signing with DOE for inclusion and verification services</li><li>• Review PoA's Performance</li><li>• Maintain high Level relation with CPA Implementers</li><li>• CME budget approval</li></ul>



	<ul style="list-style-type: none"> <li>• Correspondance with UNFCCC</li> <li>• Allocation of tasks to PoA Manager and supervision of work</li> <li>• Approval of resources provision</li> </ul>
CME/ PoA Manager	<ul style="list-style-type: none"> <li>• Promote the PoA to potential SSC CPA implementers</li> <li>• Final CPA Eligibility Criteria compliance check</li> <li>• CME-CPA implementer agreement review</li> <li>• Coordination of Validation and inclusion of the CPAs in the PoA</li> <li>• Review of PoA CPA Record Keeping System</li> <li>• Implement improvement measures and Monitor effectiveness of improvement measures adopted</li> <li>• Maintain high Level relation with CPA Implementers</li> <li>• Communication with EB</li> <li>• Coordination of verification of the CPAs in the PoA</li> <li>• Allocation of issued CERs to various constituent CPAs</li> <li>• CME budget proposal</li> <li>• Proposal for resources provision</li> </ul>
CME/ PoA officers (Technical and Financial)	<ul style="list-style-type: none"> <li>• Assess compliance of the proposed CPA with the PoA's CDM specific eligibility and applicability criteria.</li> <li>• Inform the PoA Manager of the outcome of such assessment</li> <li>• CME-CPA implementer agreement preparation</li> <li>• Coordination of Validation and inclusion of the CPAs in the PoA</li> <li>• CPA Monitoring system design and implementation or support during system set up (in conjunction with technical experts)</li> <li>• CPA Data recording and review of CPA monitoring data</li> <li>• Record keeping and data back up / archiving as per monitoring plan</li> <li>• Emissions reductions determination</li> <li>• Preparation of monitoring reports for emission reduction verification</li> <li>• Coordinate and manage verification process</li> <li>• Maintenance of PoA Record Keeping System</li> <li>• Implement improvement measures</li> </ul>
Specialist CDM Services company  Quality improvement / support	<ul style="list-style-type: none"> <li>• Conduct audits</li> <li>• Identify opportunities to improve the programme's operation and discuss improvement actions with the CME and CPA implementers.</li> <li>• Communicate results</li> <li>• Revise procedures/role out improvements to other CPAs as appropriate (in conjunction with PoA Manager)</li> </ul>
CPA Implementers	<ul style="list-style-type: none"> <li>• The CPA Implementer is the key entity in the development of this PoA. Without CPA Implementers, the emission reductions targeted by this PoA would not take place. It is the responsibility of the CPA Implementer to carry out all the activities related to the implementation and monitoring of the CPA.</li> <li>• The CPA Implementer is also required to monitor the parameters specified in the CPA-DD monitoring plan as well as follow all the quality assurance measures defined therein. The CPA implementer must gather monitored data and other relevant performance information on an annual basis and must provide it to the CME for further processing.</li> <li>• The CPA implementer is free to make arrangements to outsource specific tasks to Third Party Service providers, but is ultimately responsible for ensuring the correct implementation of such tasks., in particular that relating to the implementation of monitoring plan contained in the relevant CPA-DD</li> </ul>

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

During the initial stages of the PoA role out, staff from the team that has developed this PoA and prepared the relevant documentation will be involved in capacity building of the CME ensuring that the CME of the PoA is well equipped to check eligibility and applicability criteria set out in the design documents.

Training and capacity development sessions of new personnel to be employed by the CME for the PoA will be conducted once a year by competent external experts once a year including the following aspects:

1. Inclusion

Training sessions will be carried out for the personnel involved in the PoA and following points will be covered.

- Introduction to the Clean Development Mechanism
- Information and explanation on the Cookstove Programme of Activities
- Information and explanation in the procedures for inclusion of the CPA in the PoA

2. Monitoring

Training sessions will be carried out for the personnel involved in the CPA application and screening before the CPA inclusion to ensure that the monitoring process (and the data communications) will be implemented and managed in the correct way. This training will also consider trainings for the reporting and verification process.

- Information and explanation on the Monitoring Plan
- Information and explanation on the monitoring database to be developed

Further, the CME staff shall carry out training sessions for new personnel involved in the CME management before the start of their activities to ensure that the management and coordination of the PoA will be performed in the correct way.

Presence at the sessions will be confirmed by the participants by signing the Training Session Report and registered by the CME staff.

*c) Procedures for technical review of inclusion of CPAs*

The PoA manager is responsible for undertaking the technical review of inclusion of the CPAs.

The PoA officer before recommending the CPA for inclusion must perform a detailed technical review of the potential CPA. All necessary documents to demonstrate compliance with the eligibility and applicability criteria of the PoA are collected and verified by the PoA officer. The PoA officer also has the responsibility for collecting all the required information and supporting evidence for the CPA- DD. The PoA officer may resort to technical experts to check that the proposed CPAs technical specifications and other relevant technical features comply with the relevant technical eligibility and applicability criteria. Similarly and as required, the PoA officer may seek support from service providers to assess compliance of the proposed CPA with other, CDM specific eligibility and applicability criteria.

After performing a detailed technical review, the PoA officer will compile the information and the results of the review note concluding whether the CPA is eligible to be included in the PoA.

The PoA manager will do a final check and sign off for inclusion of the CPA and ensure that all necessary documents for the compliance check have been collected and verified. Once this process has been completed the documentation shall be presented to a DOE for inclusion.

All information pertaining to the CPA is stored in the shared folder system. The PoA officer will also be required to update the main PoA database with the CPA.



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

The CME will confirm as per EB 55 Annex 38, paragraph 6(i), that a SSC CPA that is to be included in the PoA is not registered as a CPA in another PoA nor is registered as a SSC CDM project activity in order to avoid a situation that could lead to double counting of the emissions reductions by means of the following procedure:

1. Every new SSC CPA will be compared to the already existing database and the list of similar project activities that are under validation or registered at the UNFCCC.
2. SSC CPA project implementers seeking to include their SSC CPA in the PoA will be made aware of the double accounting principle and will certify that the proposed CPA is neither registered under the Clean Development Mechanism of the UNFCCC.

The CPA Implementer shall confirm to the CME that CPA shall not be proposed as an individual CDM project and/or as a part of any other CDM PoA and/or any other mechanism to avail climate change mitigation benefits. Furthermore, the GHG emission reductions from the ICS to be disseminated under any CPA shall not be claimed under any other PoA or any other GHG mitigation benefits programme. The CME shall check from public domain sources that a CPA has not been proposed as a CPA under any other PoA nor as an individual project to avail carbon credit benefits under any other mechanisms. The CME will also keep a record of the unique identification number of the ICS distributed by each CPA implementer. This will enable crosschecking of the individual units that shall have been distributed by each CPA implementer during the proposed PoA, thus helping to avoid double counting and improve accountability.

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

A record keeping system will be set up by the CME in order uniquely identify each CPA.

1. The CPA implementer will be responsible for the implementation of the dissemination programme within a specific CPA. ICS may be disseminated to households/community institutions by the CPA implementer directly or via retailers, agents or other third parties that are sub-contracted by the CPA implementer. Any such third parties will be trained by the CPA implementer, who will be responsible for ensuring that correct procedures according to the PoA are fulfilled, as required from the CPA implementer by its confirmation to the CME.
2. During the dissemination itself, each CPA implementer shall make sure that necessary data is correctly obtained from the customer and recorded in the CPA Implementation Record, firstly to avoid double counting and secondly to enable tracking of the ICS for monitoring purposes. This data will include:
  - Name/Identification of end user that will be using the ICS
  - Phone no. of the end user that will be using the ICS
  - Geographical location of stove, which could be determined by a fixed address/location if applicable, or by using GPS data.
  - Unique Stove serial ID number (ICS manufacturer name, ICS model name and ICS serial no. shall together constitute a unique identification no.)
  - Category of old stove that the ICS is replacing, i.e. the stove type - conventional or improved<sup>22</sup>.
  - Stove dissemination date (date of ICS sale to the end user).
  - User sale price

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<sup>22</sup>The distinction between conventional and improved stoves is the same as that outlined in Methodology AMS II.G.

Additional information could be recorded in the case of each individual CPA as is deemed necessary to ensure accurate emissions reduction calculations and monitoring procedures under the particular circumstances of that CPA.

3. The CPA implementer is responsible for ensuring that the data contained in each individual CPA Implementation Record is provided in the correct format and is complete and accurate.
4. The CPA implementer will provide a CPA Implementation Report to the CME on a regular basis. The CPA implementer will maintain archives of past CPA Implementation Records.
5. The CME will perform crosschecks on the distribution information received from each CPA implementer with the original records. The CME will be responsible for maintaining a secure database, the PoA Distribution and Monitoring Database, covering the CPAs within the PoA. The serial number linked to each stove and the unique CPA ID number eliminates any risk of double counting of ICSs between CPAs.
6. IT Infrastructure: The CME office shall have the various members of the PoA Team working on the PoA operation and management on computer and/or laptop systems. Each of these systems shall be connected to a server (example in-house, cloud, etc.), that shall serve as a central document repository, as well as the data back-up provision for each individual system. Regular back-ups of the server data shall be taken in order to ensure complete data security.

*f) Measures for continuous improvements of the PoA management system*

The management system is subject to a continuous review of its effectiveness which is aligned with a Continuous Improvement Philosophy. Such review spans the various elements and any procedures. The aim is to identify any shortcomings and correct them, as well as to seek to continuously improve the PoA's performance on all counts. All those involved are encouraged to raise any issues that they feel need to be corrected and suggest any means of improvement, and to communicate these to the PoA Manager. The PoA manager will then allocate resources and appoint the relevant staff, bearing in mind the nature of issues raised, to ensure that solutions are designed, tested and their effectiveness monitored, prior to being formally adopted.

Hence all systems elements and procedures are subject to being revised in order to improve the performance of the PoA to ensure that the CDM requirements and objectives of the PoA are met.

In addition to the above management tasks, the CME will implement the following CDM operational elements to ensure proper management and oversight of the proposed PoA.

*(i) The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity.*

According to the EB 54, Annex 13, para 10 for determining the occurrence of debundling under a Programme of Activities (PoA), if each of the independent subsystem/measures included in the CPA of a PoA is not larger than 1% of the small scale threshold defined by the methodology applied, then that CPA of the PoA is exempted from performing de-bundling check, i.e. considered as being not a de-bundled component of a large scale activity. In light of same, debundling check is not required if it can be demonstrated that each ICS reduces energy consumption by less than 1.8GWh<sub>th</sub>/year

Further discussion concerning compliance of a SSC CPA with the criteria that it must not be de-bundled component of a large scale project activity shall be provided in the corresponding SSC-CDM-PoA-DD.



(ii) *The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA;*

The CME will coordinate the activities to be undertaken by each CPA implementer associated with the PoA. As part of the inclusion of a CPA under the PoA, the CPA implementer shall issue a confirmation to the CME, that will confirm the CPA implementer and any parties it contracts agree that their activity is being entered into the PoA. Suitable training will be conducted for CPA implementer taking part in new CPAs to make them aware of the rules of the CDM, relevant PoA guidelines and their requirements in terms of distribution and data collection. Guidance will be provided to each CPA implementer on the correct procedures to be followed during distribution. Contract between the CPA implementer and CME before inclusion would ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA.



## **SECTION D. Duration of PoA**

### **D.1. Start date of PoA**

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09/05/2012 – Validation Start Date (uploading of PoA on UNFCCC website for global stakeholder consultation)

### **D.2. Length of the PoA**

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28 years

## SECTION E. Environmental impacts

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

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#### PoA Level:

The PoA involves the dissemination and installation of improved cookstoves. These energy efficient cookstoves do not entail significant negative environmental impacts. Moreover, there exists no legal regulation in the country that regulates the use of cookstoves by households and/or community institutions. Furthermore, as per the notification S.O. 1533 (E) dated 14<sup>th</sup> September, 2006 of the Ministry of Environment and Forests (MoEF), Government of India<sup>23</sup> regarding the requirement of Environmental Clearance, as the CPAs under the PoA shall entail replacement of cooking appliances in households (domestic sector) and community institutions (non-commercial sectors), Environmental Impact Assessment (EIA) is not required for the projects. Thus, due to the small-scale nature of the CPAs, together with the positive social and environmental benefits, it is reasonable to undertake environmental analysis at the PoA level rather than individual assessments for each CPA.

### E.2. Analysis of the environmental impacts

&gt;&gt;

The programme does not have any identified negative impact on the environment; instead the programme contributes to the environment by reducing the level of biomass consumption as well as air pollution. The environmental benefits due to usage of improved cookstoves are as follows:

- *Greenhouse gas reductions:* The PoA will result in GHG reductions because it will reduce the consumption of non-renewable biomass fuels.
- *Air quality:* Users (especially women and children) will be exposed to fewer air pollutants through reduced emission of not only CO<sub>2</sub>, but also carbon monoxide and particulate matter. Air pollution from cooking with solid fuel is a key risk factor for childhood pneumonia as well as many other respiratory, cardiovascular and ocular diseases.
- *Biodiversity:* The programme reduces pressure on existing biomass stocks in the host country. Biomass consumption for fuel use has been shown to be a major driving factor in the rate of deforestation in India<sup>24</sup>.

No negative impacts can be identified.

<sup>23</sup> Reference : <http://envfor.nic.in/legis/eia/so1533.pdf>

<sup>24</sup> “Rising demand for fuelwood and charcoal is causing a halo of deforestation around many cities, towns, and roads. Anecdotal evidence exists of closed forests being affected, notably in India, Sri Lanka, and Thailand”: [http://earthtrends.wri.org/features/view\\_feature.php?theme=9&fid=3](http://earthtrends.wri.org/features/view_feature.php?theme=9&fid=3)

**SECTION F. Local stakeholder comments****F.1. Solicitation of comments from local stakeholders**

&gt;&gt;

Stakeholder Consultation shall be conducted at both the PoA and CPA levels.

The Stakeholder Consultation exercise shall be/ has been conducted at both the PoA and CPA level in the following manner:

- PoA Level: The CME of the programme, i.e., NIRE has conducted a programme design consultation exercise at the programme level by means of informing various relevant stakeholders and obtaining their feedback about the programme over electronic mails, requesting them to provide their valuable comments and feedback. This has been reported in this document. The list of personnel invited for the process is as follows:

Organisation	Name/Designation	Method	Date
MNRE	B. S. Negi	e-mail	07/03/2012
Gold Standard Foundation	Neha Rao	e-mail	07/03/2012
USAID	Sheena Chhabra	e-mail	07/03/2012
USAID	Jeremy Gustafson	e-mail	07/03/2012
IFC	Rajesh Mighlani	e-mail	07/03/2012
IIT Delhi	R Prasad	e-mail	07/03/2012
TIDE India	Svati Bhogle	e-mail	07/03/2012
Shell	Anuradha Bhavnani	e-mail	07/03/2012
TERI	R C Pal	e-mail	07/03/2012
WWF India	A Nath	e-mail	07/03/2012
ARTI	Company Representative	e-mail	07/03/2012
MNRE (formerly)	Deepak Gupta	e-mail	07/03/2012
Envirofit	Harish Anchan	e-mail	07/03/2012
First Energy	Nagesh Ranjan	e-mail	07/03/2012
Greenpeace	Manish Ram	e-mail	07/03/2012
KfW	Busso Alvensleben	e-mail	07/03/2012
Dharma	G Mehta	e-mail	07/03/2012
Shakti Foundation	Deepak	e-mail	07/03/2012
Non-Conventional Energy Development Corporation of Andhra Pradesh Ltd	Vice Chairman & Managing Director	e-mail	07/03/2012
Arunachal Pradesh Energy Development Agency	Director	e-mail	07/03/2012
Assam Energy Development Agency	Director	e-mail	07/03/2012
Bihar Renewable Energy Development Agency	Director	e-mail	07/03/2012
Chhattisgarh State Renewable Energy Development Agency	Director	e-mail	07/03/2012
Energy Efficiency & Renewable Energy Management Centre, Department of Environment, Govt. of NCT of Delhi	Executive Officer	e-mail	07/03/2012
Goa Energy Development Agency	Member Secretary	e-mail	07/03/2012
Gujarat Energy Development Agency	Director	e-mail	07/03/2012
Gujarat Energy Development Agency	Director and Project Officer	e-mail	07/03/2012
HIMURJA	Director	e-mail	07/03/2012
Jammu & Kashmir Energy Development Agency	Director	e-mail	07/03/2012
Jharkhand Renewable Energy	Director	e-mail	07/03/2012



Organisation	Name/Designation	Method	Date
Development Agency			
Karnataka Renewable Energy Development Agency Ltd.	Managing Director	e-mail	07/03/2012
Agency for Non-Conventional Energy and Rural Technology	Director	e-mail	07/03/2012
MP Urja Vikas Nigam Ltd.	Managing Director	e-mail	07/03/2012
Maharashtra Energy Development Agency	Director General	e-mail	07/03/2012
Manipur Renewable Energy Development Agency	Director	e-mail	07/03/2012
Meghalaya Non-conventional & Rural Energy Development Agency	Director	e-mail	07/03/2012
Zoram Energy Development Agency	Director	e-mail	07/03/2012
Nagaland Renewable Energy Development Agency	Project Director	e-mail	07/03/2012
Orissa Renewable Energy Development Agency	Chief Executive Officer	e-mail	07/03/2012
Punjab Energy Development Agency	Chief Executive	e-mail	07/03/2012
Rajasthan Renewable Energy Corporation Limited	Chairman & Managing Director	e-mail	07/03/2012
Sikkim Renewable Energy Development Agency	Director	e-mail	07/03/2012
Tamil Nadu Energy Development Agency	Chairman & Managing Director	e-mail	07/03/2012
Tripura Renewable Energy Development Agency	Chief Executive Officer	e-mail	07/03/2012
Non-conventional Energy Development Agency	Chairman & Director	e-mail	07/03/2012
Uttarakhand Renewable Energy Development Agency	Director	e-mail	07/03/2012
West Bengal Renewable Energy Development Agency	Director	e-mail	07/03/2012
Carbon Watch	Deepak Mawandia	e-mail	07/03/2012
Development Alternatives	Ashok Khosla	e-mail	07/03/2012
Energhg	Narendra Parachuri	e-mail	07/03/2012
Fair Climate Network	Sudha Padmanabha	e-mail	07/03/2012
Non-Conventional Energy and Rural Development Society (NERD SOCIETY Coimbatore)	Sathiajothi Kamaraj	e-mail	07/03/2012
Rural Education for Development Society-REDS	M. C. Raj Jyothi Raj	e-mail	07/03/2012
SKG Sangha	Vidya Sagar	e-mail	07/03/2012
Winrock International	Debjit Das	e-mail	07/03/2012
Ministry of Environment and Forests, Government of India	Assistant, National CDM Authority	e-mail	07/03/2012





Organisation	Name/Designation	Method	Date
Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ)	Michael Blunck	e-mail	07/03/2012
Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ)	Onkar Nath	e-mail	07/03/2012
South Pole Carbon	K Kartick	e-mail	07/03/2012
South Pole Carbon	Sandeep Kanda	e-mail	07/03/2012
iSquareD	T Pradeep	e-mail	07/03/2012

- CPA Level: The various CPA implementers shall conduct Local Stakeholder Consultation Meetings in their respective region of the CPAs. These shall be reported in the respective individual CPA-DDs.

## F.2. Summary of comments received

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The comments received from the Stakeholder Consultation exercise shall be/ has been compiled at both the PoA and CPA level in the following manner:

- PoA Level: the Gold Standard Foundation, a relevant stakeholder identified for the PoA appreciated the efforts of the CME towards implementation of the programme and wished them all the best in carrying it forward. Apart from that, there was no feedback received from any of the stakeholders contacted.
- CPA Level: The various CPA implementers shall conduct Local Stakeholder Consultation Meetings in their respective region of the CPAs. These shall be reported in the respective individual CPA-DDs.

## F.3. Report on consideration of comments received

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The comments received from the Stakeholder Consultation exercise shall be/ has been accounted for at both the PoA and CPA level in the following manner:

- PoA Level: In preparing this document and the associated documents.
- CPA Level: Preparation of the respective individual CPA-DDs and other associated documents.

**SECTION G. Approval and authorization**

&gt;&gt;

*Indicate whether the letter(s) of approval from Party(ies) which wishes to be involved in the PoA, is available at the time of submitting the PoA-DD to the validating DOE.*

*If so, provide along with the PoA-DD the letter(s) of approval of the:*

*(a) Party(ies) involved in the proposed PoA;*

*(b) CME letters of authorization of its coordination of the PoA from each Party*

The CME has received the Host Country Approval from the National CDM Authority, Ministry of Environment and Forests: the Designated National Authority of India.

**PART II. Generic component project activity (CPA)****SECTION A. General description of a generic CPA****A.1. Purpose and general description of generic CPAs**

&gt;&gt;

The purpose of this Small-Scale CDM Programme Activity (CPA) is to promote the widespread use of improved cookstoves (ICS) in *[region]* in India by making them available to the *[target group]* at affordable prices by means of carbon credit revenues. *[CPA implementer]* the CPA implementer envisages the dissemination of improved cookstoves that are more efficient in transferring heat from the fuel to the cooking utensil when compared to the stoves typically being used in the region. By replacing inefficient stoves, the CPA will reduce consumption of solid biomass, i.e., Non Renewable Biomass (NRB).

Therefore, by reducing the amount of fuel required for cooking, the replacement of less efficient stoves with more efficient improved cookstoves reduces the amount of greenhouse gases (GHG) emitted into the atmosphere.

*[Provide information on the scale and extent of project in terms of likely no. of ICSs to be disseminated in the defined region and the envisaged implementation schedule if it is to be phased over years]*

**Contribution to sustainable development:**

The contributions of the PoA towards sustainable development are already described in the PoA-DD. The CPA will have multiple benefits of reducing global GHG emissions, reducing pressure on forests and biomass resources, reducing indoor air pollution associated with use of traditional stoves as well as saving the local population from their efforts undertaken for procurement of fuel (solid biomass).

*[Description of additional CPA-specific environmental, social, economic, technological benefits could be included]*

**SECTION B. Application of a baseline and monitoring methodology****B.1. Reference of the approved baseline and monitoring methodology(ies) selected**

&gt;&gt;

AMS-II.G, version 3: Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass

**B.2. Application of methodology(ies)**

&gt;&gt;

AMS-II.G, version 3 requirements	Justification
1.This category comprises appliances involving the efficiency improvements in the thermal applications of non-renewable biomass. Examples of these technologies and measures include the introduction of high efficiency <sup>25</sup> biomass fired cookstoves <sup>26</sup> or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cookstoves or ovens or dryers.	As per stated Eligibility Criteria , the CPAs to be included in this PoA will involve the introduction of improved cookstoves having high efficiency as compared to the existing traditional cookstove, greater than 20%. The efficiency of the cookstoves being introduced under the CPA would be as certified by a Ministry of New and Renewable Energy (MNRE) approved Stove Testing Centre.
2.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.	<p>The forest cover of India has decimated from nearly 40% of India's geographical area a century ago to 22% in 1951 and to 20.55% in 2001<sup>27</sup>. This indicates that large-scale deforestation is prevalent since 1989. Furthermore, it may be noted as per data (tables T1 and T11) from the Global Forest Resources Assessment 2010 (FRA 2010) that the wood removals (Industrial round wood removals + Wood fuel removals) have increased 23.56% from (35,055,000 + 213,169,000 = 248,224,000) cubic meters in 1990 to (45,957,000 + 260,752,000 = 306,709,000) cubic meters in 2005.</p> <p>State of Forest Report (FSI) report in 1987 i.e., prior to 1989 clearly states for India that the firewood consumption in 1987 is estimated at 157 million tonnes or 235 million cu.m.<sup>28</sup> However, the production of firewood from forests estimated by FSI (Forest Survey of India) is only 40 million cu.m.<sup>29</sup> Thus, there was a gap of 195 million cu.m. in demand and production of firewood. This also leads to a conclusion that upto 83% (195/235) of the firewood used was non-renewable prior to 1989. It may also be noted that FSI is an organisation under the Ministry of Environment &amp; Forests, Government of India and its principal mandate is to conduct survey and assessment of forest resources in the country. Thus it is</p>

<sup>25</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>26</sup>Single pot or multi pot portable or in-situ cookstoves with specified efficiency of at least 20%.

<sup>27</sup>State of Forest Report 2001, <<http://www.fsi.nic.in/sfr2001.pdf>>

<sup>28</sup>[http://www.fsi.nic.in/sfr1987/sfr\\_1987.pdf](http://www.fsi.nic.in/sfr1987/sfr_1987.pdf) (page 46; section 3.7)

<sup>29</sup>[http://www.fsi.nic.in/sfr1987/sfr\\_1987.pdf](http://www.fsi.nic.in/sfr1987/sfr_1987.pdf) (page 46; section 3.8)



	<p>established that non-renewable biomass has been used in India since 31 December 1989, using official reports of the Government of India.</p> <p>Thus, it is clear from the above arguments that the wood resources in India are constrained with respect to extraction which has increased at a much higher rate as compared to increase in forests (including outside forests/ wooded land) and non renewable biomass extraction is prevalent since 1989.</p>
3. The annual energy savings of each project activity shall not go beyond the limits of 180 GWh <sub>th</sub> /year over the entire crediting period.	As per stated in the Eligibility Criteria., the aggregate energy savings from a CPA shall be limited to the threshold level applicable to Type II small scale activities, i.e., not exceeding 180 GWh <sub>th</sub> . <i>This shall be demonstrated in each SSC-CPA-DD.</i>
<p>4. The use of this methodology in a project activity under a programme of activities is legitimate if the following leakages are estimated and accounted for, if required on a sample basis using a 90/30 precision for the selection of samples, and accounted for:</p> <p>(a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then B<sub>old</sub> is adjusted to account for the quantified leakage;</p> <p>(b) Increase in the use of non-renewable woody biomass outside the project boundary to create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass outside the project boundary then B<sub>old</sub> is adjusted to account for the quantified leakage;</p> <p>(c) As an alternative to subparagraphs (a) and (b) B<sub>old</sub> can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required</p>	In order to reduce the transaction costs associated with the surveys for the small scale CPAs, the net to gross adjustment factor of 0.95 is adopted to account for leakages.

**B.3. Sources and GHGs**

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According to the methodology, the gas included is carbon dioxide in the baseline as well as in the project activity.

Source		GHG	Included?	Justification / Explanation
Baseline	Combustion of non-renewable biomass for cooking	CO <sub>2</sub>	Yes	Major source of emissions, considered as per the methodology
		CH <sub>4</sub>	No	Minor source of emissions, exclusion in line with the methodology
		N <sub>2</sub> O	No	Minor source of emissions, exclusion in line with the methodology
Project activity	Combustion of non-renewable biomass for cooking	CO <sub>2</sub>	Yes	Major source of emissions, considered as per the methodology
		CH <sub>4</sub>	No	Minor source of emissions, exclusion in line with the methodology
		N <sub>2</sub> O	No	Minor source of emissions, exclusion in line with the methodology

**B.4. Description of baseline scenario**

&gt;&gt;

According to the applied 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.

Specifically, and according to AMS II.G (version 03) an emission factor of 81.6 tCO<sub>2</sub>/TJ will be used, which 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 fuel use choices). Thus a 50% weight is assigned to coal as the alternative solid fossil fuel (96 tCO<sub>2</sub>/TJ) and a 25% weight is assigned to both liquid and gaseous fuels (71.5 tCO<sub>2</sub>/TJ for Kerosene and 63.0 tCO<sub>2</sub>/TJ for Liquefied Petroleum Gas (LPG)).

**B.5. Demonstration of eligibility for a generic CPA**

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Note: The criteria pertaining to demonstration of non-renewable biomass usage since 31 December 1989, environmental impact analysis and sampling plan though have been indicated, they are proven at the PoA level and need not be re-visited at CPA level.



No	Eligibility Criteria	Condition to be met	Assessment for CPA		
			Justification	Document Reference	Conclusion
1	Geographical boundary	The geographical boundary of the CPA shall be consistent with the geographical boundary set in the PoA, i.e., India	[Justification on conformity of the CPAs with this criteria in the individual CPA-DDs]	[Document / supportive/ evidence used to establish compliance with this criteria]	[Yes/ No]
2	Double counting	<p>The CPA as whole or part shall not result in double counting of emission reductions by means of</p> <ul style="list-style-type: none"> <li>• Confirmation from the CPA implementer that each ICS would have a unique identification number and the end-user location would be recorded;</li> <li>• Confirmation from the CPA implementer that the CPA or the ICS in the CPA has not been proposed as an individual CDM project or as a part of any other CDM PoA or any other mechanism to avail climate change mitigation benefits.</li> <li>• Mechanism for relinquishment of carbon rights from the end-user to the CPA implementer.</li> </ul>			
3	Specifications of technology/measure	Specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications. The ICS shall have efficiency of at least 20% demonstrated through test reports from MNRE approved cookstove testing center.			
4	Start date	The CPA start date shall be after the PoA start date i.e., 9 <sup>th</sup> May 2012. As the CPAs do not require construction or significant pre-project implementation, the “start date” (as per glossary of CDM terms) is to be considered as the earliest date when real action occurs.			
5	Methodology	<p>Compliance with the following applicability criteria of methodology AMS-II.G. has to be demonstrated:</p> <ul style="list-style-type: none"> <li>• CPA shall involve efficiency</li> </ul>			





No	Eligibility Criteria	Condition to be met	Assessment for CPA		
			Justification	Document Reference	Conclusion
		<p>improvements in the thermal applications of non-renewable biomass by introduction of improved biomass cookstoves having efficiency of at least 20%;</p> <ul style="list-style-type: none"> <li>• Demonstration that non-renewable biomass has been used since 31 December 1989;</li> <li>• Annual energy savings of each CPA shall not go beyond the limits of 180 GWh<sub>th</sub>/year over the entire crediting period;</li> <li>• Leakages are to be estimated and accounted for in accordance with para 23 of the methodology.</li> </ul>			
6	Additionality	<p>The additionality for each CPA is demonstrated as per EB 68 Annex 27 “Guidelines on the demonstration of additionality of small-scale project activities”, para 2(c), as follows:</p> <ul style="list-style-type: none"> <li>• The CPA is solely composed of isolated units;</li> <li>• The users of the ICS are households or communities; and</li> <li>• Each ICS results in energy savings no larger than the threshold of 5% of the type-II SSC cap (180 GWh<sub>th</sub>) i.e., each ICS results in energy savings no larger than 9 GWh<sub>th</sub> per year.</li> </ul>			
7	<p>PoA-specific requirements stipulated by the CME</p> <ul style="list-style-type: none"> <li>• Minimum user contribution</li> <li>• Local stakeholder consultation</li> <li>• Environmental impact analysis</li> </ul>	<p>The following requirements stipulated by the CME are to be fulfilled:</p> <ul style="list-style-type: none"> <li>• The ICS shall not be distributed for free to household consumers, i.e., a minimum proportion of the cost of the ICS (equivalent to at least INR. 100) shall be charged from the end user. There is no restriction on user contribution in case of ICS distributed to community institutions.</li> <li>• Each CPA shall conduct a local stakeholder consultation exercise for informing the various relevant stakeholders and obtaining their feedback and comments on the CPA.</li> <li>• No environmental impact analysis study or approval is required to be</li> </ul>			



No	Eligibility Criteria	Condition to be met	Assessment for CPA		
			Justification	Document Reference	Conclusion
		carried out for a CPA, as established in section E.1. of the PoA-DD by means of host country government guidelines.			
8	Official development assistance	Confirmation that the CPA is either: <ul style="list-style-type: none"> <li>• Not receiving any funding from Annex I parties; or</li> <li>• The Annex I party funds do not result in a diversion of ODA.</li> </ul>			
9	Target group	The end-user of the ICS shall be either a household (domestic user) or a community institution (non-commercial user).			
10	Sampling requirements	It is envisaged that there would be multiple CPA implementers and ICS types under the PoA. Therefore, each CPA would be verified. Thus there is no PoA level sampling to be considered. For the purpose of monitoring, each CPA shall follow the sampling plan guidelines provided in section B.7.2. (part II) of the PoA-DD.			
11	Small-scale threshold criteria	Annual energy savings of each CPA shall not go beyond the limits of 180 GWh <sub>th</sub> /year for small scale CPAs over the entire crediting period			
12	Debundling check	<p>The CPA shall comply with the “<i>Guidelines on assessment of de-bundling for SSC Project activities</i>” (EB54, Annex 13).</p> <p>According to the EB 54, Annex 13, para 10 for determining the occurrence of debundling under a Programme of Activities (PoA), if each of the independent subsystem/measures included in the CPA of a PoA is not larger than 1% of the small scale threshold defined by the methodology applied, then that CPA of the PoA is exempted from performing de-bundling check, i.e. considered as being not a de-bundled component of a large scale activity.</p> <p>In light of same, debundling check is not required if it can be demonstrated that each ICS reduces energy consumption by less than 1.8GWh<sub>th</sub>/year.</p>			

**Additionality Demonstration for the CPA:**

The CPAs under the PoA shall demonstrate additionality by showing that the size of each unit is no larger than 5% of the small-scale CDM thresholds

*[Provide details on the CPA specific information for establishing the above points]*

Thus, in line with the additionality assessment criteria provided in the PoA-DD, it is established that the CPA under consideration is additional.

**B.6. Estimation of emission reductions of a generic CPA****B.6.1. Explanation of methodological choices**

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Emission reductions would be calculated as:

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

Where:

$ER_y$	Emission reductions during the year $y$ in tCO <sub>2</sub> e
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes
$f_{NRB,y}$	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 (IPCC default for wood fuel, 0.015 TJ/tonne)
$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO <sub>2</sub> /TJ

$B_{y,savings}$  is estimated using option 2 stated in the methodology, as follows:

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

Where:

$B_{old}$	Quantity of woody biomass used in the absence of the project activity in tonnes
$\eta_{old}$	Efficiency of the system being replaced, default value of 0.10 is used as 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 will be used
$\eta_{new}$	Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol. Weighted average values would be used if more than one type of system is being introduced by the project activity

$B_{old}$  is determined by using the following option:

Following para 7(a) of the methodology,  $B_{old}$  is calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of biomass per appliance (tonnes/year) derived from *historical data/ survey of local usage*.

$$B_{old} = N \cdot Q_{biomass}$$

Where:

$B_{old}$  Quantity of biomass used in the absence of the project activity (tonnes/ year)

$N$  Total number of systems (number)

$Q_{biomass}$  Average annual biomass consumption per appliance (tonnes/ year).

### Differentiation between non-renewable and renewable woody biomass

The determination of the shares of renewable and non-renewable woody biomass in  $B_{old}$  (the quantity of woody biomass used in the absence of the project activity) the total biomass consumption using *[nationally approved methods (e.g. surveys or government data if available)]* and then determination of

$f_{NRB,y}$  has been done as described below. The following principles have to be taken into account:

### Demonstrably renewable woody biomass<sup>30</sup> (DRB)

Woody<sup>31</sup> biomass is “renewable” if one of the following two conditions is satisfied:

- I. The woody biomass is originating from land areas that are forests<sup>32</sup> where:
  - (a) The land area remains a forest; and
  - (b) Sustainable management practices are undertaken on these land areas to ensure, in particular, that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvesting); and
  - (c) Any national or regional forestry and nature conservation regulations are complied with.
- II. The biomass is woody biomass and originates from non-forest areas (e.g., croplands, grasslands) where:
  - (a) The land area remains as non-forest or is reverted to forest; and
  - (b) Sustainable management practices are undertaken on these land areas to ensure in particular that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvesting); and
  - (c) Any national or regional forestry, agriculture and nature conservation regulations are complied with.

### Non-renewable biomass:

Non-renewable woody biomass ( $NRB$ ) is the quantity of woody biomass used in the absence of the project activity ( $B_{old}$ ) minus the  $DRB$  component, as long as at least two of the following supporting indicators are shown to exist:

- 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;

<sup>30</sup> This definition uses elements of annex 18, EB 23.

<sup>31</sup> In cases of charcoal produced from woody biomass, the demonstration of renewability shall be done for the areas where the woody biomass is sourced.

<sup>32</sup> The forest definitions as established by the country in accordance with the decisions 11/CP.7 and 19/CP.9 should apply.

- 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;
- Increasing trends in fuel wood prices indicating a scarcity of fuel-wood;
- Trends in the types of cooking fuel collected by users that indicate a scarcity of woody biomass.

Thus the fraction of woody biomass saved by the project activity in year  $y$  that can be established as non-renewable is:

$$f_{NRB,y} = \frac{NRB}{NRB + DRB}$$

*[Specific details on  $f_{NRB,y}$  shall be provided in each CPA-DD. Evidence that the trends identified not occurring due to the enforcement of local/national regulations shall be provided in each CPA-DD.]*

### Leakage

As per para 23(c) of the methodology, a net to gross adjustment factor (NTG) of 0.95 will be applied to account for leakages, in which case surveys are not required.

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

<b>Data / Parameter</b>	$Q_{\text{biomass}}$
<b>Unit</b>	Tonnes/year
<b>Description</b>	Annual average biomass consumption per appliance in the project region
<b>Source of data</b>	<i>[Historical data or survey of local usage]</i>
<b>Value(s) applied</b>	<i>[value for household cookstove(s)]</i> <i>[value for community cookstove(s)]</i>
<b>Choice of data or Measurement methods and procedures</b>	Requirements as per methodology AMS-II.G. Used for calculation of $B_{old}$ as per paragraph 7 (a) of methodology.
<b>Purpose of data</b>	Calculation of Baseline Emissions
<b>Additional comment</b>	The parameter shall be fixed for the entire crediting period of the CPA.

<b>Data / Parameter</b>	$f_{NRB,y}$
<b>Unit</b>	Fraction
<b>Description</b>	Fraction of woody biomass saved by the project activity in year $y$ that can be established as non-renewable in the project region
<b>Source of data</b>	<i>[Historical data or survey of local usage]</i>
<b>Value(s) applied</b>	<i>[value]</i>
<b>Choice of data or Measurement methods and procedures</b>	Requirements as per methodology AMS-II.G
<b>Purpose of data</b>	Calculation of Baseline Emissions
<b>Additional comment</b>	The parameter shall be fixed for the entire crediting period of the CPA.



<b>Data / Parameter</b>	$NCV_{\text{biomass}}$
<b>Unit</b>	TJ/tonne
<b>Description</b>	Net calorific value of the non-renewable biomass that is substituted
<b>Source of data</b>	AMS-II. G
<b>Value(s) applied</b>	0.015
<b>Choice of data or Measurement methods and procedures</b>	Default value as prescribed by methodology applied
<b>Purpose of data</b>	Calculation of Baseline Emissions
<b>Additional comment</b>	-

<b>Data / Parameter</b>	$EF_{\text{projected fossilfuel}}$
<b>Unit</b>	tCO <sub>2</sub> /TJ
<b>Description</b>	Emission factor for the substitution of non-renewable biomass by similar consumers
<b>Source of data</b>	AMS-II. G
<b>Value(s) applied</b>	81.6
<b>Choice of data or Measurement methods and procedures</b>	Default value as prescribed by methodology applied
<b>Purpose of data</b>	Calculation of Baseline Emissions
<b>Additional comment</b>	-

<b>Data / Parameter</b>	$\eta_{\text{old}}$
<b>Unit</b>	Fraction
<b>Description</b>	Efficiency of the system being replaced,
<b>Source of data</b>	AMS-II. G
<b>Value(s) applied</b>	0.1 for conventional stoves and 0.2 for improved stoves
<b>Choice of data or Measurement methods and procedures</b>	The default value taken from the methodology AMS-II.G version 03. A default value of 0.10 will be 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 will be optionally used.
<b>Purpose of data</b>	Calculation of Baseline Emissions
<b>Additional comment</b>	-

<b>Data / Parameter</b>	NTG
<b>Unit</b>	Fraction
<b>Description</b>	Net to gross adjustment factor to account for leakages
<b>Source of data</b>	AMS-II. G
<b>Value(s) applied</b>	0.95
<b>Choice of data or Measurement methods and procedures</b>	Default value as prescribed by methodology applied
<b>Purpose of data</b>	Calculation of Leakage
<b>Additional comment</b>	-

**B.6.3. Ex-ante calculations of emission reductions**

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The CPA consists of the distribution of improved cookstoves, which by definition are small appliances providing energy efficiency improvements in the thermal applications of non-renewable biomass. In accordance with the applied 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.

Emission reductions would be calculated as:

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

Where:

$ER_y$	Emission reductions during the year $y$ in tCO <sub>2</sub> e
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes
$f_{NRB,y}$	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 (IPCC default for wood fuel, 0.015 TJ/tonne)
$EF_{projected\_fossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO <sub>2</sub> /TJ

$B_{y,savings}$  is estimated using option 2 stated in the methodology, as follows:

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

Where:

$B_{old}$	Quantity of woody biomass used in the absence of the project activity in tonnes
$\eta_{old}$	Efficiency of the system being replaced, default value of 0.10 is used as 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 will be used
$\eta_{new}$	Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol. Weighted average values would be used if more than one type of system is being introduced by the project activity

$B_{old}$  is determined by using the following option:

Following para 7(a) of the methodology,  $B_{old}$  is calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of biomass per appliance (tonnes/year) derived from historical data/ survey of local usage.

$$B_{old} = N \cdot Q_{biomass}$$

Where:



$B_{old}$	Quantity of biomass used in the absence of the project activity (tonnes/ year)
$N$	Total number of systems (number)
$Q_{biomass}$	Average annual biomass consumption per appliance (tonnes/ year).

Furthermore,  $N = N_{all} \cdot SOF$

Where:

$N_{all}$	Total number of stoves distributed (number)
$SOF$	Stove Operation Fraction (% of stoves operating or replaced by equivalent in-service appliance) – to be measured ex post using survey

In compliance with paragraph 23 (c) of the methodology,  $B_{old}$  is adjusted for Leakage. It is also adjusted for the average stove operation period and the proportion of stoves still operating during monitoring period. Further, paragraph 20 (b) of the methodology requires monitoring of the continued use of replaced stoves and exclusion of such use from  $B_{old}$  if baseline stoves are not disposed of, as follows:

$$B_{old} = NTG \cdot N_{all} \cdot SOF \cdot (Q_{biomass} - (\mu_{old} \cdot f_{old}))$$

Where:

$NTG$	Net to gross Adjustment factor (0.95) applied in accordance with paragraph 13 and 23 of AMS-II. G version 03
$\mu_{old}$	Amount of woody biomass consumption that is consumed through the continued use of old stoves (tonnes/year) to be established through sampling.
$f_{old}$	Fraction of end users that are still using baseline (traditional) cookstoves during the monitoring period along with the ICS (established through sampling).

## 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

<b>Data / Parameter</b>	$\eta_{new}$
<b>Unit</b>	Fraction
<b>Description</b>	Efficiency of the system being disseminated as part of the project activity
<b>Source of data</b>	Field Survey Reports: WBTs performed on the sample of ICS selected
<b>Value(s) applied</b>	<i>The efficiency of the different improved cookstove models to be distributed will be included in each CPA-DD and a representative sample shall be tested ex-post during monitoring field visits.</i>
<b>Measurement methods and procedures</b>	Water Boiling Tests (WBTs) will be carried out for a sample of installed improved cookstoves in operation in line with the Sampling Plan
<b>Monitoring frequency</b>	Annual Sampling
<b>QA/QC procedures</b>	As per the sampling plan in section B.7.2 of the PoA-DD, point b, sub-point ii
<b>Purpose of data</b>	Emission reduction calculation
<b>Additional comments</b>	-



<b>Data / Parameter</b>	$N_{all}$
<b>Unit</b>	Number
<b>Description</b>	Total number of ICS distributed
<b>Source of data</b>	CPA implementation records
<b>Value(s) applied</b>	<i>[number of improved cookstoves installed in households]</i> <i>[number of improved cookstoves installed in community institutions]</i>
<b>Measurement methods and procedures</b>	Each CPA implementer shall maintain CPA Implementation Records containing entries for each ICS disseminated, which will provide the data used to arrive at the value of this parameter.
<b>Monitoring frequency</b>	Monitored continuously and archived annually
<b>QA/QC procedures</b>	Cross-checking against other records like sale receipts
<b>Purpose of data</b>	Emission reduction calculation
<b>Additional comments</b>	-

<b>Data / Parameter</b>	SOF
<b>Unit</b>	Fraction
<b>Description</b>	Stove Operation Fraction – used to determine stoves that are still operating, measured ex-post through survey.
<b>Source of data</b>	Survey of a representative sample of households and community institutions
<b>Value(s) applied</b>	<i>A value of 1 could be applied for estimating emissions reductions ex-ante. For each CPA, local circumstances will be considered to determine whether this value should be reduced for the purposes of ex-ante estimation.</i> The actual monitored values shall be applied ex-post for GHG ER calculations.
<b>Measurement methods and procedures</b>	The actual value to be applied for emissions reduction calculations and request for issuance of CERs will be based on ex-post survey by investigation of the number of ICS operational within the sampled ICS.
<b>Monitoring frequency</b>	Annual Sampling
<b>QA/QC procedures</b>	As per the sampling plan in section B.7.2 of the PoA-DD, point b, sub-point ii
<b>Purpose of data</b>	Emission reduction calculation
<b>Additional comments</b>	-

<b>Data / Parameter</b>	$\mu_{old}$
<b>Unit</b>	Tonnes/year
<b>Description</b>	Amount of woody biomass for the continued use of old stoves
<b>Source of data</b>	Survey of a representative sample of households and community institutions
<b>Value(s) applied</b>	<i>A value of 0 could be applied for estimating emissions reductions ex-ante. For each CPA, local circumstances will be considered to determine whether this value should be increased for the purposes of ex-ante estimation.</i> The actual monitored values shall be applied ex-post for GHG ER calculations.
<b>Measurement methods and procedures</b>	The actual value to be applied for emissions reduction calculations and request for issuance of CERs will be based on ex-post survey by estimation of a representative sample of end users using the deployed ICS. Further detail on the approach is provided in the Sampling Plan in Section E.7.2
<b>Monitoring frequency</b>	Annual Sampling
<b>QA/QC procedures</b>	As per the sampling plan in section B.7.2 of the PoA-DD, point b, sub-point ii
<b>Purpose of data</b>	Emission reduction calculation
<b>Additional comments</b>	-

<b>Data / Parameter</b>	$f_{old}$
<b>Unit</b>	Fraction
<b>Description</b>	The fraction of end users that are still using baseline (traditional) cookstoves along with ICS
<b>Source of data</b>	Survey of a representative sample of households and community institutions
<b>Value(s) applied</b>	<i>A value of 0 could be applied for estimating emissions reductions ex-ante. For each CPA, local circumstances will be considered to determine whether this value should be increased for the purposes of ex-ante estimation.</i> The actual monitored values shall be applied ex-post for GHG ER calculations.
<b>Measurement methods and procedures</b>	<p>The actual value to be applied for emissions reduction calculations is based on ex-post survey of a representative sample of end users using the deployed ICS, as conducted in line with the PoA Sampling Plan. The survey will be done on the basis of a visual inspection of the premises and if necessary an interview with the stove user to confirm whether they are still using a baseline stove or not. Sampling will estimate the value of this parameter through one of two approaches:</p> <ul style="list-style-type: none"> <li>A. Monitoring the fraction of end users using baseline stoves along with ICS (<math>f_{old}</math>)</li> <li>B. Monitoring the fraction of end users <i>not</i> using baseline stoves at all (<math>f_{non,old}</math>),</li> </ul> <p>Where:  <math>f_{old} = 1 - f_{non,old}</math></p> <p>The decision to apply either Option A or Option B will be made by the CPA implementer based on the expected proportion of end users continuing to use baseline stoves in the group of CPAs that are being sampled as part of the PoA Sampling Plan. In cases where it is anticipated that the majority of end users will stop using baseline stoves once they have started using the ICS, then Option B will be applied.</p>
<b>Monitoring frequency</b>	Annual Sampling
<b>QA/QC procedures</b>	As per the sampling plan in section B.7.2 of the PoA-DD, point b, sub-point ii
<b>Purpose of data</b>	Emission reduction calculation
<b>Additional comments</b>	-

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

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The CME will obtain confirmations from each CPA implementer involved in the implementation of CPA under the PoA. This confirmation will include inter alia CDM-specific requirements relating to monitoring activities that occur during the distribution of stoves including the collecting of the necessary data required for ex-post monitoring, and ensuring that the CPA Implementation Records are completed correctly, as outlined in Section C.

The CME will also oversee ex-post monitoring activities by providing guidance to the parties involved, which could include its own staff, CPA implementer or other parties (for example, local marketing firm, university etc) contracted by the CME – “Monitoring Organisations”. This will ensure that the correct procedures are carried out during monitoring activities.

Ex-post monitoring activities will involve visiting a sample of households and community institutions as are required under AMS II. G. version 3 and the Standard for sampling and surveys for CDM PAs and PoAs (version 03.0), EB69, Annex 4 (hereafter referred as the ‘Sampling Standard’).

***Continued use of displaced traditional stoves***

*Methodology document: Monitoring shall ensure that the replaced low efficiency appliances are disposed of and not used within the boundary or within the region or continued usage of baseline stoves needs to be monitored and taken into consideration for the baseline emission calculations.*

Field visits will investigate the extent to which baseline stoves are no longer used, in the houses and communities adopting the ICS. If it is found that households exist in which a traditional stove is still used, emission reductions will be calculated taking into account only the portion of the wood used in ICS as per the parameter Stove Operating Factor (SOF).

***Representative sampling***

The indicative sampling plan is as follows:

***(a) Sampling Design:***

Due to the large number of the ICS envisaged to be distributed as part of the CPAs to be included in the PoA, it is not economically feasible to monitor each individual ICS unit distributed. Therefore, representative sampling will be undertaken as part of a Sampling Plan that is designed in line with the requirements of AMS II.G and the Sampling Standard.

***(i) Objectives and Reliability Requirements:***

The objective is to obtain a reliable estimate of the following key variables over the course of the crediting period and meeting the indicated confidence/precision levels, for each CPA.

Parameter	Description of parameter	Type of parameter	Confidence/precision level (frequency of sampling)
$\eta_{\text{new}}$	Efficiency of the ICS being disseminated as part of the project activity	mean value	90/10 (annual sampling)
SOF	Stove Operation Fraction	proportion value	90/10 (annual sampling)
$\mu_{\text{old}}$	Amount of woody biomass for the continued use of old stoves	mean value	90/10 (annual sampling)
$f_{\text{old}}$	Fraction of stove users still using baseline stove	proportion value	90/10 (annual sampling)

In cases where such precision is not able to be achieved, the lower bound of the 90% confidence interval of the parameter value will be used as is allowed by the methodology AMS.II.G version 3 (para 22). The frequency of sampling will always comply with the requirements of the methodology and the Sampling Standard.

***(ii) Target Population:***

The overall target population are the ICS distributed as a result of the CPAs implemented under the PoA. Each ICS will be identified by a unique identification number for each CPA. Based on the serial numbers, the sampling will be applied. The ICS to be sampled will be drawn from the list of individual ICS unique ID numbers contained in the respective CPA Database, which is maintained by the respective CPA implementer. Each ICS is assigned to a CPA in the Database and linked to an end user whose premises will be visited during monitoring.

***(iii) Sampling Method:***

Use of Simple Random Sampling is recommended. The CPA implementer will draw a sample for defined sampling frame.

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

- $\eta_{\text{new}}$ : ICS will be tested using WBTs. (ICS efficiency);

- SOF: visual inspection of the premises to see if ICS is operational and in use. Interview with end user if required to verify that ICS is still in use. (Yes/No);
- $f_{old}$ : visual inspection of the premises to see if baseline (replaced) stove continues to be used. Interview with end user if required to verify that baseline stove is still in use. (Yes/No);
- $u_{old}$ : interview with end user to establish the share of cooking that is done using baseline stove

More ICS will be selected for sampling than is required by the sample size, to ensure that if there are any ICS that are unable to be reached the required accuracy is still achieved. The CPA implementer may choose to stop monitoring a particular parameter once the required level of confidence/precision has been reached, as long as the calculated minimum number of samples has been achieved.

*(iv) Sample Size:*

The size of the sample for each sampling frame is determined by the requirement to achieve 90/10 confidence/precision for the estimation of the proportion or mean value of the parameter investigated.

Note: of the four parameters to be monitored, two are proportions/percentages (SOF and  $f_{old}$ ) and two are mean values ( $\eta_{new}$  and  $u_{old}$ ).

In order to calculate the required sample sizes, estimates for the proportions and the mean values are required. Of the four parameters to be monitored, two are proportions/percentages (SOF and  $f_{old}$ ) and two are mean values ( $\eta_{new}$  and  $u_{old}$ ). Furthermore, the standard deviation needs to be assumed in case of sampling for a mean value. For the following monitoring periods, the estimates shall be adjusted taken the results of the previous monitoring period(s) into account.

Referring to the ‘Guidelines for sampling and surveys for CDM project activities and programme of activities’ (version 02.0) (EB 69, Annex 5) (hereafter referred as Sampling Guideline), for the parameters SOF and  $f_{old}$  the following equation is applied:

$$n \geq \frac{1.645^2 \times N \times p \times (1 - p)}{(N - 1) \times 0.1^2 \times p^2 + 1.645^2 \times p \times (1 - p)}$$

Where:

n	Sample size
N	Total number of elements in the population
p	Expected proportion
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

For the parameters  $\eta_{new}$  and  $u_{old}$  the following equation is applied:

$$n \geq \frac{1.645^2 \times N \times V}{(N - 1) \times 0.1^2 + 1.645^2 \times V}$$

Where:

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

n	Number of elements to be sampled
N	Total number of elements in the population
mean	Average value of the parameter that is expected in the total population
SD	Standard deviation of the parameter that is expected in the total population
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

#### $f_{old}$ :

There is a need for some flexibility in the sampling approach for this variable. The purpose of this flexibility is to avoid having an estimated sample size that is so large that it makes the cost of monitoring prohibitive to the economics of the whole programme. This could occur if the CPA Implementer is required to estimate very low values of either  $f_{old}$  or  $f_{non,old}$  through sampling (for example, if it expects the range of values for  $f_{old}$  to be below say 10% and it cannot estimate  $f_{non,old}$  instead).

Prior to monitoring each of CPA, the CPA Implementer will take a view on whether the majority of end users will or will not continue to use the old stoves after they have received the ICS. Since it is possible that the circumstances in a particular region could influence end user behaviour, the CPA Implementer will use this information to decide on whether to apply either Option A (sampling of  $f_{old}$ ) or Option B (sampling  $f_{non,old}$ ) for the sampling of different CPAs to be monitored.

The sample size required for monitoring this parameter under circumstances where the CPA Implementer expects that the fraction of end users continuing to use baseline (replaced) stoves ( $f_{old}$ ) is lower than the fraction of end users *not* continuing to use baseline (replaced) stoves ( $f_{non,old}$ ). Applying Option B, the sample size has to be defined for the parameter  $f_{non,old}$  and from the results of the sampling survey,  $f_{old}$  shall be estimated as follows:

$$f_{old} = 1 - f_{non,old}$$

#### *(v) Sampling Frame*

Generally, the above mentioned parameters are sampled among all distributed ICS separately for each CPA. Hence, the overall sampling frame consists of all installed ICS per CPA, represented by their unique identification nos. in the CPA database.

#### *(b) Data:*

##### *(i) Field Measurements:*

The following parameters will be measured as indicated below:

Parameter	Frequency	Methods to be applied	Comments on seasonal fluctuation
$\eta_{new}$	Annually	Water Boiling Test (WBT)	Not due to any seasonal fluctuation
SOF	Annually	Visit to premises, visual inspection and interview with owner of ICS if required	Unlikely to be due to seasonal fluctuation
$\mu_{old}$	Annually	Visit to premises and interview with owner of ICS to estimate share of annual consumption accounted for by baseline stoves	Unlikely to be due to seasonal fluctuation
$f_{old}$	Annually	Visit to premises, visual inspection and interview with owner of ICS if required	Unlikely to be due to seasonal fluctuation

##### *(ii) Quality Assurance/Quality Control:*

The potential for non-responses, refusals and related issues will be considered by the CPA implementer during sample selection. If the sampling results are insufficient to achieve the target reliability levels, the CPA implementer has a number of options to address this (see below). By selecting a larger than necessary sample size before commencing monitoring, the CPA implementer can help ensure that an adequate number of responses are obtained during sampling. If it is necessary to engage third parties for carrying out field measurements, the CPA implementer will ensure that any such third parties are

credible, experienced adequately trained for the tasks they are contracted for (e.g. carrying out of WBTs in line with a methodology. Training will be provided to the parties carrying out the actual field measurements (Monitoring Agents) on how to deal with non-responses etc if necessary.

The calculation of the sample size will be carried out using estimates for proportions, mean of values and standard deviations as the actual characteristics of the population/sampling frame are unknown. In order to ensure the quality of the sampling results, the CPA implementer can draw on the provisions for reliability calculations as provided by the *Sampling Guideline (EB 69, Annex 5)*. In the event that the sampling results do not fulfil the required level of confidence and precision, the CPA implementer can undertake additional samples. If the reliability is still not sufficient after additional samples, the sampling may be repeated with an increased sample size. Alternatively, the CPA implementer may choose to apply the lower bound of the confidence interval of the parameter value as is allowed for by the methodology (AMS II G version 3, paragraph 22).

The data contained in each individual CPA Monitoring Record and collected during field measurements will be transferred to the CME by the CPA implementer. The CME will be responsible for maintaining a secure PoA Database, which includes all the data relating to the CPAs within the PoA.

*(iii) Analysis:*

The data obtained from sampling of each CPA will be used to estimate values for the parameters described above for use in GHG ER calculations.

*(c) Implementation:*

*(i) Implementation Plan*

It is envisaged that the CPA implementers will implement the Sampling Plan over the course of the PoA, including contracting all necessary third parties who would be responsible for actual field measurements. The actual timing will depend on the speed of CPA inclusion and ICS distribution, as well as the decisions made to either hire and train direct staff to conduct field measurements or to sub-contract these responsibilities. Any such third parties will be trained to ensure that field measurements are undertaken in line with the standards required of the Sampling Plan.

The skills and experience required for the data collection activities under the Sampling Plan may include:

- Experience conducting WBTs;
- Experience conducting door-to-door surveys of biomass consumption;
- Local language skills and English language skills;
- Cultural awareness;
- Numerical proficiency;
- Data entry skills

**Monitoring Plan**

The data contained in each individual CPA Monitoring Record will be compiled into a CPA Monitoring Report by the responsible party carrying out the ex-post monitoring activities. The CPA Monitoring Report will be transferred to the CME from the Monitoring Organisation. Either the originals of the CPA Monitoring Records or scanned copies of Record will also be provided to the CME to enable cross-checking.

The CME will perform crosschecks on the distribution and monitoring information received for each CPA. The CME will be responsible for maintaining a secure PoA Distribution and Monitoring Database, covering the CPAs within the PoA. The Database will provide the necessary data for emissions reduction calculations and for verification.

The CME will ensure that all CPA Implementation Records (either original or scanned copy of original) are archived securely to enable verification by the DOE at a later point in time. Archives will be maintained for at least 2 years after end of crediting period of the each CPA or after last issuance -



whichever is later. A copy of the PoA Distribution and Monitoring Database will be kept in an electronic format.

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

<b>Organization</b>	Sardar Swaran Singh National Institute of Renewable Energy
<b>Street/P.O. Box</b>	12 <sup>th</sup> km Stone, Jalandhar-Kapurthala Road, WadalaKalan
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### **Appendix 2: Affirmation regarding public funding**

No public funding that amounts to diversion of ODA is involved for financing of the PoA.



### **Appendix 3: Application of methodology(ies)**

The justification is provided in in detail in Part II Section B.2.



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

No further details, please refer Part II, section B.6.3.



## Appendix 5: Further background information on the monitoring plan

No further details, please refer Part II, section B.7.

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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.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Form <b>Business Function:</b> Registration		